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ORIGINAL RESEARCH

Advancing the decadal plan for the science of nutrition: Progressing a framework for implementation

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Abstract

Aims: In 2019, the Australian Academy of Science in collaboration with the nutrition community published the decadal plan for the science of nutrition. This article aims to review progress towards each of its pillar goals (societal determinants, nutrition mechanisms, precision and personalised nutrition, and education and training) and two enabling platforms (a national data capability and a trusted voice for nutrition science), prioritise actions, and conceptualise program logic implementation models. This process also brought together public health nutrition researchers to reflect on societal determinants of health, and advise how the next 5 years of the decadal plan could reflect contemporary issues.

Methods: Two engagement events, in 2023, brought together experienced and mid- and early-career nutrition professionals for co-creation of implementation logic models.

Results: One hundred and nine early and mid-career professionals were involved. A revised model for the decadal plan pillars emerged from synthesis of all logic models. This new model integrated the precision and personalised nutrition pillar with nutrition mechanisms pillar. These combined pillars build towards the national data capability enabling platform and created new cross-cutting themes for education and training. The need arose for greater focus on respectful engagement with Aboriginal and Torres Strait Islander communities and sustained effort to build cross-disciplinary collaboration to realise the plan's societal determinants goals. A new alliance for nutrition science is

The members of the National Committee for Nutrition and its working groups are provided in the Appendix section.

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proposed to become a unified advocacy voice and build trust in nutrition professionals.

Conclusions: A programmatic approach provides a road map for implementing the decadal plan for the final 5 years.

KEYWORDS

decadal plan, implementation, nutrition science, program logic

1 | INTRODUCTION

The decadal plan for the science of nutrition¹ was an initiative of the National Committee for Nutrition of the Australian Academy of Science (the Academy), who commenced work on this project in 2016. After extensive consultation with the nutrition community, 'Nourishing Australia: A decadal plan for the science of nutrition' was published in 2019.¹ This resource was designed to provide a road map for Australian nutrition science to achieve the food- and health-related Sustainable Development Goals.² The stated aim of the decadal plan is that 'Australian nutrition science plays a key role in improving the long-term health and wellbeing globally while delivering environmental, social and economic benefits nationally with core values of equity, sustainability, collaboration, and innovation by 2030'. The decadal plan has four pillars: societal determinants, nutrition mechanisms, precision and personalised nutrition, and education and training.

A major challenge for nutrition scientists is to unravel the complex mechanisms by which diet interacts with an individual's biology and psychobiology.^{3,4} Equally important is how food systems and local food environments can be optimised to enable equitable health outcomes at both population and individual levels while promoting sustainable ecosystems.⁵ These can both be described as wicked problems. Wicked problems are, by their definition, ones in which there is no predefined solution but require constant iterative change and strengths-based practices with the reflexivity to pivot and evolve when required.⁶ Potential solutions must be underpinned by scientific evidence and require accessible data that can both provide longitudinal evidence of impact as well as data to support solutions. The need for a new national nutrition data repository is a key enabling platform for the decadal plan.

We live in an ever-changing landscape socially, politically, and economically, all of which impact the ability to achieve the goals of the decadal plan. Six years ago, we would not have imagined having lived through a pandemic, large-scale natural disasters, and global conflicts. These events have exposed vulnerabilities in both

Australian and global food supply chains and contributed to a period of rapid inflation that has specifically affected the affordability of essential, nutritious food.⁷ Consequently, there is heightened awareness about the increase in food insecurity both at household and national levels.⁸ The heightened vulnerability in the food supply chain and the rapid rise in the cost of living are interconnected issues tied to an agri-food system that is particularly susceptible to climate damage.⁹ There is an urgent global need to deliver on the provision of sustainable foods, systems, and manufacturing processes that will support planetary health.^{5,10} These systems should support Australia towards attainment of the UN Sustainable Development Goals of 'zero hunger' and 'good health and wellbeing'.¹¹

Local, state, and federal policies and decision-making processes are crucial for change. Since the original decadal plan was published, the growing health disparities between Indigenous and non-Indigenous Australians have been highlighted,^{12,13} a new National Preventative Health Strategy published,¹⁴ and a parliamentary inquiry into Australia's food security conducted.¹⁵ There is a renewed urgency to address these issues with respectful and meaningful collaboration with Aboriginal and Torres Strait Islander communities to enable greater self-determination.¹⁶ Policy context can stimulate actions; however, food and food systems are currently aligned to the health agenda rather than being part of a broader system including agriculture, economics, and considered as a human right.¹⁷ There is a need for nutrition professionals to be part of the conversation around policy and able to respond rapidly to consultation, and to be viewed as a valued partner in government decision-making where food and nutrition science is on the agenda. As such, nutrition professionals becoming a 'trusted voice' was initially conceptualised along with the need for unity and consistency of messaging for effective advocacy.¹⁸⁻²¹

A workforce must be capable of grappling with and providing solutions to 'wicked' problems. This requires skills not just in the foundational sciences that comprise nutrition, but also in advocacy, communication, leadership, systems approach, and implementation science, underpinned by a greater appreciation of the traditional

knowledges that have existed in Australia for millennia.²² In the broader landscape, nutrition science has merged its traditional boundaries with other disciplines including but not limited to ecology, sociology, sustainability, digital and data science, genetics, agricultural science, and economics. This blurring of discipline boundaries provides opportunities for nutrition professionals to have greater influence in previously inaccessible sectors.

2 | METHODS

A program of work was undertaken to review the progress towards each of the decadal plan pillar goals, prioritise actions and conceptualise program logic implementation models for the enabling platforms of the national ‘data capability’ and the ‘trusted voice’ for nutrition science by the National Committee for Nutrition.

Two engagement events were held during 2023. These events facilitated career development for early- and mid-career researchers and promoted engagement with the wider nutrition community, building on previous engagement with early- and mid-career researchers conducted during the initial phases of the decadal plan process.^{18–21} The events were delivered free or at low cost to participants, providing the first opportunities for face-to-face meetings to discuss the decadal plan post-pandemic. These were purposefully designed events to enable the nutrition community to come together in a voluntary capacity and, as such, ethical approval was not required. The event programs were designed to enhance participants’ reflection on achievements of the decadal plan to date, co-create programmatic logic models,²³ and seed communities of action and working parties to accelerate the necessary steps towards implementation.

Engagement occurred in parallel with an environmental and contextual scan alongside policy reviews to ensure that actions and strategies were cognisant of the contemporary landscape in which the decadal plan is situated. Public health nutrition researchers and Indigenous leaders came together to reflect on societal determinants of health, to advise how the next 5 years of the decadal plan could better reflect contemporary issues, including a clearer focus on supporting priority groups. This includes strengthened collaboration with Aboriginal and Torres Strait Islander communities, and improved acknowledgment of Aboriginal and Torres Strait Islander food system knowledges and cultural intellectual property.

The first event, held in July 2023, was a symposium funded by the Theo Murphy Initiative (Australia). Sixty early- and mid-career researchers were selected to attend after a national expression of interest process. The face-

to-face symposium was preceded by a virtual introduction session designed to support participants’ understanding of the decadal plan and to provide education and training on program logic models. The symposium participants self-selected their area of contribution from one of four options: nutrition mechanisms (Pillar 2), education and research training (Pillar 4), the trusted voice, or national capability for nutrition data. A small group of experienced public health nutrition professionals discussed societal determinants (Pillar 1), undertaking a strengths, weaknesses, opportunities, threats (SWOT) analysis.

The second event, held in October 2023, was a hybrid conference at the Academy’s Shine Dome in Canberra, funded by the Boden research conferences. This event focused on the most novel and emerging area of the decadal plan: precision and personalised nutrition (Pillar 3). The conference was preceded by a virtual workshop to set the scene for the decadal plan and provide education and training on the use of logic models and implementation program planning. The conference focused on the creation of a logic model for precision and personalised nutrition—a topic of increased focus and interest with the advent of precision medicine, data informatics, and analytical tools.²⁴ Forty-nine attendees contributed their expertise via two workshop streams: personalised behaviour change, and precision nutrition mechanisms.

Participants at both events reviewed the decadal plan goals, undertook SWOT analyses to identify priority actions, and co-designed implementation program logic models.

The individual logic models were combined by the National Committee for Nutrition team leaders who examined each for synergies and overlap and synthesised into a summarised model. This article presents the implementation models for the enabling platforms, the national data capability, and the ‘Trusted Voice’ alongside a review of actions for supporting pillars. It presents a revised schematic of the decadal plan enabling platforms and pillars.

3 | RESULTS

The summary of the discussions and the SWOT analysis from the 2023 Theo Murphy symposium is available²⁵ and the summary from the 2023 Boden conference on precision and personalised nutrition is accessible in full.²⁶ These discussions and analyses informed a revised model for the decadal plan, provided in Figure 1. Below we present key elements of this revised model, alongside actions arising from the analysis and progress towards goals.

At the events, the development of discrete program logic models for the national data capability (enabling

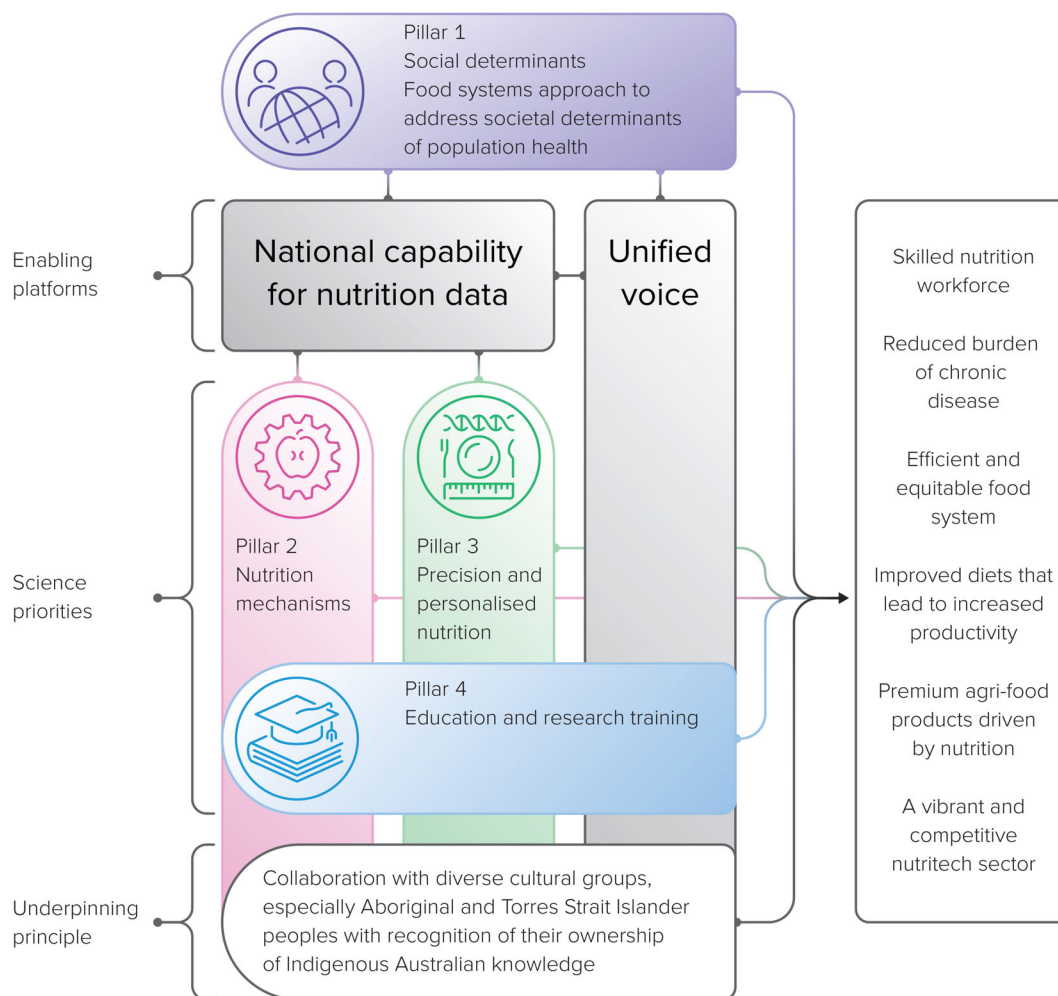


FIGURE 1 A schematic of the revised decadal plan model, showing the alignment of enabling platforms and their associated pillars.

platform), nutrition mechanisms (Pillar 2), and precision and personalised nutrition (Pillar 3) allowed concepts to be explored in depth independently. However, significant overlap of the activities and outcomes was noted during the development of these program logic models. Specifically, each of the program logic models identified the need for a guiding national nutrition policy and wide stakeholder engagement, as well as collaboration to enhance funding opportunities. The models also identified the need to create benchmarks for data collection and use to advance these areas of the decadal plan, leading towards improved nutrition-related health outcomes for all Australians. A sustainable, national nutrition data capability platform was viewed as integral infrastructure to facilitate the realisation of these common goals. To recognise these commonalities, the program logic models for data capability (enabling platform), nutrition mechanisms (Pillar 2), and precision and personalised nutrition (Pillar 3) were merged and integrated as a combined program logic model (Table 1).

To realise the importance of social determinants on food and nutrition, nutrition professionals with public health and advocacy expertise are required. Within the pillars of nutrition mechanisms and precision and personalised nutrition, education, and research training are needed alongside leadership opportunities and training for early- and mid-career researchers. This synergy across all the pillars led to education and research training becoming a cross-cutting theme (Figure 1). Now clearly articulated as a fundamental requirement, a body of work is needed to support the existing workforce and to prepare a workforce capable of delivering systems change. The logic model for education and research training can be found in Table 2.

All participant groups clearly articulated the need to hear the voices of Aboriginal and Torres Strait Islander communities more clearly, understand cultural protocols, and, with respect, ensure that the needs and desires of Aboriginal and Torres Strait Islander communities are integrated in their work. This commitment is demonstrated by the underpinning principle of greater

TABLE 1 Implementation logic model for the national capability for nutrition data (enabling platform) incorporating nutrition mechanisms (Pillar 2) and precision and personalised nutrition (Pillar 3).

Objective	Inputs	Activities	Outputs	Outcomes
A high-level food and nutrition policy and implementation plan that provides the capacity, capability and infrastructure needed to support the integration of tools and services generated by Australian nutrition research into the health system	Funding to support engagement and modelling activities Nutrition research health-benefit and cost-benefit data	Engage with existing organisations with an interest in nutrition science, professional stakeholder groups and consumer groups Economic benefit modelling using existing data to show cost and health benefit to government Identify and engage politicians/ministers who would champion this policy Policy consultation	Position statements from professional organisations, publications and economic modelling as resources for ministers	Increased engagement with nutrition science by healthcare professionals, education professionals, regulatory organisations, and government with end goal to benefit consumers Increased research funding, e.g., MRFF/NHMRC calls for nutrition mechanisms research in Australia Improved personalised dietary recommendations Reduced diet-related disease burden via dietary change (short term) and reduced prevalence of disease (long term)
Nutrition scientists embrace the genetic and cultural diversity of Australians	Inclusive societal engagement with Aboriginal and Torres Strait Islander communities and culturally and linguistically diverse groups to seek their authentic voice and intellectual insights into nutrition mechanisms and precision and personalised nutrition research priorities	Identify relevant stakeholders, organisations, interdisciplinary networks, interest and consumer groups and key individuals who can provide a rich cultural viewpoint through diverse lived experience and are supported to share knowledge and understanding from which to build collaborations with nutrition scientists	Established governance model of communication channels with diverse stakeholders, networks, and consumers to facilitate active and meaningful two-way collaboration with nutrition scientists Develop a collaborative set of principles which will outline intellectual ownership of knowledges and data, and define a set of principles that all members agree to adhere to	Strengthened trust, rapport and collaboration with diverse cultural groups and especially Aboriginal and Torres Strait Islander peoples with recognition of ownership of Indigenous knowledges which can be integrated into research priorities for the science of nutrition
Australian nutrition science has access to a national data capability, research facilities, plus a range of accepted methodologies, animal models, and study designs that are relevant, translatable and accepted as best practice models by applying systems approaches	Requirements analysis including: <ul style="list-style-type: none"> Strategic stakeholder engagement Scoping existing data infrastructures and sources Co-producing solution requirements with end users Identifying ethical and legal obligations 	Establish a national data capability infrastructure Establish an Australian and Pacific region biobank (engage with national research organisations such as CSIRO to ensure adequate nutrition data collected in establishment of biobank) Establish a nationally representative cohort study to identify individual and group	National infrastructure for nutrition data that allows for: <ul style="list-style-type: none"> Depositing and storing data securely Searching, accessing and using data Governance procedures for data collection and access Resources for users and contributors: <ul style="list-style-type: none"> Guidelines on ethics, privacy and legal requirements Use documentation and standard operating procedures 	Faster translation of research into practice Improved understanding of long-term trends and relationships between food, nutrition, and health data National data asset to generate evidence for the development of personalised and precision tools and services Transformation of the nutrition workforce in research, practice, and policy

(Continues)

TABLE 1 (Continued)

Objective	Inputs	Activities	Outputs	Outcomes
	<ul style="list-style-type: none"> relevant to governance and end users Developing proposals and partnerships for funding to ensure sustainability, maintenance, and update, including possible models for cost recovery Identify training needs for governance, contributors and end users 	factors that determine disease/health outcomes	<ul style="list-style-type: none"> FAIR data training Metadata templates and examples 	
Australia is a global leader in evidence-based and equitable precision and personalised nutritech products and services that are environmentally and economically sustainable and improve individual and public health and safety, for both Australian and international markets	<p>User engagement (engagement with research, health professionals, industry, consumers, regulatory organisations)</p> <p>Funding to support collaborative roundtables to bring together stakeholders</p>	<p>Co-design interventions with industry, policymakers, and consumers (advisory/steering committee with consumers, health professionals, scientists)</p> <p>Design strategies for monitoring usage, cost-benefit, sustainability, and impact on health</p>	Environmental and economic sustainable personalised and precision nutrition products and services	<p>Collaboration between industry, research, health professions, and consumers</p> <p>Inclusive and equitable products and services</p>

Abbreviations: CSIRO, Commonwealth Scientific and Industrial Research Organisation; FAIR, Findable, Accessible, Interoperable, Reusable; MRFF, Medical Research Future Fund; NHMRC, National Health and Medical Research Council.

collaboration with Aboriginal and Torres Strait Islander peoples and recognition of ownership of Indigenous knowledges and their intellectual property (Figure 1).

Participants conceptualised the ‘trusted voice’ enabling platform as an alliance of organisations who have an interest in nutrition science acknowledging that ‘trust’ is built over time and not just by the formation of a group itself.²⁷ The new proposed alliance would advocate for evidence-based nutrition policies and programs that have the potential to significantly impact population health nutrition outcomes. The concept of trust for this alliance requires organisations with common goals, which can be nimble and reactive to relevant issues. By harnessing collective expertise, influence, and

resources, this alliance will amplify advocacy for evidence-based policies and initiatives that effectively address nutrition challenges by:

1. Achieving positive changes in government nutrition policies and programs through the promotion of evidence-based approaches and closer alignment with scientific guidance.
2. Strengthening government engagement and collaboration by influencing policy decisions and fostering ongoing dialogue via the Academy, who is already a trusted advisor to government.
3. Promoting collaboration and synergy among nutrition organisations for collective impact—a unified voice

TABLE 2 Implementation logic model for the cross-cutting theme of education and research training.

Objective	Inputs	Activities	Outputs	Outcomes
Ensure currency of nutrition and dietetic degrees with inclusion of new research and developments in nutrition science and public health. Train students in effective and ethical usage of social media	Accrediting bodies and regulatory organisations such as Australian Dietetics Council, Nutrition Society of Australia, Dietitian and Nutritionist Regulatory Council, and universities, review and maintain currency of competencies Liaison with other scientific professional bodies (in biotechnology, biomedical science, biological sciences, food science, etc.)	Communication and consultation between the NNC with professional bodies as updates in science arise. Facilitate continuing education opportunities to update practising professionals Note: some of these bodies already have representation on the Academy's NNC to facilitate communication Facilitate opportunities for multidisciplinary engagement with research scientists—such as conference presentations and workshops—so educators have expert cutting-edge science knowledge	All degrees in nutrition and dietetics guarantee currency in evidence-based content and assessment as evaluated by accrediting and regulatory bodies All degrees in nutrition and dietetics ensure training in usage of social media for nutrition communication	Nutrition professionals demonstrate cutting-edge science in their professional practice and their communication with the public All nutrition professionals understand the contribution of scientists (e.g., epidemiologists, biochemists, molecular biologists or geneticists) to the development of the evidence base implemented by those creating individual and population-level nutrition advice
To promote teaching of nutrition into all education degrees, diplomas and certificates is evidence based and develops competency in food and nutrition literacy	Accrediting and regulatory bodies responsible for development of professional competencies and experts from early childhood education and care services, TAFE and universities	Mapping the existing curriculums and competencies established for degrees, diplomas and certificates in education Mapping of the stakeholders already influencing nutrition in education institutions Scope the existing literature on food and nutrition teaching in educational institutions Roundtable of experts from appropriate bodies	Position paper from the Academy and partners on the minimum requirements for competence in food and nutrition literacy that degrees, diplomas and certificates would include	Food- and nutrition-literate graduates who can impart their knowledge and skills at all stages of the education system and in the communities and sectors in which they live and work Aspiration that this will result in a more food- and nutrition-literate public
To promote teaching of nutrition into all health degrees is evidence based and develops competency in food and nutrition literacy	Experts from the regulatory bodies that develop competencies for health degrees and diplomas	Mapping the existing curriculums and competencies established for degrees and diplomas in health Mapping of the stakeholders already influencing nutrition education for healthcare professionals Scope the existing literature on food and nutrition teaching in health degrees Roundtable of experts from appropriate bodies	Position paper from the Academy and partners on the minimum requirements for competence in food and nutrition literacy for all health degrees	All health professionals empowered to identify and engage on nutrition matters, including knowing when to refer to dietitians or other appropriate specialists
Upskill health and education professionals currently practising to	Experts from the professional and/or registration bodies that promote continuing education	Roundtable of experts for input into suitable continuing education to upskill professionals so they meet or	Continuing education short courses to upskill health and education professionals created	Health and education professionals demonstrate evidence-based food and

(Continues)

TABLE 2 (Continued)

Objective	Inputs	Activities	Outputs	Outcomes
support their food and nutrition knowledge and skills Note: this will follow when the targets above are achieved.	and ensure competence to practice For example: Nutrition Society of Australia, Dietitians Australia, Australasian College of General Practitioners, Australian College of Nursing, Pharmaceutical Society of Australia, Australian Professional Teachers Association	exceed the entry-level competence of their given profession in food and nutrition Review of existing short courses that might be suitable or determine the need for developing a new course, e.g., Dietitians Australia and Nutrition Society of Australia might be involved	by professional/registration bodies NCN statement from roundtable	nutrition literacy in their practice and teaching Aspiration that this will result in a more food- and nutrition-literate public
To grow the nutrition professional workforce and opportunities	Universities Australia, academic councils (e.g., Council of Deans of Nutrition and Dietetics), professional bodies like the Public Health Association of Australia, Nutrition Society of Australia, and Indigenous Allied Health Australia Representatives from priority groups such as rural and remote	Advocate for adequate government funding of nutrition and dietetics education inclusive of experiential learning and placements Advocate for access to equitable education. In particular, pathways for Aboriginal and Torres Strait Islander peoples, ensuring cultural safety for students Develop an agile nutrition workforce that seeks new opportunities—recognising the multiple nutrition issues requiring input Review current and previous nutrition professional's workforce documents Strengthen engagement with nutrition professional bodies (that are already members of the Academy) to build workforce opportunities Advocate for more PhD and post-doctoral funding in government, NGO, and philanthropic groups to ensure other parts of the decadal plan in research training and leadership are achieved Educate nutrition professionals to understand the multidisciplinary nature of nutrition science	Position paper with partners on the need for an expanded nutrition workforce that can be used for government and employer advocacy Continued engagement with EMCR to support their career development Collegiality and respect across and between the many interconnected disciplines	Nutrition workforce that ensures access to food and nutrition literacy training of the public New workplace opportunities More nutrition professionals in leadership positions Informed government

TABLE 2 (Continued)

Objective	Inputs	Activities	Outputs	Outcomes
Incorporate leadership training into all levels of nutrition training, i.e., undergraduate, and post-doctoral	Universities, Nutrition Society of Australia, Oceanic Nutrition Leadership Platform, Dietitians Australia, health and medical science employers, government	Continue to provide EMCR opportunities for development like the Boden research conferences and Theo Murphy Initiative (Australia)	Directory of leadership development opportunities Media-savvy nutrition scientists	More nutrition professionals in leadership positions and across the breadth of nutrition-related sectors Alliance for Nutrition Science Australia the unified voice More outputs and outcomes from collegial, collaborative activities
Provide media training opportunities for nutrition scientists and practitioners	Universities, Nutrition Society of Australia, Oceanic Nutrition Leadership Platform, Dietitians Australia, health and medical science employers, government	Mapping existing opportunities for leadership development Mapping existing opportunities for media training Raise funds for media spokesperson training as part of the trusted voice Advocacy for collegiality and respect across and between the many interconnected disciplines, and further collaborative activities		
Train and develop the leadership skills of scientists with the required skills in emerging 'omic' methodologies, big data mining, and implementation science	Engage with the Academy's EMCR Forum, Oceanic Nutrition Leadership Platform, and champions members more effectively to engage with and build capacity of individuals who may take this body of work forward	Forum and/or focus group. Facilitate an education and leadership forum for all stakeholders, scientists, industry, clinicians and clinician-researchers, training and education organisations, and peak bodies to discuss workforce training needs of nutrition science into the future and how to embed within curriculums or enable upskilling of existing workforce	Comprehensive briefing papers that define key nutrition science skills Position papers on what science skills underpin 'omic' knowledge, microbiome, and other emerging areas to increase the capacity for the workforce in the future Develop and contribute to professional development programs that may be auspiced by other organisations to build nutrition capability and implementation science into their qualifying programs or professional development short courses A community of practice or collaborative groups who work to support leadership of existing nutrition scientists	Integration of new nutrition science methodologies into existing training programs, and development of new training Upskilling existing workforce to increase their skills in applying newer methodologies and designing studies that are scalable and implementable Enhanced credibility of nutrition scientists as professionals, leaders and influencers in Australian science policy and practice Clarity in pathways for new PhD students into nutrition science and greater diversity in those entering nutrition science Improved implementation of nutrition discoveries into practice

Abbreviations: NCN, National Committee for Nutrition; NGO, non-governmental organisation; EMCR, early- and mid-career researcher.

for government and other stakeholders is a key differentiation.

4. Elevating the alliance reputation and influence in the fields of nutrition and public health through increased media coverage and acknowledgement of expertise.
5. Raising public awareness, engagement, and support for evidence-based nutrition policies while establishing the alliance as a trusted information source.

The logic model to establish this proposed alliance is provided in Table 3.

Further actions and priorities emerged from the analysis. For example, the SWOT analysis from the nutrition mechanisms pillar²⁵ suggests that nurturing and developing networks could bring together cross-disciplinary teams to solve nutritional grand challenges. These teams would provide cohesive leadership and contribute strong 'track record' to competitive grant applications which would increase their chance of funding success and raise the profile of nutrition as a national science priority. Analysis of the nutrition mechanisms pillar also recognised that study designs need to evolve to generate data that is representative of dietary patterns at a population level and generate evidence to prevent, manage, and treat diet-related diseases that are prevalent in Australia. Emerging science such as the study of the human microbiome and its metabolites offers potential to drive nutrition science forward. This must occur in parallel with greater precision of measurement and reporting of food intake in both human and animal models.

Precision and personalised medicine is emerging with the advent of precision medicine and the ability of nutrition interventions to be targeted based on biological characteristics or behavioural intentions. The SWOT analysis from this pillar²⁶ identified the opportunity to showcase the central role that nutrition science has across many disciplines, including medicine, data science, food science, genetics, physiology, and behavioural science. This would foster a holistic and collaborative approach to nutrition and an avenue for attracting research funding to the field. Further, the Boden conference attendees noted the opportunity to establish ethical standards for data sharing and collaborating across health professions that will translate precision and personalised nutrition research findings into actionable insights and support open science practices for transparent and collaborative research efforts.

The Boden conference and workshops enabled a team of interdisciplinary experts to generate a high-level implementation logic model for the development of precision and personalised nutrition strategies in Australia. This logic model will form the basis for future collaborations to action the items outlined in the plan. Activities such as stakeholder engagement, economic modelling, policy

consultation, and establishment of a nationally representative cohort study to identify individual and group factors determining disease and health outcomes will lead to the long-term benefits. Such benefits might include improved personalised dietary recommendations, reduced diet-related disease burden through dietary change, and incorporation of personalised and precision nutrition into national and state policies. Collectively these efforts will help ensure Australia is a world leader in ethical, legal, socially just, and sustainable cutting-edge nutrition data science and technology that translates data into action.

'Australia as a global leader' is an overarching aspirational goal set out in the decadal plan. This leadership involves action towards ensuring the complex agri-food system supports positive dietary behaviours, health outcomes, and equitable access to safe and nutritious food. Currently, Australia is not on track to meet that goal. To address this, participants articulated an urgent need for a cross-disciplinary summit or roundtable. This approach would bring together a diverse range of skills and voices, including social determinants and nutrition researchers, alongside Aboriginal and Torres Strait Islander representatives, with policymakers and decision-makers. The objective of this roundtable would be to inform more nuanced cross-disciplinary strategies that advocate for and influence food and nutrition policies in a united way, placing the lived experience of social determinants at the forefront. For example, part of the roundtable agenda may involve strategies to address the need for improved measurement of the impacts of social determinants on nutrition and other outcomes to build capacity for advocacy. This collaborative effort would likely be framed by a human rights approach, focusing on enhancing the equitable, affordable, and sustainable aspects of the food and environmental systems. Such a roundtable is expected to be planned in 2024, with a publication and collaborative advocacy strategy arising from the roundtable discussions.

Some goals set out in the decadal plan, such as the development of competency-based education standards for nutrition science, have been achieved.²⁸ Updated competency standards for dietitians in Australia which form the basis of dietetics education programs, are approved and being implemented, including a greater focus on culturally safe and responsive practice (relevant to the societal determinants pillar).²⁹

4 | DISCUSSION

This article advances the implementation of the major enabling platforms of the decadal plan for the science of nutrition, providing revised priority actions to progress

TABLE 3 Implementation logic model for the trusted voice enabling platform, envisioned to be the establishment of the Alliance for Nutrition Science Australia.

Objective	Inputs	Activities	Outputs	Outcomes
Bring together diverse nutrition organisations and stakeholders under a unified umbrella through the creation of an alliance	Engaged and committed nutrition organisations willing to collaborate Engagement is initially through intellectual contributions	Stakeholder mapping: identify key nutrition organisations, researchers, and other relevant stakeholders across Australia Communication plan: conduct engagement and communication efforts to inform stakeholders about the alliance's formation Develop database of stakeholders: identify and engage nutrition science organisations that are passionate about evidence-based policies and willing to contribute to the alliance	Established alliance of nutrition science organisations stakeholders with clear governance and communication mechanisms: <ul style="list-style-type: none"> Formally articulated coalition body with defined roles, responsibilities, and decision-making structures Established communication channels (e.g., mailing lists, forums, virtual platforms) to facilitate collaboration among members 	Strengthened collaboration and networking among nutrition organisations and stakeholders: <ul style="list-style-type: none"> Increased cooperation and partnerships between member organisations Opportunities for joint research, initiatives, and events among alliance members
Develop structure and governance model for the alliance, including shared vision, mission, and set of principles	Expertise in nutrition science, public policy, communication, and advocacy Recruit coalition member professionals with expertise in nutrition science, public health, policy analysis, communication, and advocacy to lead and support coalition activities Engage external expertise if required to boost above skills Funding and resources for coalition development Seek an inaugural auspicing organisation to support the alliance in its initial development	Model development: <ul style="list-style-type: none"> Conduct an analysis of successful coalition models that are operational in Australia Facilitate discussions on governance, decision-making processes, and collaborative roles within the alliance Develop vision, mission, and principles: <ul style="list-style-type: none"> Organise an inaugural roundtable to introduce the alliance's concept and potential impact Facilitate discussions to collectively develop the alliance's vision and mission Collaboratively craft a mission statement that outlines the alliance's goals and objectives. Define a set of principles that all alliance members agree to adhere 	Defined model for structure and governance <ul style="list-style-type: none"> Agreed model of governance including decision-making processes, and roles and responsibilities of stakeholders Defined vision, mission, and principles of the coalition: <ul style="list-style-type: none"> Shared vision and mission statements endorsed by all alliance members Set of agreed principles that guide alliance activities and advocacy efforts 	A unified nutrition science voice for Australia Established and prepared nutrition alliance available to provide expert advice
Develop evidence-based policy recommendations	Expertise in nutrition science, public policy, communication, and advocacy Use coalition member base to form working groups for	Influence nutrition- and food-related policy: <ul style="list-style-type: none"> Establish a policy sub-committee with representatives from member organisations to identify and prioritise issues to be supported by evidence-based nutrition policies 	Prioritised list of evidenced-based nutrition science policies for advocacy: <ul style="list-style-type: none"> Identified policy priorities with potential significant impact on public health 	Positive changes in nutrition-related policies and programs at the government level: <ul style="list-style-type: none"> Adoption of evidence-based nutrition policies in government programs and initiatives

(Continues)

TABLE 3 (Continued)

Objective	Inputs	Activities	Outputs	Outcomes
	<p>advocacy and policy recommendations.</p> <p>Funding and resources for coalition activities:</p> <ul style="list-style-type: none"> • Seek financial support for basic costs for administration expenses • Engage administrative personnel as required, or within funding limits 	<ul style="list-style-type: none"> • Form topic-specific working groups to analyse scientific research to support the policy development and recommendation 	<ul style="list-style-type: none"> • Comprehensive policy briefs and position papers on these key nutrition issues 	<ul style="list-style-type: none"> • Improved alignment of national nutrition strategies with scientific recommendations <p>Increased government engagement and consideration of evidence-based nutrition policies:</p> <ul style="list-style-type: none"> • Incorporation of alliance recommendations into government policy proposals and implementation • Increased frequency of policymakers seeking input from the alliance on nutrition-related issues
Advocate for evidence-based nutrition policies	<p>Expertise in nutrition science, public policy, communication, and advocacy</p> <p>Use coalition member base to support advocacy work</p> <p>Funding and resources for coalition activities:</p> <ul style="list-style-type: none"> • Seek financial support for basic costs for administration expenses and, event organisation • Engage administrative personnel and functions as required, or within funding limits 	<p>Communication and advocacy activities:</p> <ul style="list-style-type: none"> • Develop advocacy strategies outlining target audiences, key messages, and specific advocacy tactics • Organise advocacy events—such as meetings with government officials, public hearings, or media engagements—to present evidence and recommendations <p>Alliance awareness:</p> <ul style="list-style-type: none"> • Design and implement alliance awareness campaigns targeting policymakers and implementers and potentially the public • Partner with stakeholders to amplify alliance mission and advocacy messages 	<p>Advocacy and awareness campaigns:</p> <ul style="list-style-type: none"> • Coordinated advocacy campaigns through multiple channels for policymakers, the media, and public • High-quality and evidence-based materials for distribution to policymakers, the media, and the public 	<p>Enhanced credibility and influence of the alliance in the nutrition and public health domains:</p> <ul style="list-style-type: none"> • Recognition of the alliance as a key player in shaping nutrition policy discussions • Increased media coverage and recognition of the alliance's expertise <p>Improved public understanding of the importance of nutrition science in policymaking:</p> <ul style="list-style-type: none"> • Higher levels of public engagement and support for evidence-based nutrition policies • Recognition of the alliance as a credible source of nutrition information

towards achieving pillar goals and the enabling platforms envisioned in 2019. The body of work completed in 2023 marks the nearly halfway stage in the decadal plan lifecycle.

The science of implementation has evolved to focus on developing action plans based on the desired outcomes, using small progressive steps that advance towards bigger goals.³⁰ We acknowledge that attainment of each outcome in the logic models presented in this article will take collaborative effort, with engagement of many individuals, groups, stakeholders, and policy- and decision-makers. To increase the chances of successful attainment of the outcomes, an implementation sub-committee of the National Committee for Nutrition will be established with members drawn from pertinent stakeholder groups and peak bodies alongside policy and decision-makers. This new sub-committee will monitor the progress of the program models, provide support to the National Committee for Nutrition working groups, and help overcome barriers as well as take up opportunities for funding, as it is inevitable that the environment and political landscape will evolve and change over time.

Measurement of impact will be direct as the process of implementation of activity goals is achieved, but also importantly have indirect impact. There is no doubt that the decadal plan process has seeded innovation and change—not just in nutrition science, but in organisations that are not typically viewed as being primarily involved in nutrition science, for example, the Australian Research Data Commons was prompted to assist with using big data approaches to food security challenges in Australia, resulting in a 3.6 M investment in this area in 2023. Cross-disciplinary efforts can be harnessed by the conversations and engagement efforts across disciplines, as this will stimulate innovation within organisations who see the benefits of some goals that are aligned with their own strategic objectives.

In a step pivotal to implementation—but also likely to result in greater influence on the political landscape—the initial preparatory work to establish a collective voice for nutrition science has begun. This will take the form of a new alliance, tentatively named the Alliance for Nutrition Science Australia (ANSA), proposed as a science policy project of the Academy. It is anticipated that this new alliance will be self-supporting by income from membership groups and will be able, in time, to develop into a key advocacy body for nutrition professionals and a forum for development of national collaborations across the board scope of nutrition science. The initiation of this new alliance is a key outcome from the consultation process undertaken during 2023.

The decadal plan offers high-level and aspirational concepts to transform the science of nutrition by 2030, to bring long-term benefits to all Australians via its food and nutrition systems, and to support the next generation of nutrition professionals and nutrition scientists. This implementation action plan has reflected on the state of Australian nutrition science in 2023, synthesised and prioritised attainable goals and provides a road map for actions. Successful implementation will rely on the continued engagement of many nutrition professionals and although much remains to be done, the journey is underway.

AUTHOR CONTRIBUTIONS

HT, MAF, EJB, ELB, CB, ALD, KML, JW, and SAW were involved in conceptualisation and design of methodologies, have contributed their knowledge, to data acquisition, analysis, and interpretation, HT drafted the article, and all have critically reviewed it for content and take public responsibility for its accuracy. MC was involved with contribution of knowledge, data acquisition and reviewing of manuscript, KK, SMcN, ER, and CP have contributed their knowledge, to data acquisition, analysis and interpretation, L-DH was involved with conceptualisation and design and data acquisition, AP and NS were involved with data acquisition and interpretation, All have approved submission of the final article. We acknowledge Penny Brew for technical support and editing and Ellen Rykers for technical editing. We are grateful to Nicole Turner who provided scientific advice and intellectual input to the review process for societal determinants. We further acknowledge the following who provided intellectual input: Nathan Cook, Shiva Greenhalgh, Jennifer Hutchinson, Megan Jensen, Ellas Ligdopoulos, Rebecca Mete, Chiara Murgia, Elizabeth Neale, Kay Nguo, Stephanie Risciniti, Erin Shanahan, Alison Spence. We thank all the leaders and participants of the 2017 Theo Murphy Highflyers Think Tank for their conceptual thinking and contribution to the 2019 decadal plan. We acknowledge Dietitians Australia, the Nutrition Society of Australia, the Australian Nutrition Trust Fund, the Theo Murphy Initiative (Australia), and the Australian Academy of Science Boden research conferences for funding that supported the engagement events that enabled many EMCRs to attend.

CONFLICT OF INTEREST STATEMENT

HT, SAW and BB are Associate Editors of *Nutrition & Dietetics*. This manuscript has been managed throughout the review process by the Journal's Editor. The Journal operates a blinded peer review process and the peer reviewers for this manuscript were unaware of the

authors of the manuscript. This process prevents authors who also hold an editorial role to influence the editorial decisions made. ELB is employed by FOODiQ Global that receives funding from Industry, Government and Peak bodies. All other authors have no conflicts to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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