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ORIGINAL RESEARCH

Transformative systemic changes to embed environmental sustainability in foodservices: A grounded theory exploration

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Abstract

Aims: Foodservices are a strong contributor to global environmental impact. Systemic change is required to lead the transformation towards environmentally sustainable foodservices. However, guidance to support foodservices to be more environmentally sustainable is lacking. The aim was to explore food-related environmentally sustainable strategies and their transferability to foodservices in a range of settings, to inform a framework for future application and research.

Methods: A constructivist grounded theory study design was used. Semi-structured interviews with foodservice sustainability consultants, who support foodservice organisations to improve environmental sustainability, were conducted. Interviews were recorded, transcribed, and coded line-by-line. Ten consultants were purposively sampled for diversity in location, organisation type, funding model, and services provided. Codes were collapsed into categories, to inform the development of themes and a framework for the implementation of strategies.

Results: Four sub-themes were created under an overarching theme of ‘Transforming the Foodservice System’: embedding leadership, shifting perspective, constructing collaborative networks, and fostering momentum. A range of implementation strategies were captured within the sub-themes.

Conclusion: These themes informed the development of a practical application framework for implementing sustainable strategies in foodservices that is useful for practice and future research in the area.

KEYWORDS

climate, environment, food, food services, health, nutrition, Sustainable Development Goals

1 | INTRODUCTION

The global population is estimated to reach about 10 billion people by 2050 and the equivalent of almost three planets would be required to sustain current lifestyles.^{1,2} Human activities have warmed the atmosphere, oceans, and land at an unprecedented rate, causing rapid global environmental changes.^{3,4} Climate change has now become a worldwide emergency with global emissions of carbon dioxide having increased by almost 50% since 1990 and greenhouse gas emissions having reached their highest level in history.¹ International actions have aimed to address the ecological and climate crisis, such as the Glasgow Climate Pact, 2021 Intergovernmental Panel on Climate Change Report, Paris Agreement, and Agenda 2030: the Sustainable Development Goals.^{1,3,5,6} However, their translation to practice, including through effective net zero targets, has been slow.^{3,5}

Food systems are a large contributor to this issue and are responsible for 25%–30% of global greenhouse gas emissions and contribute to a range of global environmental changes including deforestation, biodiversity loss, ocean acidification, air, water and soil pollution, and climate change.^{7,8} Food systems have the capacity to support the human population within planetary boundaries; however the current trajectory threatens both.^{2,9} A food system is sustainable when food security and nutrition meet the needs of the present without compromising the economic and environmental requirements for providing food security and nutrition to future generations.^{10,11} As well, sustainable food systems are protective and respectful of biodiversity and ecosystems; culturally acceptable; accessible; economically fair and affordable; nutritionally adequate, safe, and healthy; while optimising natural and human resources.¹² All components of the food system are important to enhance its sustainability, such as agriculture, primary processing, manufacturing, through to retail and foodservice.¹³

Foodservice, by definition, is the serviced provision of food and beverages (meals) purchased out of the home, which may be consumed both in and out of the home.¹⁴ The global foodservice market reached \$2.75 Billion in 2021 and is projected to reach \$3.629 Billion by 2027.¹⁵ Foodservices are one of the sectors of the food system which interact directly with the public, or consumers, and there is an increasing pressure for foodservices to meet their needs.^{2,16} The public are now placing increasing emphasis on the importance of 'eco' or 'green' practices by foodservices and the broader food system.^{17–19} This continued pressure is threatening land, soil, and water limits and is injecting a sense of urgency to transform all areas of the food system, including foodservices.²⁰ In addition, foodservices are increasingly under

pressure to implement environmentally sustainable strategies to comply with international agreements which can influence standards, policies, and political changes.^{1–3,5,6,21}

While several strategies have been suggested to increase the environmental sustainability of foodservices²² and leadership has been described as important for pro-environmental change,²³ more information on how foodservices can best manage pro-environmental change is necessary. Frameworks or models are useful, and examples also exist in the areas of business change management and systems thinking/problem-solving for enhancing the sustainability of other sectors or the food system more generally.^{13,24,25} One food system example is the food citizenship model, which describes the interaction between food producers, food brands (including foodservices), and the public to create environmental, social, and financial value to support positive change.¹⁶ It recognises the positive role that all sectors and participants in the food system can have in changing their mindset and actions to one of individual responsibility and food citizenship.¹⁶ While some of the components of the framework are not 'new' conceptually, there is a paucity of information on facilitating organisational change specific for environmental sustainability and foodservice. Understanding key strategies and transferability aimed specifically towards foodservices would be useful in supporting systemic change across the food system.

To better understand the food-related, environmentally-sustainable strategies being proposed and their transferability to foodservices, this study focused on the experiences of social enterprise, not-for-profit, and private consultants who support foodservices in enhancing their environmental sustainability to inform a framework for future application and research.

2 | METHODS

Constructivist grounded theory was used for this study.²⁶ It was grounded in a constructivist-interpretivist position, reflecting the researchers' views that knowledge is constructed and formed through multiple viewpoints being interpreted to form a consensus. Differing from classic grounded theory, constructivist grounded theory allows for personal interpretation, subjectivity among participants, and researcher reflexivity.^{27,28} Given the novelty of the topic and paucity of practice or research frameworks previously published on it, constructivist grounded theory as a method aligns with our study aim of constructing, with consultants, a practical application framework to promote environmental sustainability in foodservices. Methods were informed by Charmaz's constructivist

TABLE 1 Demographic data of consultant organisations working with foodservice organisations.

Company	Country	Human development index ^a	Type of company	Strategies implemented to support foodservices
1	Australia	Very High	Not-for-profit	<ul style="list-style-type: none"> • Recycling
2	Australia	Very High	Not-for-profit	<ul style="list-style-type: none"> • Non-plastic utensils
3	Canada	Very High	Not-for-profit	<ul style="list-style-type: none"> • Organic agriculture and sourcing
4	Greece	Very High	Social enterprise	<ul style="list-style-type: none"> • Waste monitoring • Educational events • Workshops
5	Mexico	High	Not-for-profit	<ul style="list-style-type: none"> • Sustainable fishing • Seafood portfolio • Public sourcing commitment
6	UK	Very High	Not-for-profit	<ul style="list-style-type: none"> • Food system transformation strategy • Sustainable food systems strategy
7	USA	Very High	Private	<ul style="list-style-type: none"> • Brand positioning • Plant-based menus
8	USA	Very High	Private	<ul style="list-style-type: none"> • Local & organic food • Scratch cooking • Food waste
9	USA	Very High	Private	<ul style="list-style-type: none"> • Sustainability strategy • Carbon footprint
10	USA	Very High	Private	<ul style="list-style-type: none"> • Menu design • Recipe development • Food sourcing

^aThe Human Development Index (HDI) measures the achievement of human development in the following areas: a long and healthy life, being knowledgeable, and having a decent standard of living.³⁰

grounded theory approach and reported in accordance with the standards for reporting qualitative research.^{26,29} Each member of our research team brought their own unique experience to this study, therefore influencing the research aim, data collected, and interpretations developed. This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving research study participants were approved by the Bond University Human Research Ethics Committee (Approval No. VS03037).

Consultants are recognised as potential leaders and sources of information that support foodservice organisational change management, specific to environmental sustainability. They work with a variety of organisations (e.g., private, public, universities, franchises, government-funded) to create policies, processes, strategy development, reporting, and measuring techniques to promote environmental sustainability. Recruitment was targeted at individual consultants representing social enterprise, not-for-profit, and private organisations from developed countries [Human Development Index (HDI) of High or Very High].³⁰ They were purposively sampled through a web-based search, identifying organisations that consult with foodservices regarding environmentally sustainable food-related strategies. Individuals who responded to the

recruitment email were initially provided with a survey to collect demographic data and short responses regarding their location, organisation type, funding model, and services/strategies provided. Participants who completed the survey were then invited to participate in an extended, semi-structured interview about their experiences working with foodservices. Respondents were also asked to provide suggestions about other potentially eligible organisations to approach. Recruitment ceased when the same themes began recurring throughout the interviews with no new insights being brought forward by participants, and the final sample was deemed to represent organisations covering a range of locations, types of organisations, and strategies offered. Organisational characteristics are outlined in Table 1.

Data collection from the survey included questions relating to the organisation's structure and operations, as well as free text fields for the optional sharing of an example, related to the research aim, of a strategy that they had previously undertaken to improve sustainability in foodservice practice. These initial stages of data collection allowed the interviews to focus on more extensive questions and conversation and provided a brief overview and understanding of the organisation, which were used as interview prompts. Further data was collected via

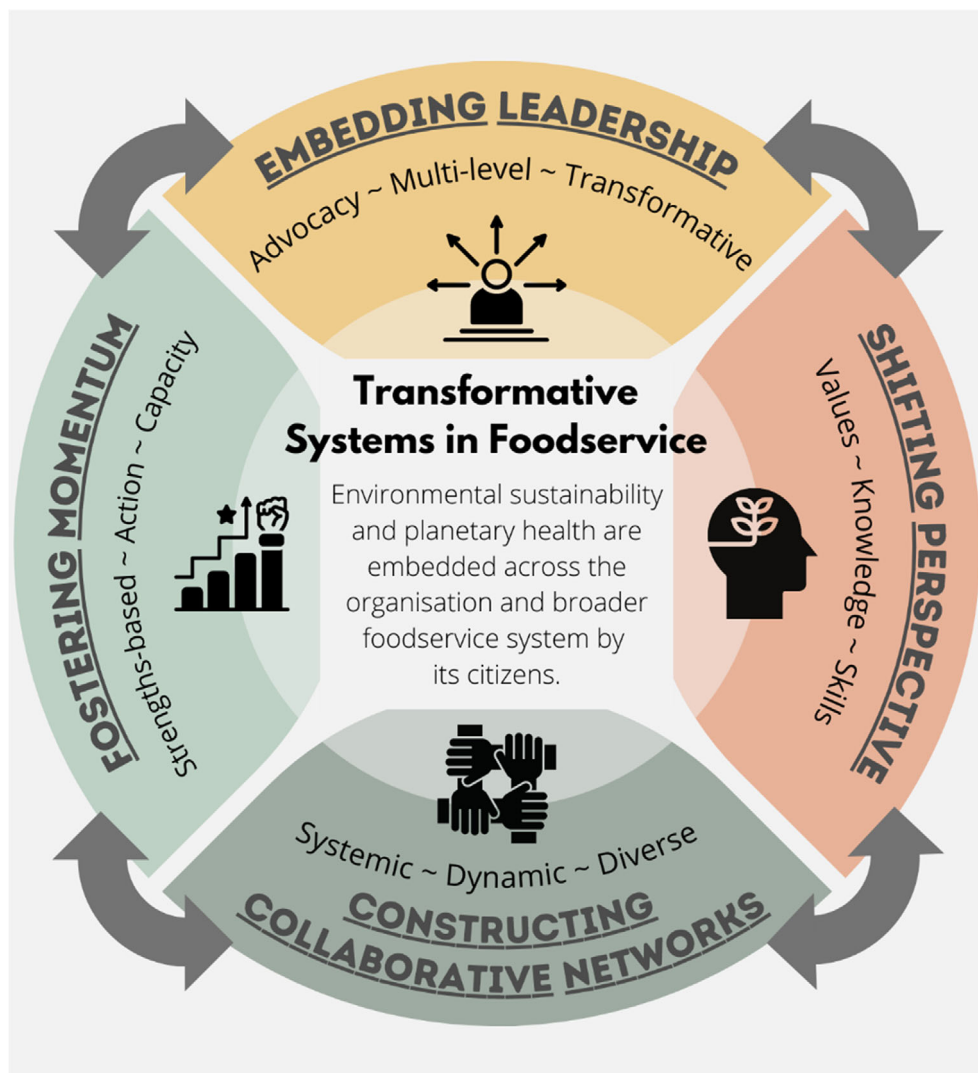


FIGURE 1 Visual framework representing foodservice consultants' experiences of transformative systemic changes required for environmental sustainability in foodservices. This framework includes an overarching theme and four sub-themes that work together to create this transformative system: embedding leadership, shifting perspective, constructing collaborative networks, and fostering momentum.³³

semi-structured, videoconference interviews conducted by one researcher and a research intern. Interview prompts were developed by the research team and guided by the food citizenship framework due to its powerful insights towards pro-environmental change across the food system (online supplementary material). The interview guide featured information that guided the research team on the application of the food citizenship model in the interview process¹⁶ All interviews were recorded and transcribed verbatim.

Interview transcripts were inductively coded line-by-line. As standard with constructivist grounded theory, analytic memo journals were completed during each phase of the project to aid in data analysis.²⁶ Following the conclusion of interviews and transcriptions, initial codes were developed, and then axial coding was conducted to group codes and form categories, which were then discussed in research team meetings to conceptualise and refine themes and sub-themes (example provided as online supplementary material).³¹ The themes and

sub-themes were constructed using implementation strategies and quotes directly from both the survey and interview data. These were selected and agreed upon during the research team meetings. Once the themes and sub-themes were agreed upon, the researchers practised theoretical coding, which broke each theme down into its broader pattern and meaning, linking back to the primary aim of the research.³² From there, a visual was created to represent the developed framework.

3 | RESULTS

Ten foodservice consultants participated in the survey and a one-to-one interview. As shown in Table 1, representatives from a variety of countries and types of consultancy organisations participated. Strategies implemented by these organisations supported environmentally sustainable practices in foodservices and had a broader reach into other areas of the food system.

TABLE 2 Implementation strategies represented in the data and relating to the sub-themes.**Embedding leadership**

- Advocate to higher and/or decision making departments for change in policy
- Challenge companies to think about how change could affect their entire business strategy and what strategies they would have to put into place
- Make employees feel valued
- Understand the company's current practice and/or framework around environmental sustainability
- Advocate internally and externally (e.g., events and campaigns, speaking at conferences, and participating in online forums)
- Support emerging leadership
- Involve senior leadership and executives to influence change
- Encourage behaviour modelling from key stakeholders and senior leadership

Shifting perspective

- Educate on how environmental sustainability is integrated and applied in foodservices, including prioritisation of what will be most impactful for both the business and environment
- Interlink environmental problems with the client's values, beliefs, and motivations
- Engage in practical application and hands-on experiences (e.g., workshops, farm visits, and integrating with other members of the food system)
- Develop personal skills (e.g., leadership and confidence)
- Ensure integrity and transparency of practices across the business
- Introduce modern techniques, such as media and technology

Constructing collaborative networks

- Collaborate with diverse teams locally, nationally, and internationally
- Engage the community through events, workshops, and fundraisers
- Apply already-developed resources and frameworks to enhance knowledge, efficiency, and impact
- Involve the client (organisation) in the change
- Prioritise and build relationships before initiating change

Fostering momentum

- Set goals
- Collect and measure data for progress reporting and accountability
- Use branding, marketing, technology, and media to increase impact
- Develop and/or re-orientate personal skills and values for personal and professional impact
- Prioritise those more willing to change first
- Start with purposive, targeted, strength-based strategies and expand to systemic, impactful, long-term changes

the environmental sustainability of practice. The framework was developed with arrows to symbolise the interlinkages between the elements, which represents the opportunity to focus and address some of those separate, individual components before introducing and interlinking them to the other elements.³³

An overarching theme, 'Transforming the Foodservice System', emerged from the data and represents how the four sub-themes work together to embed environmental sustainability and planetary health across the organisation and broader foodservice system by its food citizens: embedding leadership, shifting perspective, constructing collaborative networks, and fostering momentum. Table 2 outlines broad implementation strategies linked to each sub-theme and proposed by foodservice consultants.

The first sub-theme was embedding leadership. Within this sub-theme, participants described the importance of transformational change across an entire company, multi-level leadership, and advocating for that change both internally and externally. Participants reported the significance of embedding environmental sustainability into the business model and all areas of the company, as well as breaking hierarchical norms to do so. Contribution and embodied leadership from all areas of the company, including senior leadership and executives, were necessary for this change. It was also desirable for companies to have their employees leading in the area through different forms of advocating (e.g., conferences, education, and events).

'[I] have done some work with foodservice to really embed sustainability across their organisational DNA, so it's not seen as an add-on, but it's really embedded across decision making across those organisations'. *Participant Six: background working on sustainability agendas and using systemic interventions to influence transformational change in foodservices and across the food system.*

The second sub-theme was shifting perspective. Participants emphasised the importance of using systematic approaches to shift employee perspectives and allow for the integration of environmental sustainability initiatives into a foodservice. Raising awareness and knowledge, as well as developing or re-orientating the necessary knowledge, skills, values, and beliefs, were all recognised as key components of making impactful change. Shifting perspective was described as not only required physical and emotional acceptance of environmental sustainability, but also required additional skills and values, such as confidence; a shift to a focus on individual, collective, and organisational responsibility; and the understanding of how environmental sustainability can be economically and impactfully incorporated into a foodservice. Understanding and addressing knowledge and skill gaps and

The framework in Figure 1 was developed to represent the theme and sub-themes from the consultants' key considerations for working with foodservices to improve

personal and professional development were all described as necessary to re-orientate and change mindset and behaviours for a more impactful result.

'This tribal knowledge is in direct conflict...it has to be WRENCHED out...this is the hardest part for [kitchen staff] because all of a sudden, they don't know what to do, but there's a lack of accountability and there's a lack of leadership'. *Participant Eight: expertise as a chef combined with systems thinking is used to consult and transition kitchens to environmentally sustainable, locally and organically sourced, zero waste kitchens.*

The third sub-theme was constructing collaborative networks. Participants highlighted the value of collaborating with diverse teams of people locally, nationally, and internationally with a collective goal to enhance environmental sustainability. This included applying a systems approach and involving people across all sectors of the food system, including government representatives and policy makers. Participants recognised that it was crucial to prioritise building relationships and communication with people as a starting point and to not 're-invent the wheel', but to rather build-upon and apply others' work. Although outsourcing support can be beneficial, there should also be a focus on engaging people internally and from all areas of the business, including customers, to support a dynamic organisation that encourages systemic, positive environmental change.

'No one can resolve this problem [of environmental sustainability] alone and it's a huge problem and you need synergies...you need the collaborations to be able to tackle the problem...we don't know everything so we try to bring people on board with us so they can offer the expertise they have...because sustainability—it's about people and it's about humans and it's about how we work together, all of us'. *Participant Four: background of culinary consulting with a focus on food waste management in hotels and restaurants through waste monitoring, educational events, and hands-on workshops.*

The fourth sub-theme was fostering momentum. Participants reported that a company's acknowledgement and recognition of environmental actions to date, willingness to change, and internal and external capacity for environmental change supported a systemic, longer-term impact. These factors were reported as influencing momentum and encouraging organisational development and translational systemic growth. Participants highlighted that it was taking these first steps towards change that were the hardest for foodservices and the individuals within them, and therefore required initial targeted, strength-based, and purposive strategies for change. Commitment, goal setting, accountabilities, progress reporting, and positive reinforcement were described as important and which may be supported by outside consultants, where needed.

'In the sustainability world, we're not good at demonstrating urgency... it's not that sustainability is ever a bad idea, it's that often it just stays in that sort of second tier of priorities – it doesn't have the urgency that gets the time and the attention of the executives... there's a momentum issue that I think makes it quite difficult. My experience is the companies that have the most success are those that have a specific external pressure'. *Participant Nine: background in social sustainability and human rights used to create and implement sustainability frameworks and strategies that address the complexities of environmental sustainability in foodservices and across the food system.*

4 | DISCUSSION

This study explored the experiences of participants engaged by organisations as consultants to support foodservices to implement environmentally sustainable strategies. The study aimed to inform a practical application framework and describe sustainability strategies recommended for foodservices. The key findings included the development of an overarching theme, 'Transforming the Foodservice System', with four supporting sub-themes emerging from the data: embedding leadership, shifting perspective, constructing collaborative networks, and fostering momentum. The participants also described broad strategies that supported a paradigm shift towards environmental sustainability and action within these themes, many of which also support international actions, such as The *Eat-Lancet* Commission's important areas for change in the great food transformation and the Paris Agreement goal of 'affirming the importance of education, training, public awareness, public participation, public access to information, and cooperation...'.^{2,6}

The overall finding of our research was the need for systematic change overarching all changes within an organisation. The four sub-themes and framework provide a blueprint for action for foodservice stakeholders including, consultancy organisations, government and policy makers, and dietitians³⁴ to facilitate positive, translational environmental change. Aligning with our study's findings, embedding leadership within organisations has been more broadly recognised as a central component of environmental change.^{35–37} Many sustainability challenges are characterised by high complexity, structural uncertainty, resistance to simple solutions, and the requirement for long-term focus, so they are difficult to tackle with management as usual.^{38–42} Multi-level management can contribute a more holistic view of individual, organisational, and societal sustainability efforts and performance.^{43,44} Social modelling has been shown to promote significant environmental change in

foodservices^{45,46} and thus individuals within the foodservice system (food citizens)¹⁶ can feel empowered to be emergent leaders (change champions) and promote positive environmental change within an organisational structure.^{36,37}

Similarly, the sub-theme shifting perspective recognises the importance of defying the status quo and removing participant-described 'tribal knowledge' to adapt to new skills and perspectives that will positively promote environmental sustainability. It is clear that consumer attitudes and satisfaction towards environmentally sustainable strategies by foodservices are mostly positive,⁴⁶ however there is a widely reported value-action gap in the literature between awareness and pro-environmental initiatives. Literature has addressed these value-action gaps seen across organisations by relating them to groupthink and conformity theories, among other psychological concepts, which describe how hard it is to resist authority or group pressures to make decisions.⁴⁷ Engler, Abson, and Von Wehrden review additional human cognition biases, including status quo bias, related to both individual and group settings, alongside mitigation strategies directly related to environmental sustainability.⁴⁸ For an organisation to be able to defy the status quo and change, there must be a cohesive commitment to change across the entire organisation. Shifting perspective of all employees can promote positive transformational leadership and change-related communications from top-management through to all employees within an organisation, and will assist in mitigating hierarchical barriers to change.⁴⁹

The sub-theme constructing collaborative networks recognises the importance of adopting practices, resources, and frameworks that are already deemed successful to maximise impact, as well as prioritising relationships that will foster additional impact and momentum. Similarly, Blay-Palmer, Sonnino, and Custot identified common challenges among community-scaled sustainable food initiatives and possible solutions to overcome these shared global pressures experienced by sustainable food system projects around the world.⁵⁰ Although this links to the food system as a whole, the strategies identified complement those described within the current framework and are applicable to the challenges and opportunities that our participants reported when working with foodservices across three key areas. First, values-based education for *citizens*: empowering consumers and informing them about the food they consume. Second, networks to connect producers, processors, distributors, retailers, foodservices, and consumers in the shortest food webs possible: technologies to support networks and innovation. Third, economic viability along the food web.⁵⁰ It has been identified that although our study focuses on the foodservice sector of the food

system, considering all components of the system is relevant for optimal environmental sustainability implementation. Also, implementing learnings and collaboration across various sectors of the food system will promote overall food system transformation.

The sub-theme fostering momentum describes the importance of support and transition management to work towards longer-term and larger impact, that is, the 'ripple effect'.⁵¹⁻⁵³ Initial targeted, strength-based, and purposive strategies were emphasised as a starting point to pro-environmental change. This component of the framework relates to agency (belief in one's own ability to help, relating to climate change) and actions (pro-environmental behaviours) at an individual through to organisational level. Usual behaviour change approaches can potentially be applied to support change for example, the Com-B behaviour change wheel.⁵⁴ Strengths-based approaches are also supported, as they are within individuals' or organisational capabilities and thus support greater agency. This recognises that change is more sustainable when we focus on strengths and possibilities, rather than focusing on challenges. Interestingly, consultancy organisations' funding structures and the impact they had on implementing environmentally sustainable strategies in foodservices was not identified as a common theme or barrier carried by consultants. While other frameworks have acknowledged the role of economy, including the triple bottom line,^{21,50,55} this was not distinguished as a priority barrier or enabler for consultants in our study. This may be due to a majority of consultancy organisations in our study working in line with the Sustainable Development Goals, which have commonalities with an updated conceptualization of the triple bottom line, where all dimensions (social, environmental, economic) overlap and the distinction between economy and human society are removed, with both confined together within environmental limits.^{1,55}

Participants engaging in consultancy to foodservices were recruited as they were identified as leaders working with foodservices; however, as custom with grounded theory research design, it became evident that they were not only focusing on foodservice-specific strategies, but also on strategies supporting the broader food system, as these are indistinguishable. Therefore, organisational or systems change frameworks can be applied to support change, of which there are many,^{24,56} including some specifically for health promotion and food systems. For example, similar themes have emerged from The I+ PSE conceptual framework for action,²⁵ World Health Organization,⁵⁷ and Sustainability Victoria,⁵⁸ including strengthening individual knowledge and skills, promoting community engagement and education, and facilitating partnerships and multi-sector collaborations.

Our research referenced the food citizenship model, which was reinforced by participants as all sectors of the food system were identified as important to promote positive change within foodservices.¹⁶ Facilitating organisational change specific for environmental sustainability and foodservice has now been determined through applying a constructivist grounded theory approach.

Due to purposive sampling, a potential limitation to our study is that only select foodservice consultants were recruited. Consultants from key businesses with different experiences may not have been interviewed. The minimal results relating to consultancy organisations' funding structures could suggest that the interview may have not gone into enough depth on the funding structure of the consultancy organisations and its effects on consultants' experiences. One last limitation is that no countries categorised as low on the HDI scale³⁰ were included in this study. Including low HDI countries would have provided unique differences in experiences.

It is recommended that consultancy organisations, individuals that consult to foodservices, and potentially foodservices themselves apply the developed framework when implementing environmentally sustainable strategies in foodservices. Foodservice dietitians can enhance their dietetics practice by implementing, or supporting the implementation of, the sustainable strategies that fit within the developed framework. Applying the individual components of the framework, and organisation-appropriate strategies, in collaboration both within and external to the organisation, will support dietitians to foster momentum, support and implement pro-environmental change.

This study created a framework for consultants to use when working with foodservices to promote a fundamental shift towards pro-environmental change. Through embedding leadership, shifting perspective, constructing collaborative networks, and fostering momentum, foodservices will be actively involved in the long-term, systemic change and impact that is crucial to transform the foodservice system. The developed framework will inform research and company environmental performance.

AUTHOR CONTRIBUTIONS

MS recruited participants, collected data, performed data analysis, developed the themes and framework, wrote the manuscript, and had primary responsibility for the final content; KMS designed the research, reviewed the data collection and analysis, contributed to the theme and framework development, reviewed the manuscript, and had primary responsibility for the final content; AD contributed to the methodology, theme and framework development, and reviewed the manuscript; and DPR designed the research, contributed to the methodology, theme and framework development, and reviewed the manuscript. All authors are in agreement with the

manuscript and it has not been published elsewhere. The authors acknowledge Gregory Cox for his contribution to the creation of this research concept, Vanessa Sullivan for her assistance with the preliminary stages of recruitment and data collection, and Grace Zadow for her assistance with the visual framework development.

CONFLICT OF INTEREST STATEMENT

Dianne Reidlinger is Editor of Nutrition & Dietetics. This manuscript has been managed throughout the review process by the Journal's Editor-in-Chief. 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. All other authors declare no conflicts of interest.


DATA AVAILABILITY STATEMENT

The data are not publicly available due to privacy or ethical restrictions.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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