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**Sustainable Diets: improving planetary and population health (evidence summary for policymakers)**

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Dr Clare Pettinger, University of Plymouth

## SUSTAINABLE DIETS

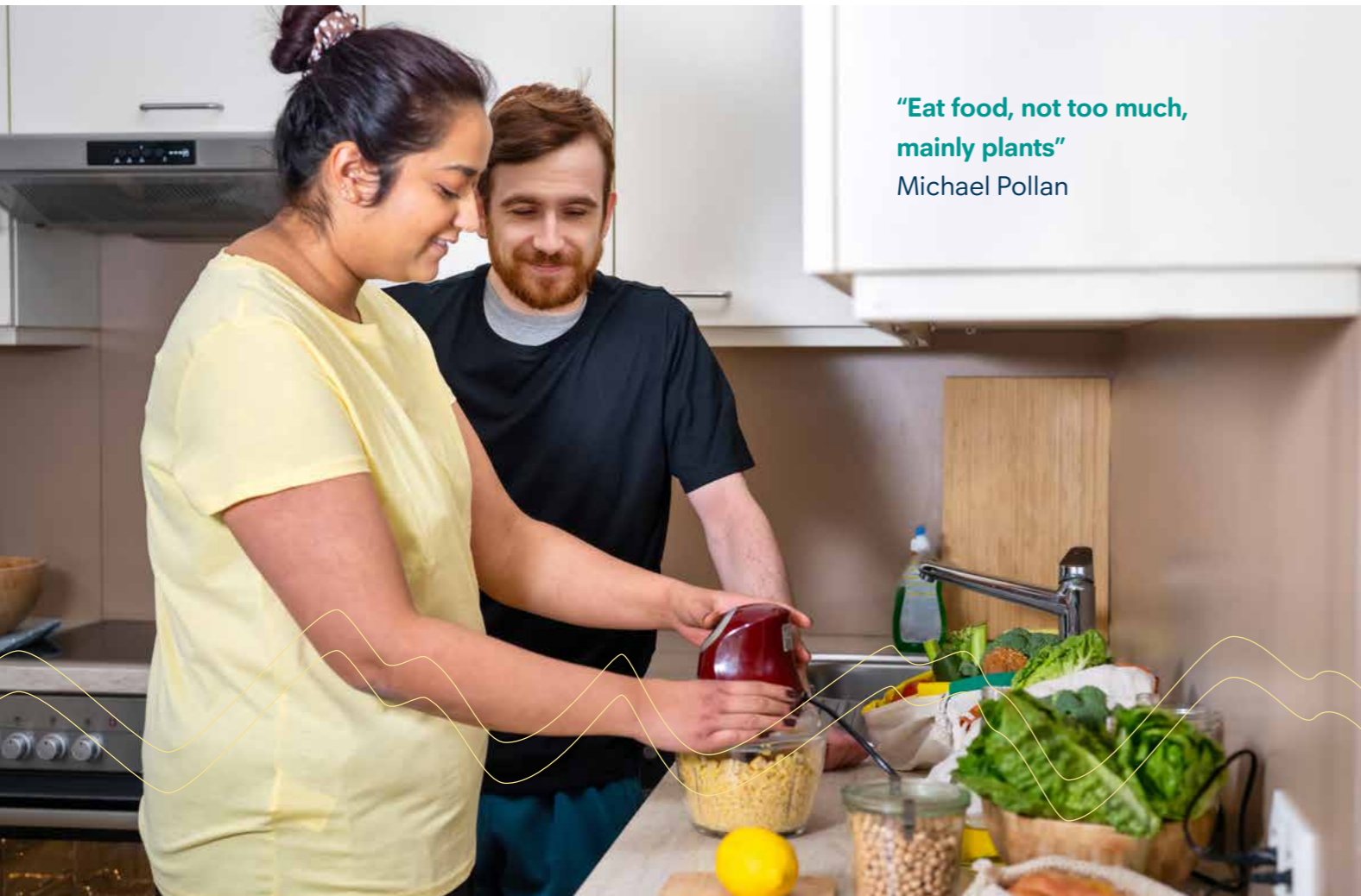
- improving planetary and population health

### Summary

Globally, the current food system is unsustainable; it is damaging both the planet and people's health. Even though enough food is produced to feed everyone, half the planet's population is malnourished, whilst another quarter of the global population has a diet that is either unhealthy or deficient in key micronutrients. These problems need to be addressed and doing so is not mutually exclusive; a sustainable food system can also be a healthy one. Health and nutrition professionals could play a key role in efforts to remedy the current state of affairs, both globally and in the UK. Sustainability should be more deeply embedded in dietitians' study curricula and Continuing Professional Development (CPD) activities. They, and other allied health professionals (AHP), can work with communities to advocate for and support more sustainable food systems as the effects of climate change increasingly impact healthcare practice.

**"Dietitians, as allied health professionals, are well positioned to support the sustainable food agenda. Through their work and engagement with patients, carers and communities, they can promote healthy, sustainable diets, empowering people to make informed food choices to protect their health and wellbeing and prevent illness, whilst also supporting the nation's efforts to achieve carbon net zero."**

Dr Clare Pettinger



**“Eat food, not too much,  
mainly plants”**

Michael Pollan

## Key points

- Today’s food system is unsustainable. If it continues unchecked, current dietary trends will cause significant damage to the environment;
- The food system is also contributing to poor population health outcomes; many people do not consume the right balance of food, leading to ill health;
- Diet and nutrition professionals are already playing an important role in pioneering change to achieve more sustainable diets. In recent years, the ‘what’ and the ‘why’ (i.e. evidence) has become clear. The focus now should be on how dietitians, as AHPs, use their skills to lead the way and support the AHP strategy where environmental sustainability is a key priority;
- Educational learning and curricula for diet and nutrition professionals are beginning to change, evolving from a purely biomedical model of health, to one which focuses on both human and planetary health;
- The food system is also distorted by inequalities of access. Advice from dietitians and nutritionists should also be aligned with the real-world circumstances of the communities they are working with, thereby addressing the public health and preventative agenda in the AHP strategy;
- Sustainable eating habits align with recommendations in the UK’s Eatwell Guide and are actively promoted within the British Dietetic Association’s (BDA) ‘One Blue Dot’ toolkit;
- Messaging around the sustainable diet agenda will add more complexity to the plethora of messages currently in use around food, diets and eating. This presents an opportunity for dietitians and nutrition professionals to help consumers decipher these messages;
- Making changes to how food is procured and used within the NHS will be key to helping the UK achieve carbon net zero. Everyone working within the NHS will need to be prepared for a future where many aspects of healthcare practice are likely to be affected by climate change.

## Context

The growing human population is increasing demand on a food system that is stressed and challenged by the degradation of global ecosystems. Currently, the food system accounts for around a quarter of all global greenhouse gas (GHG) emissions. The majority of these emissions are caused by rearing livestock for meat and dairy (these activities alone generate between 18%-20% of total global GHG emissions). If the food system continues unchecked, current predictions are that within 30 years’ time dietary trends will have caused significant damage to the environment.

Our food system is not only contributing to poor outcomes for the planet, but for the population too. More than enough food is generated to feed a global population of 7 billion but around 3.5 billion people are malnourished today and a further 2 billion are deficient in key micronutrients.

The UK population does not currently consume the right balance of food. In October 2018, *The Lancet* published the results of a ‘Global Burden of Disease’ study, which estimated that 15% of deaths in the UK were attributed to poor dietary habits alone. Many people’s diets contain too much refined sugar, fat, salt and processed meats. The resulting ill health from such diets costs the NHS £6 billion each year.

## How food is ‘bad’ for the planet

- Food production contributes 15-30% of total UK GHG emissions and contributes significantly to global warming. It is a leading cause of deforestation, biodiversity loss and soil and water pollution and accounts for 70% of all human water use.
- 9.6 million tonnes of all food produced is spoiled or wasted in the UK every year with the majority (71%) occurring in the home. Some of this is avoidable. It represents a waste of land, water and other inputs and produces ‘unnecessary’ GHG emissions.
- Over-fishing and poor fishing practices have impacted on fishing stocks with 90% of fisheries now fully exploited or over-fished. The marine vertebrate population has been halved and the marine ecosystem has been damaged.
- Livestock farming is a significant contributor to GHG emissions, deforestation, biodiversity loss, and soil pollution, as well as land and water use.



The objectives of the recently published UK National Food Strategy<sup>1</sup> are:

- (1) to escape the junk food cycle to protect the NHS;
- (2) to reduce diet-related inequality;
- (3) to make the best use of our land;
- (4) to create a long-term shift in our food culture.

<sup>1</sup>Available at <https://www.nationalfoodstrategy.org/>

The ‘trilemma’ of diet-environment-health has become a pressing global challenge, yet it is not currently getting the attention it deserves. This needs to change. Health and nutrition professionals could, and should, play an important role in pioneering such change, combining healthy eating messages and sustainable dietary advice. They could support efforts to make the UK’s food system more sustainable, especially at a time when there are pressures on the supply chain, as well as on public and household finances, because of the rising cost of living brought about by the triple whammy of the global pandemic, political instability and Brexit.

## The Issue

Achieving sustainable diets is a broad and complex issue. It links public and environmental health with food businesses (including the multinationals that span the globe) and the sustainability agenda. Influential players in the food industry can have vastly different interests and there are calls for stronger multi-sector leadership in championing a sustainable, ecological approach to

the food system. At first glance, the complexity of the issue seems overwhelming. GHG emissions are only one aspect of sustainable eating. Water and energy use in food production and transportation, as well as waste, are other issues. In addition to the biodiversity loss and soil degradation caused by the current system, there are also threats to food security.

## Addressing the issue

Until recently, little attention had been paid to the role health professionals, such as dietitians, could play in promoting sustainable food production and consumption. This is an oversight. Part of a dietitian's role is to utilise the most up to date scientific evidence on food, health and disease and translate this into practical guidance to enable people to make appropriate lifestyle and food choices. Dietary guidelines are beginning to incorporate elements of sustainability

and they will continue to play a vital role in promoting environmentally sustainable diets but dietitians and nutrition professionals need to find a consistent approach to work with patients in a way that focuses on both human and planetary health.

The 2005 Giessen Declaration highlighted how 'new nutrition science' needed to move beyond biomedical science to address ethical concerns such as the social

and ecological factors linked to food production, transportation, consumption and disposal. The range of elements relating to the breadth and depth of the sustainable diets discourse is slowly beginning to be integrated into nutritional science education and practice. Future scientific approaches should be developed with a socio-economic and a planetary perspective in mind.

## Defining a sustainable diet

A challenge in efforts to address the issue has been the lack of one clear definition for sustainable diet. The lack of consensus has been a barrier to making more progress in line with the sustainable food agenda. The best-known global definition of a sustainable diet is 'those diets with low environmental impacts which

contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets 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'. Translating and communicating what a sustainable diet looks like 'on a plate' is difficult however, even for nutrition professionals. This could potentially be supported by the introduction of professional standards in the area.



Seasonal, locally grown produce

The lack of consensus has been a barrier to making more progress in line with the sustainable food agenda

## Education

One crucial area requiring policy focus is education. Already, the education of dietitians and nutrition professionals is beginning to change, but this needs to happen more consistently to evolve from a purely biomedical model of health to a more ecological one. Sustainability should form a stronger part of dietetic and nutrition curricula, so that its associated values can be translated and embedded within nutrition professional practice.

The British Dietetic Association (BDA) has advocated for the profession to build on the progress already made and lead discussions on how food behaviours can affect both health and the environment. To do this successfully, dietitians need to be better informed about sustainability. Learning for all healthcare professionals is lifelong; sustainability should be a theme that runs through their CPD curricula. Improving

students' sustainability literacy could entice more young people to study nutrition and dietetic programmes in UK (as well as other AHP subjects). Potential curricula should build on initial work to support students co-learning from other disciplines. Surveys and feedback show that students have reported a strong desire to learn more on this topic.

## Inequalities in the current system

The current unsustainable food system is distorted by inequalities of access. The food purchased, processed and eaten in the UK actually costs twice as much as the sum on the till receipt. For every £1 consumers spend on food, additional costs of 97 pence are incurred: production-related costs account for an extra 48 pence for every £1 spent on food, while the costs of diet-related disease account for an extra 39 pence. Food systems at local, national and (inter)national levels will need to be transformed in order for the UK to meet its carbon net zero targets. Nutrition professionals need to embrace the sustainable diet agenda with more urgency and also align it within the wider health versus 'eco-system' contexts. They can play an important role advocating for more

democratic and sustainable food systems and in supporting people to become food citizens. Advice from dietitians and nutritionists should be based not only on government policies, but also aligned with the real-world circumstances of the communities they are working with.

The UK population can make choices now to positively influence the planet's future. To succeed, it will be necessary to put communities at the heart of the work, to involve different elements within those communities, connect voices at all levels and ensure all levels of knowledge are valued. This aligns with the growth of participatory citizen-science approaches, such as the Transforming UK Food Systems Programme (<https://ukfoodsystems.ukri.org/>), where engagement and

co-production are encouraged. This approach will challenge traditional ways of teaching nutrition, which are typically based on bio-medical models of evidence-based practice, relying mainly on reductionist research paradigms. Embracing more relational models of critical thinking for transformational learning is needed now in nutrition science.

**Food systems at local, national and (inter)national levels will need to be transformed in order for the UK to meet its carbon net zero targets.**

## Potential improvements

Different foods impact the environment to differing degrees. Dietary modelling studies have confirmed that to improve public health, at the same time as reducing the impact of climate change, consumption of red and processed meat and dairy products needs to be reduced. Air-freighted foods, soft drinks and processed foods high in

fat, sugar and salt are likely to have a greater impact on GHG emissions than others. Such food items could be replaced with appropriate plant-based proteins, such as beans and pulses, or plant-based dairy alternatives. Optimising land use for food production, such as reducing the amount of land required for the rearing of meat, would lessen environmental

impacts in a range of ways. Such sustainable eating habits align with recommendations in the UK's Eatwell Guide and are actively promoted within the BDA's 'One Blue Dot' toolkit - see page 7.

## Case Study - the One Blue Dot toolkit (The British Dietetic Association, 2018)

Launched in 2018, the project's development drew on learning gathered during insight work amongst the BDA membership. In 2018, a working group of dietitians collated and reviewed the latest evidence on environmentally sustainable and healthy eating patterns, drilling down to micronutrient level.

Supported by the project partner, Alpro, the One Blue Dot reference guide and supporting toolkit was co-created. This highlights how urgently

diets need to change not only for human, but also for planetary health.

The One Blue Dot reference guide, which was updated in August 2020, is designed primarily for dietitians but it is hoped that everyone involved in food provision will find it a useful resource.

One Blue Dot aims to provide the latest evidence as well as a bank of practical resources such as menu swap suggestions.

The BDA environmentally sustainable diet's nine point plan includes:

- 1 Reductions in red and processed meat, if eaten, to at most 70g per person per day (also recommended by the World Cancer Research Fund).
- 2 Increasing plant proteins such as beans, nuts, soya and tofu.
- 3 Only consuming fish from sustainable sources, and from a wider variety of species.

- 4 Moderating dairy consumption and using fortified alternatives where needed.
- 5 Focusing on wholegrain, starchy carbohydrate sources.
- 6 Opting for seasonal, locally sourced vegetables/fruit. Avoiding air freighted, pre-packed and prepared vegetables/fruit.
- 7 Reducing consumption of high fat, sugar, salt foods.

- 8 Making tap water and unsweetened tea/coffee the choice for healthy hydration.
- 9 Reducing food waste, especially of perishable fruit and veg by choosing tinned/frozen alongside seasonal fresh produce.

Within the toolkit, each is covered in depth, from the point of view of both the effect on the planet and nutrition.

The toolkit is a 'live' document, with regular updates and extra information as the science develops.

<https://www.bda.uk.com/resource/one-blue-dot.html>



## The average quantity of GHGs emitted and land & water use to produce 100g of protein from animal and plant foods.



	GHGe as kg CO <sub>2</sub> eq per 100g of protein	Land use m <sup>2</sup> per 100g of protein	Stress weighted water use 1000s litres per 100g of protein
Nuts	0.3	7.9	140.8
Peas	0.4	3.4	12.6
Beans	0.8	7.3	10.5
Peanuts	1.2	3.5	23.6
Tofu	2	2.2	3.2
Eggs	4.2	5.7	16.2
Poultry meat	5.7	7.1	8.2
Fish (farmed)	6	3.7	18.2
Pig meat	7.6	11	41.3
Cheese	11	40	81.9
Dairy cattle	17	22	60.7
Shellfish (farmed)	18	2	86.2
Sheep meat	20	185	70.9
Beef meat	50	164	17.4

## The BDA sustainable diet recommendations

<b>Red meat</b> Red meat <70g/pppd or <350g-500g pppw (cooked weight). Processed meats.	<b>Fruit and vegetables</b> Seasonal + locally produced vegetables/fruit or use tinned/frozen. Air freighted, pre-packed and prepared fruit and vegetables.
<b>Plant proteins</b> Prioritise beans and lentils, soya (beans, mince, nuts, tofu), mycoprotein (Quorn™), nuts and seeds.	<b>Portion control</b> Animal proteins Dairy produce High Fat, Sugar and Salt (HFSS) foods
<b>Fish</b> From sustainable sources and follow oily fish recommendations.	<b>Hydration</b> Tap water and unsweetened tea or coffee over soft drinks.
<b>Dairy</b> Moderate dairy consumption. Use calcium fortified plant-based alternatives where needed.	
<b>Potatoes, bread, pasta, rice and other starchy carbohydrate foods</b> Recommend wholegrain. Recommend tubers such as potatoes.	
<b>Reduce food waste</b> Especially perishable fruit and vegetables. Any food waste should be recycled.	

✗ Avoid 
 ▼ Reduce 
 ▼ Moderate 
 ▲ Increase

<https://www.bda.uk.com/resource/one-blue-dot.html>



## Communications clarity

Many factors influence people's food choices. Messaging around the sustainable diet agenda will add more complexity to the plethora of messages currently in use around food, diets and eating. This could potentially confuse consumers further, but it presents an opportunity for dietitians and nutrition professionals to help decipher these messages. Their skills will be increasingly called upon to navigate this complexity and help consumers

make both sustainable and healthy food choices. Nutrition professionals need to support consumers in their attempts to engage in healthy and sustainable eating practices. In response to a changing education, health and policy environment, it is encouraging that the UK dietetic (and nutrition) workforces are beginning to seek out opportunities to steer and influence local, regional and national policy including the sustainability agenda.

## Green leadership

Currently, 'green leaders' recognise that the climate crisis is also a health crisis and that health services need to deliver high quality care for patients today, as well as for future generations. More collaboration between the health professions would optimise 'green leadership.' A team of academics at the University of Plymouth recently explored the perceptions of strategic leaders and trainee AHPs (future leaders) on 'collaborative leadership for sustainability'. It asked them to critically consider what 'being a greener leader' and 'sustainability' meant in practice. Three key themes emerged from this work: aligning behind a collective vision of sustainable practice; empowering, enabling and embedding sustainability, and embracing collaborative change. Today's leaders fed back that the green agenda should be prioritised, to raise awareness and communicate what is already happening whilst future AHP leaders argued that getting opinions and ideas from all stakeholder voices (including patients) is important in shaping the common purpose within the green agenda.

Overall, there was a clear sense from the leaders of the need for education to improve sustainability literacy for AHPs generally. Whilst some AHP educational curricula are beginning to reflect this need (e.g. BDA), the focus now should be on the how to deliver appropriate education programmes to support (future) practitioners. Higher Education curricula (AHP trainees) and CPD (practitioner) programmes are urgently needed to support environmental sustainability literacy across AHPs.

The participants' feedback evidenced a clear call to 'embrace collaborative change,' with ubiquitous agreement for more effective cross-sector (and disciplinary) working towards this common purpose. Communication is a key element of practice for dietitians, specifically to support the promotion of diet-related behaviour changes, and they have a vital role as knowledge translators, educators and influencers. Dietitians were also seen as having an amplified voice within the narratives which will underpin

their emerging role to support environmentally sustainable diets and food systems.

Dietetics specifically are already showing bold visionary leadership and are well placed to push the boundaries of collaborative leadership on this agenda. Food waste in hospitals is a catastrophic environmental issue in the UK (Wrap, 2021) and is being collaboratively tackled as part of the NHS net zero strategy. Dietitians are ahead of the game in the green agenda (in education and professional practice contexts), whereas other professional disciplines have further to go. This needs to be seen as a catalyst for the dietetic profession. The BDA are already engaging their membership in the UK via shared practical resources (e.g. One Blue Dot) and AHP greener hub. Dietitians now need to step into their role as leaders and educators of other AHPs to promote sustainable diets and food systems within broader healthcare contexts. Such collaborative and supportive leadership will boost confidence and enhance the capacity for environmentally sustainable healthcare at scale.



*Red meat replacements include plant based meat alternative proteins such as pea or soy based mince.*



## Conclusion

AHPs are well positioned to support the sustainable food agenda. There is an inextricable link between their work to improve the public's health and reduce the country's carbon footprint. By 'making every contact count', they can lead positive conversations to promote healthy, sustainable diets, and empower people to make informed food choices at the same time as supporting efforts to achieve carbon net zero. Sustainability is increasingly seen as an important issue in higher education and all learners should acquire the knowledge and skills needed to promote sustainable development and for their own continuous professional development. Whilst dietitians' and nutritionists' training is already beginning to change to address this agenda, this change needs to be applied more consistently.

Greater effort to embed sustainability in the curricula, will empower AHPs to showcase their skills and become proactive advocates for healthy, sustainable diets, capable of influencing a range of policy areas at a local and national level, including education, pricing and food accessibility. Sustainability advocacy relates to wider, more complex food system issues, pertaining to environment, society and economy. It needs to be 'people-centred' and grow via 'collective agency'. Food and nutrition professionals are 'perfectly placed' to interpret complex nutrition science and communicate national and international guidance to help the public understand what they need to do to improve their own health and that of the planet.



Relating to the following Global Sustainability Development Goals



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The **Sustainable Earth Institute (SEI)** connects the University's world leading research expertise with the wider world to collaborate on creating a more sustainable future. We bring together researchers from natural and social sciences, engineering, arts, humanities, health and business, to take an interdisciplinary, systems-thinking approach to help tackle sustainability challenges.

This Policy Brief is part of a series aiming to inform policy-makers of our sustainability research, in particular around Net-Zero Carbon and Healthy Landscapes.

To read more in the series visit:  
[www.plymouth.ac.uk/sei-impact](http://www.plymouth.ac.uk/sei-impact)

Voice of a sustainable earth

## Researcher biography



**Dr Clare Pettinger** is an award winning lecturer in Public Health Dietetics at the University of Plymouth's School of Health Professions. A Registered Dietitian, Public Health Nutritionist and experienced educator, she is actively engaged in community-focussed research around food systems, poverty and social justice.

Dr Pettinger is passionate about radical creative approaches to tackle local (and global) health, (in)equality and social well-being challenges. She is currently the Principal Investigator (Plymouth workpackage) for a five-year national consortium project on the 'Co-production of healthy, sustainable food systems for disadvantaged communities' (a project led by the University of Reading) which has received £6million of funding from the UK Research and Innovations (UKRI) Strategic Priorities fund.

She previously led the 'Food as a Lifestyle Motivator' (FLM) project (British Academy funded), exploring creative methods to engage 'marginalized' communities in food activities to enhance their health, well-being and life skills.

Dr Pettinger is an enthusiastic 'sustainability advocate' involved in promoting 'collaborative leadership for sustainability' and environmentally-sustainable diets for nutrition professionals and Allied Health Professionals. She also worked with British Dietetic Association to co-produce the One Blue Dot campaign & AHP sustainability advisory group, for which she was nominated for a 'Greener AHP' award (CAHPO) in 2022 and she delivered the prestigious British Dietetic Association's Elsie Widdowson memorial lecture in September 2022 with the title 'How Dietitians Can Protect the Planet'. Dr Pettinger was recently shortlisted for the Caroline Walker Trust '2023 lecturer of the year' award for 'sustainable food'.

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