Food systems governance and the environmental agenda

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Executive summary

Food systems are major contributors, but also critically vulnerable, to the triple planetary crisis of climate change, biodiversity loss and pollution. The food sector uses more natural resources than any other sector. This means that the way in which food systems are governed has direct consequences for how natural resources are managed — and for environmental sustainability and ecosystem functioning. Governance therefore also plays a critical role in transforming food systems towards increased sustainability.

This report aims to show how food systems governance can contribute to advancing environmental agendas. It builds on the findings of the One Planet network's Sustainable Food Systems Programme's research on Sustainable Food System Multi-Stakeholder Mechanisms (SFS MSMs), which aimed to understand how multi-stakeholder governance arrangements are advancing policymaking on sustainable food systems, by analysing 10 national and sub-national examples from around the world (Alliance of Bioversity & CIAT, UNEP and WWF, 2021).

This paper is based on a literature review, a survey with members of 7 out of the 10 original SFS MSM case studies and follow-up video interviews. It aims to shed light, raise awareness and inspire decision makers and practitioners, especially in the environmental sector, to think about how they can use food systems governance as an entry point to tackle the triple planetary crisis — and in turn, this might inform future policy and practice related to food systems and the environment.

The first part summarises evidence of the links between food systems and the environment. Food systems contribute directly and indirectly to climate change, biodiversity loss and pollution, as well as malnutrition and diet-related diseases. They are responsible for around a third of greenhouse gas (GHG) emissions, one third of global terrestrial acidification and more than three quarters of eutrophication in aquatic ecosystems. Production of food is also the primary driver of biodiversity loss. At the same time, the triple planetary crisis is undermining the capacity of food systems to produce and distribute nutritious and safe food.

The review of the literature on food systems governance, environmental governance and global environmental change, highlights concepts, evidence and examples that help to demonstrate the value and utility of addressing environment-related challenges through food systems governance. The key findings from the literature review are:

The shift to a systems approach to food governance has been important for integrating environmental dimensions with other positive outcomes of food systems such as food and nutrition security, health and improved livelihoods. Food systems are increasingly defined in a holistic way, rather than just being thought about in terms of food security. Environmental sustainability and the sustainable use of natural resources have therefore also become a central aim of food systems *governance*. Systems approaches to governing food are also thought to be more effective for tackling environmental challenges such as climate change.

In order to transform food systems so that they benefit the environment, governance of food systems will also need to change. In the field of environmental governance, the transformation of social-ecological systems, such as food systems, towards sustainability, is recognised to require *transformative* governance. This is typically understood to combine four features or approaches:

- Integrative governance: collaborating across different places, sectors and levels of governance, combining governance instruments, and integrating key issues (e.g. sustainability) across different governance areas.
- Inclusive governance: increasing participation of citizens, stakeholders and those most affected in decision-making, as well as groups who are often excluded, such as women and young people, and Indigenous Peoples and local communities.
- Adaptive governance: the capacity of governance to successfully adapt to change, which is relevant in the context of climate change and environmental change.
- Pluralist governance: recognising diverse knowledge and value systems, including Indigenous and local knowledge.

There is still limited evidence of the impacts of food systems governance on environmental outcomes. Gathering more data and agreeing on how to measure and evaluate those impacts could help make the case for food systems governance in other arenas — for example, within international environmental fora such as the United Nations Framework Convention on Climate Change (UNFCCC), the Convention on

Biological Diversity (CBD) and the Global Biodiversity Framework (GBF).

Working with, and learning from, Indigenous Peoples and local communities is essential. Integrating diverse communities, groups, perspectives, value systems and knowledge can support the transformation of systems, such as food systems, towards sustainability. The participation of Indigenous Peoples and local communities in particular, and of stakeholders and citizens more broadly, can increase the effectiveness of natural resource management and increase food systems resilience in the long-term.

The second half of the report analyses the contribution of 7 SFS MSMs from around the world to advancing environmental agendas and policymaking at different levels. Multi-stakeholder mechanisms are one form of food systems governance with 'transformative' potential — with most exhibiting inclusiveness and integration — that are incorporating environmental issues into their work, helping to develop environment-related policies, and promoting environmental agendas. The insights from the case studies can be summarised into six key messages:

1. **SFS MSMs are playing a role in policymaking related to environmental issues, including on climate change, sustainability and recycling.** Many of the SFS MSMs studied are addressing environmental challenges through the creation of integrated policies on sustainable food systems. In addition, several are also contributing to environmental policy processes, e.g. in relation to climate change and recycling.
2. **These types of governance mechanisms are advancing environmental agendas by facilitating cross-sector dialogue on environmental issues.** SFS MSMs by definition bring together actors from within and across different sectors to collaborate on complex issues. The role of SFS MSMs in convening dialogues around environmental issues was seen as one way in which they are helping to tackle environmental problems.
3. **SFS MSMs are contributing to environmental agendas and outcomes in both direct and indirect — and sometimes even hidden — ways.** The impact pathways through which food systems governance contributes to tackling the triple planetary crisis are not always easy to demonstrate. In addition, environmental co-benefits are sometimes implicit in the work of MSMs, rather than being the primary objective of a policy or intervention.
4. **Food Loss and Waste (FLW), urban agriculture and sustainable diets are popular entry points for tackling environmental problems among the SFS MSM case studies.** Although there are many food systems challenges with environmental dimensions, the initiatives studied appear to be tackling some more than others. However, it is important to note that our study included a relatively high number of MSMs working in cities (which likely explains the popularity among our respondents of working on urban agriculture, for example).
5. **The motivation to address environmental issues is embedded in the mission of SFS MSMs, and is shaped by some citizen, media and political agendas.** Most SFS MSMs have adopted a "systems framing" in which environmental sustainability features as a key pillar and part of their vision. Public opinion on environmental issues is also influential in creating an enabling environment for MSMs to talk openly about and campaign around issues such as climate change.
6. **The multi-stakeholder initiatives studied are raising awareness of the connections between food systems and the environment, and the environmental dimensions of food systems.** Through their interactions with the public, governments and sometimes, the media, these SFS MSMs are showing other actors how food systems and environmental issues are connected. Individual MSM participants also spread messages about food and the environment to their respective organisations, professional networks and sectors.

Introduction

1

Given its potential to both support and hinder social, economic and environmental sustainability, food is at the heart of the 2030 Agenda for Sustainable Development (UNEP, 2016). It cuts across almost all of the Sustainable Development Goals (SDGs), from the elimination of hunger to goals on gender equality and climate action. In recent years it has become clear that the world is not on track to meet many of the SDGs.[1] This has prompted calls for urgent transformation — i.e. fundamental change in technological, economic and social structures — of global systems, including food systems (IPBES, 2019a; Willett, Rockström, Loken, Springmann, Lang, Vermeulen, Garnett, Tilman, DeClerck, Wood, Jonell, Clark, Gordon, Fanzo, Hawkes, Zurayk, Rivera, de Vries, *et al.*, 2019; HLPE, 2020; FAO, 2022b).

Food systems are inextricably linked to the environment and the triple planetary crisis of climate change, biodiversity loss and pollution. These links are especially clear if food systems are seen as 'coupled social-ecological systems' characterised by the mutual dependence of, and interactions between, humans and the environment (Ericksen, 2008). Environmental sustainability is therefore a 'crucial enabling factor' for achieving the SDGs, and managing natural resources fairly and sustainably is critical to ensure that everyone, everywhere, has access to safe, healthy and culturally appropriate food (UNEP, 2016).

A key implication of thinking about food systems as social-ecological systems is greater recognition of the role that governance plays in 'mediating between the social and ecological processes and resources' (Ericksen, 2008). Governance plays an important role in both driving the problems that food systems currently face and shaping the possible pathways for them to change (van Bers *et al.*, 2016). Governing food systems is challenging due to their complex, multi-dimensional, multi-scalar nature. However, transforming food systems governance, in tandem with transforming food systems, will be essential to meet emissions reduction targets, as well as ambitions on biodiversity, pollution, and several interlinked SDGs (van Bers *et al.*, 2016; Webb *et al.*, 2020).

This report aims to increase understanding of how food systems governance can contribute to environmental governance and help advance environmental agendas. It is based on a review of academic literature on the links between food systems governance and the environment, as well as primary research on one kind of food systems governance — multi-stakeholder governance mechanisms — and its contributions to environmental policy and agendas.

There has been limited research to date on the role that the governance of food systems as a whole — as opposed to sectoral governance, or government policies alone — can play in facilitating the transformation of food systems (van Bers *et al.*, 2019). Furthermore, despite increased evidence of the links between governance of food production and the triple planetary crisis, overall there is still limited empirical evidence linking food systems governance to material environmental outcomes (Delaney et al., 2018). This is partly due to the relatively recent adoption of the food systems problem-framing in food governance (which previously focused largely on single issues in isolation), and the relative paucity of studies linking food systems governance to sustainable food systems transformations.

This study does not aim to systematically evaluate the environmental or other impacts of food systems governance arrangements. Rather, it provides insights into how food systems governance activities are connected to, and in many cases lending support to, environmental agendas. In bringing concepts from environmental governance into conversation with the food systems literature, it also aims to contribute to discussions on the role of food systems governance in transforming food systems and tackling the triple planetary crisis.

The report is aimed at decision makers, practitioners and stakeholders working on both food systems and environmental agendas, as well as the wider food systems and environmental policy research community. The evidence presented aims to inform policy and practice related to food systems and the environment agendas. In addition, the report aims to bridge the gap between those working on food systems and actors addressing environmental issues in government departments and agencies, international non-governmental organisations (NGO), and international decision-making bodies.

The remainder of the Introduction summarises the links between food systems and the triple planetary crisis of climate change, biodiversity loss and pollution, and discusses how food systems governance is connected to the environment.

Section 2 discusses the connections between food systems governance and environmental governance, agendas and outcomes. It draws on examples from the literature to illustrate how these connections work in practice. The aim of this section is to present a broad conceptual framework for thinking about the contribution of food systems governance to environmental agendas.

[1] Many of the biodiversity-related targets in the 2030 Agenda have target dates of 2020, reflecting their origin in the Aichi Biodiversity Targets.

BOX 1. DEFINITIONS

Food systems have been defined by the High-Level Panel of Experts (HLPE) on Food Security and Nutrition as 'all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, and the outputs of these activities, including socio-economic and environmental outcomes' (HLPE, 2020).

Governance refers to the informal and formal rules, customs, processes and practices whereby power is exercised, decisions are made, and societal problems are managed and solved (Andrée *et al.*, 2019; Vignola, Oosterveer and Béné, 2021). Governance is about more than just 'government' and encapsulates the many non-governmental actors who shape decision-making at different territorial or jurisdictional levels, including civil society and corporations, markets and networks (Donkers, 2013; Andrée et al., 2019; van Bers et al., 2019).

Food systems governance has been defined as the "processes and actor constellations and institutions that shape decision-making and activities related to the production, distribution and consumption of food" (van Bers et al., 2019). Other definitions have included the environmental dimension more explicitly, for example: "Governance of food systems refers to the ability of actors to steer the food systems to achieve food security, enhance resilience, facilitate adaptation, or to instigate transformation and involves not only the actors and activities of the food system itself but also the actors and activities of related domains such as land use, conservation, energy and water resource management, poverty, and human development" (Delaney et al., 2018). A food systems approach to policymaking and implementation is one aspect of food systems governance, which refers to integrated and holistic food systems interventions based on cooperation among different actors in the system (Alliance of Bioversity & CIAT, UNEP and WWF, 2021).

Environmental governance is the set of formal and informal rules, processes, mechanisms and institutions that shape how human-environment interactions influence environmental outcomes (Lemos and Agrawal, 2006).

Transformative governance refers to ways of governing social-ecological systems, such as food systems, in ways that enable them to change in desirable ways, e.g. to be more resilient and sustainable. It implies that governance itself will need to change, in addition to supporting actual change to systems (Chaffin *et al.*, 2016). The concept is rooted in environmental governance but is gaining traction in wider debates about the environment, sustainability and systems change.

In Section 3, the report focuses on a specific form of food systems governance: multi-stakeholder mechanisms. This part of the paper builds on the findings of a previous research which aimed to understand how multi-stakeholder mechanisms are advancing policymaking on sustainable food systems, drawing on case studies from around the world, commissioned by the Community of Practice on Food Systems Approach on the Ground (CoP-FSAG) of the One Planet Network Sustainable Food Systems Programme (OPN SFSP) (Alliance of Bioversity & CIAT, UNEP and WWF, 2021).

Finally, Section 4 concludes with some reflections and key messages on tackling environmental challenges through food systems governance to inform policy and practice.

BOX 2. METHODOLOGY

This discussion paper is based on a literature review, an online survey and video interviews. A conceptual review of the literature from the past ten years sought to understand current debates linking food systems governance and the environment, with a particular focus on the governance of food systems, and environmental governance. The survey and interviews aimed to gather further information about how the SFS MSM case studies in the 2021 OPN SFSP study include environmental agendas in their work, and as a result, help to address environmental challenges. A survey was sent to the main contact persons (focal points) for each of the 10 SFS MSMs, as well as to their members and stakeholders. Follow-up interviews were conducted with five people from 7 SFS MSMs to deepen the analysis. A detailed description of the methodology as well as the survey materials are provided in Appendix 2.

1.1 Food systems and the triple planetary crisis

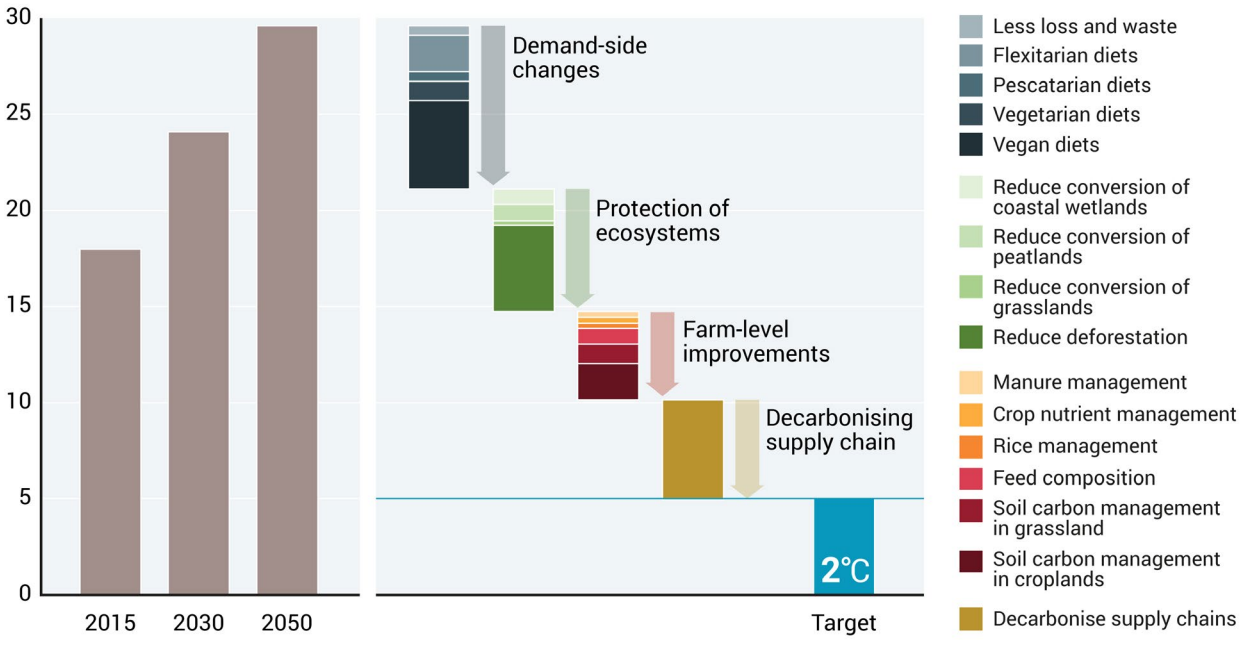
Food systems and the environment are closely interlinked. Food systems are both major drivers and victims of the triple planetary crisis of climate change, biodiversity loss and pollution (Willett, Rockström, Loken, Springmann, Lang, Vermeulen, Garnett, Tilman, DeClerck, Wood, Jonell, Clark, Gordon, Fanzo, Hawkes, Zurayk, Rivera, De Vries, *et al.*, 2019; UNFCCC (United Nations Framework Convention on Climate Change), 2022). They are responsible for up to one third of all anthropogenic GHG emissions and three quarters of consumptive water use, occupy nearly half of the world's habitable land surface, and extract fish at an industrial scale from more than half of the ocean's surface (Poore and Nemecek, 2018; Raja *et al.*, 2018; IPBES, 2019a; Crippa *et al.*, 2021). The negative impacts of unsustainable food systems on the environment arise not only from production — which has received most attention — but also from other stages, such as packaging, processing, distribution and waste management (see Figure 1) (Leite *et al.*, 2022). Food systems contribute to GHG emissions via three main pathways:

1. Production of crops, livestock and aquatic foods, as well as activities required to support their production, contribute around 40% of food-systems emissions.
2. Changes in land use associated with agriculture and aquaculture contribute around 32% of emissions, mainly through carbon losses resulting from deforestation and degradation of soils such as peatlands.
3. Supply chain activities, including retail, transport, consumption, fuel production, waste management, industrial processes and packaging also contribute significantly (Crippa *et al.*, 2021; Zurek, Hebinck and Selomane, 2022).

The production of food is the primary driver of biodiversity loss in terrestrial and freshwater ecosystems, with agriculture linked to 86% of the 28,000 species at risk of extinction (IPBES, 2019a; Benton *et al.*, 2021). Food systems are also a major contributor to environmental pollution, responsible for nearly one third of global terrestrial acidification and more than three quarters of eutrophication in aquatic ecosystems (Poore and Nemecek, 2018; IPBES, 2019a).

The triple planetary crisis also has the potential to drive negative outcomes in other food systems areas, and vice versa. Together, climate change, biodiversity loss and pollution feedback to food systems are a vicious cycle, undermining their capacity to produce and distribute nutritious and safe food for a growing global population (UN-Nutrition, 2023; Benton *et al.*, 2021). Biodiversity loss influences the diversity of plants and

Figure 1. Food systems GHG emissions trajectory and mitigation potentials by transformation domain



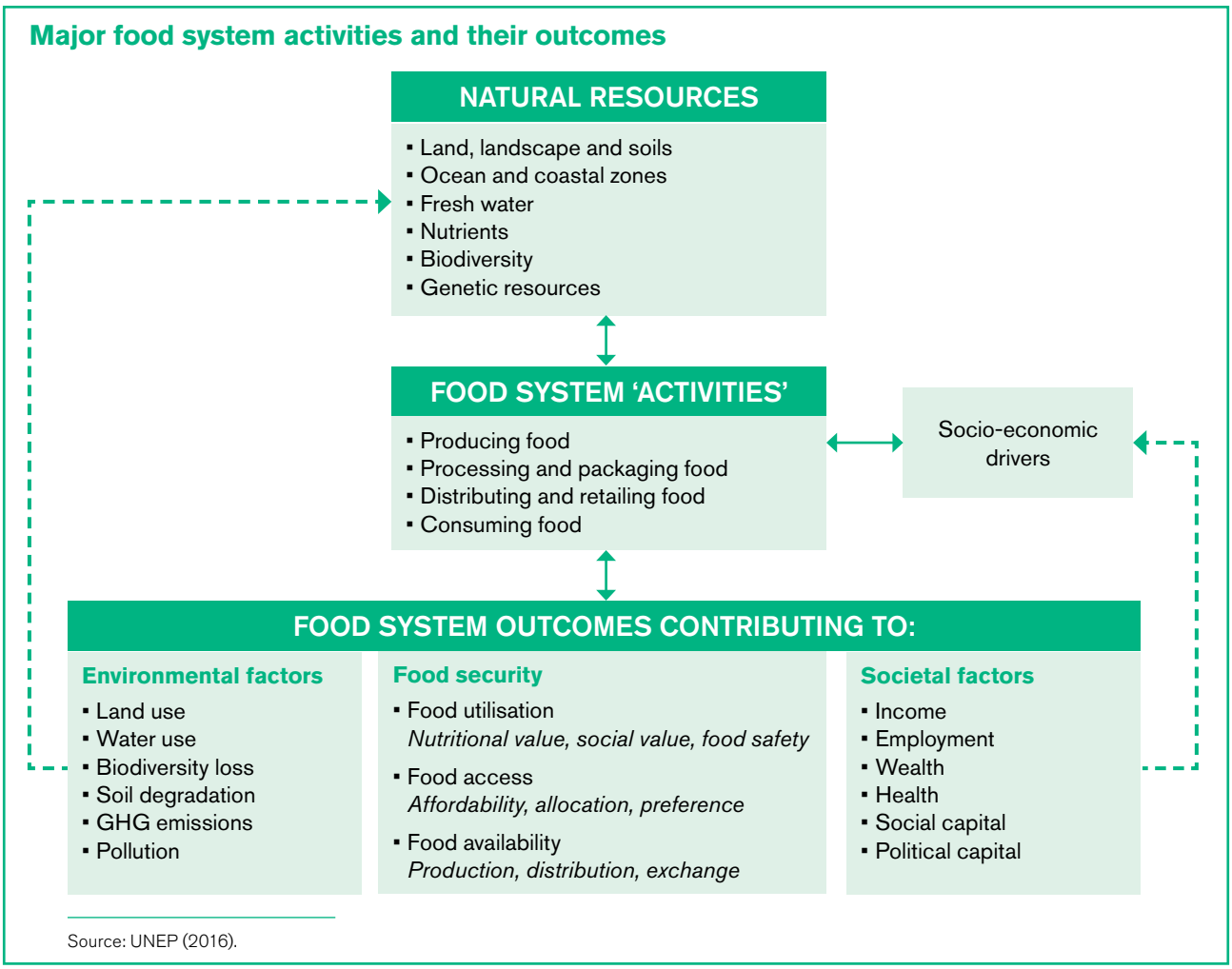
Source: UNEP Emissions Gap Report: https://www.unep.org/resources/emissions-gap-report-2022, p.55

animals cultivated for human consumption and affects the ability to promote healthy diets from sustainable food systems (UNN, 2023). Meanwhile, with dietary transitions, most rapidly in urban areas, populations tend to consume more animal-source foods and ultra-processed foods (UPFs), which tend to have higher environmental impacts than plant-based and less processed foods (UNN, 2023).

From production, processing, distribution, storage, and marketing to consumption, there are opportunities to reduce and/or manage the environmental impacts of food systems, as well as the impact of the triple planetary crises on other food systems outcomes (e.g., food security, societal factors). The four major sets of food system activities depicted in Figure 2 below are dependent on natural resources, and in turn, influence food systems outcomes which contribute to food security, societal and environmental factors (UN-Nutrition, 2023; Willett, Rockström, Loken, Springmann, Lang, Vermeulen, Garnett, Tilman, DeClerck, Wood, Jonell, Clark, Gordon, Fanzo, Hawkes, Zurayk, Rivera, de Vries, *et al.*, 2019; Benton *et al.*, 2021).

Several international treaties and commitments have been made to address these environmental crises, in which food systems receive increasing attention. The UNFCCC, signed in 1992, led to the 2015 Paris Agreement, which aims to limit global warming to less than 2°C and strengthen the global response to climate change. Given their contribution to GHG emissions, food systems can play a central role in mitigation targets, but they also need to adapt to climate change (Zurek, Hebinck and Selomane, 2022). The UN Convention on Biological Diversity (CBD), also signed in 1992, promotes 'the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from genetic resources' (CBD, 2021). Traditionally, the CBD has viewed food production as a threat to its efforts to protect natural ecosystems, but increasingly it recognises sustainable food production — particularly by Indigenous Peoples and local communities — as part of the solution to biodiversity loss (CBD, 2021). In 2022 the COP15 resulted in the adoption of the Kunming-Montreal Global Biodiversity Framework (GBF), a landmark agreement to guide global action to halt and reverse nature loss through to 2030. The GBF aims

Figure 2. Relation between resource use, environmental impacts and food system activities



Source: UNEP (2016).

to address biodiversity loss, restore ecosystems and protect indigenous rights. It includes 23 targets, and specifically addresses food systems in targets 7 (reduce pollution), 10 (sustainable management of areas under agriculture, aquaculture, fisheries and forestry) and 16 (halve global food waste).

Environmental considerations have also been included in international food governance processes and mechanisms. Agroecology has featured prominently in the work of the Committee on World Food Security (CFS), the international multi-stakeholder platform housed within the UN Food and Agriculture Organisation (FAO) (see Box 7 for more on the CFS and agroecology). In 2021 the UN convened the Food Systems Summit as part of the Decade of Action to achieve the SDGs by 2030. The Summit concluded with around 150 countries announcing voluntary commitments, based on several rounds of national level multi-stakeholder dialogues; environmental issues that have long been championed by grassroots organisations, including agroecology, were among these commitments. However, it is unclear whether they will lead to meaningful systemic change, and the summit itself has been critiqued for its handling of corporate influence (Fakhri, 2020; Canfield, Duncan and Claeys, 2021; Gliessman and de Wit Montenegro, 2021; McKeon, 2021).

BOX 3. THE IMPORTANCE OF AQUATIC FOOD SYSTEMS

Although the literature on food systems has generally focused on agriculture, fisheries and aquaculture should not be overlooked. Historically, aquatic foods have been viewed predominantly as natural resources with commercial value, while their value for food and nutrition security has largely been ignored (Bennett et al., 2021). Yet global consumption of aquatic foods is rapidly increasing. They are now the world's most highly traded food products, supporting the livelihoods, economies and cultures of hundreds of millions of people, particularly climate-vulnerable coastal and riparian communities in the global South (Short *et al.*, 2021; Tigchelaar *et al.*, 2021). Aquatic animals provide a diversity of omega-3 fatty acids and bioavailable micronutrients that are essential for human health and development and are on average richer in these nutrients than meat from livestock (Golden *et al.*, 2021; FAO, 2022a). Since many aquatic foods also have lower environmental footprints than terrestrial foods, a shift towards increased sustainable production and consumption of these types of aquatic foods has potential to contribute to healthy diets while supporting environmental sustainability (Ahern, Thilsted and Oenema, 2021; Gephart *et al.*, 2021; Naylor *et al.*, 2021).

1.2 Linking food systems governance and the environment

In order to address the environmental problems arising from and impacting food systems, society must address the drivers of environmental impacts. Drivers can be both direct and indirect. Governance, including food systems governance, is one of the many indirect drivers of environmental problems (Visseren-Hamakers *et al.*, 2021). This means that although governance does not directly cause climate change or pollution, it shapes how people interact with the environment. This, in turn, has direct consequences on environmental outcomes. For example, a policy on forest management itself will not cause an increase or decrease in GHG emissions — but it will likely shape deforestation and land use conversion, which are important direct drivers of GHG emissions. Similarly, national food-based dietary guidelines have the potential to increase or decrease consumption of specific foods, which may in turn have implications for food production and direct drivers of climate change, biodiversity loss and pollution (UNN, 2023). Other examples of indirect drivers include technological innovation, socio-cultural norms and traditions, trade, and conflict.

The food sector uses more natural resources — such as land, soil, water and biodiversity — than any other sector, and is responsible for depleting and degrading them on a vast scale (UNEP, 2016). As a result, the way in which food systems are governed determines in large part how natural resources are governed and managed. The people and institutions governing food systems, directly and indirectly, are the 'largest group of natural resource managers in the world', and therefore 'critical agents of change' in these systems (UNEP, 2016).

Food systems have typically been conceptualised as a set of activities linking food production, processing, distribution and consumption, but are increasingly defined more holistically, and include economic, social and environmental factors (Ericksen, 2008; UNEP, 2016; Parsons, Hawkes and Wells, 2019). As a result, food systems *governance* has also expanded from a narrow focus on production to a more systemic perspective that includes other parts of the food chain, and other dimensions, drivers and feedbacks (Delaney *et al.*, 2018; Canfield, Duncan and Claeys, 2021). **Environmental sustainability and the sustainable use of natural resources have therefore become a central aim of food systems governance, alongside food security and social welfare** (Ericksen, 2008; UNEP, 2016).

Systems approaches to governing food are thought to be more effective for tackling climate change at different levels of governance. There are growing calls to abandon traditionally siloed approaches to food policy — for example, the tendency to have separate policies on agriculture, fisheries, nutrition and environment — and move towards integrated policies. There is also a drive towards more inclusive policymaking, i.e., enabling a broad spectrum of society to contribute to policy agenda-setting, rather than a small number of powerful actors (see the definition of Food Systems Governance in Box 1) (Alliance of Bioversity & CIAT, UNEP and WWF, 2021; Kugelberg *et al*., 2021). These shifts towards holism and inclusion are thought to lead to policies that integrate environmental dimensions alongside food system outcomes related to food security, health and livelihoods. Likewise, they could also contribute to environment-related policies that take food systems into account. Food systems governance can also help to manage trade-offs between often competing priorities and outcomes, such as economic growth and environmental sustainability, and by the same token, foster the identification of synergies between improved health, nature and socio-economic wellbeing (Guijt, de Steenhuijsen Piters and Smaling, 2021).

Currently, food continues to be side-lined in most international environmental and natural resource governance, even when the importance of food systems for sustainable development and the environmental impacts of food systems are widely acknowledged. For example, food systems were not properly represented in the climate negotiations prior to COP26. The decision of the UN Framework Convention on Climate Change (UNFCCC) to include only 'agriculture' and 'food security' in the official negotiations in 2022, rather than 'sustainable food systems', represents a missed opportunity to tackle climate change through joined-up actions — and excludes voices from the fisheries sector, as well as small-scale farmers (IPES-Food, 2022). Nevertheless, the recently adopted 2022 GBF is a promising development and opportunity. It includes food systems-related targets that promote and support sustainable production and the rights of Indigenous Peoples and local communities, as well as decreased pollution and food waste. To achieve these targets, the GBF also calls for integrative governance, with whole-of-government and whole-of-society approaches to ensure policy coherence (targets 14-17).

Food systems governance approaches with potential to contribute to environmental sustainability

2

As discussed in the Introduction, food systems governance plays a key role in both reducing the negative impacts of food systems on the planet and enabling them to change, so that they deliver improved environmental, health, economic and societal outcomes (van Bers *et al.*, 2019). In this section the paper discusses key concepts and characteristics of food systems governance which could help advance environmental agendas, summarising and building on academic debates from several fields, including the literature on food systems and governance, sustainability, and environmental governance.

Research on food systems governance is relatively recent, tends to be highly theoretical, and has been critiqued for being conceptually fragmented (Hospes and Brons, 2016; van Bers *et al.*, 2019; Vignola, Oosterveer and Béné, 2021). Multiple concepts or features of governance have been put forward in support of a transition to more sustainable food systems, often taking inspiration from other fields of study, such as global environmental change research and sustainability science (van Bers *et al.*, 2016, 2019; Guijt, de Steenhuijsen Piters and Smaling, 2021). Many of these authors use different words or concepts to talk about how food systems governance could be improved to contribute to environmental sustainability, as well as other outcomes such as food and nutrition security.

There are clear similarities between the approaches to, or features of, governance which are thought to be needed in order to transform societal systems towards increased sustainability. Four key concepts that are discussed across the literature on food systems governance could be summarised as: (1) collaboration across and between different scales, sectors and interest groups; (2) collective action and food regimes based on food sovereignty; (3) the capacity for governance actors to reflect and learn; and (4) the capacity for governance to adapt to change (Hospes and Brons, 2016; van Bers *et al.*, 2016, 2019; Vignola, Oosterveer and Béné, 2021). These broadly mirror similar approaches to governance in the literature on biodiversity, sustainability and environmental governance: integrative governance, inclusive governance, adaptive governance and pluralist governance (Chaffin *et al.*, 2016; Visseren-Hamakers *et al.*, 2021).

Thinking of food systems as social-ecological systems is a helpful framework for understanding how food systems governance can help tackle the triple planetary crisis. In the field of environmental governance, the transformation of social-ecological systems, such as food systems, towards sustainability is recognised to require *transformative* governance (Chaffin *et al.*, 2016; IPBES, 2019a; Visseren-Hamakers *et al.*, 2021). While this concept is still nascent, it is typically understood to combine four features: integrative, inclusive, pluralist (or informed) and adaptive governance (see Box 4 for definitions). None of these approaches is novel individually, but in combination they have great potential to drive transformative change. Most of these characteristics also overlap closely with ideas discussed in the literature on food systems governance — indeed, many authors working in that field have themselves borrowed concepts from environmental science and system governance (Hospes and Brons, 2016; Vignola, Oosterveer and Béné, 2021).

Without wishing to add to the proliferation of abstract ideas and terminology for talking about food systems governance, in this paper the concept of transformative governance practically and succinctly describes the kind of governance that could help food systems to advance environmental agendas and improve environmental governance. Therefore, 'transformative food systems governance' could help to bring together some of these conceptual approaches and be used to refer to ways of governing food systems which are inclusive, adaptive and integrative, and draw on different knowledge systems.

The remainder of this section draws on examples from academic and grey literature on food systems and the environment to show how features of transformative governance are being applied within food systems — and having an impact on environmental agendas. As noted above and in Box 4 above, it is the combination of these features of governance that makes them transformative.

BOX 4. TAKING INSPIRATION FROM TRANSFORMATIVE ENVIRONMENTAL GOVERNANCE

Building on findings of the Global Assessment of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, 2019a), transformative environmental governance has been defined as governance that enables transformative change by tackling the indirect drivers of unsustainability and combining approaches in four domains (Chaffin *et al.*, 2016):

1. Integrative governance ensures that 'solutions have sustainable impacts at other scales, on other issues, and in other places and sectors'. There are three broad approaches, which need to be used together to be truly transformative:
   - Combining instruments in 'smart governance mixes' to address indirect drivers of a sustainability challenge.
   - Coordinating across sectors, issues, governance levels and places (including through multi-level governance).
   - Integrating sustainability into other sectors (e.g. through environmental policy integration and mainstreaming).
2. Inclusive governance empowers people who are implicated in transformative change, but whose interests are not being served by existing governance arrangements.
3. Adaptive governance enables feedback gained over time to be incorporated into the understanding of transformative change, so that governance can evolve with learning.
4. Pluralist or informed governance recognises and incorporates knowledge from different systems of knowledge production, such as scientific communities and indigenous communities.

2.1 Integration and collaboration

Food systems involve many different actors and span multiple levels of governance — such as sub-national, national and international — as well as different sectors — such as agriculture and fisheries, retail, public health and nutrition (Wilkes, 2022a). However, not all governance arrangements or decision-making processes are necessarily integrated across these levels and sectors (Guijt, de Steenhuijsen Piters and Smaling, 2021; Vignola, Oosterveer and Béné, 2021).

Effective governance and sustainable transformation of food systems is increasingly seen to necessitate an arrangement that addresses these multi-level dynamics, also known as 'multi-level governance'. The Special Report on Climate Change and Land by the Intergovernmental Panel on Climate Change (IPCC) draws attention to the fact that 'land and food sectors face particular challenges of institutional fragmentation', including a lack of cross-scale coordination and policy integration. The authors suggest that increased collaboration with public health, environment, energy and other sectors could lead to co-benefits, including for environment and health (Intergovernmental Panel on Climate Change, 2022).

An example of multi-level food systems governance which is contributing to positive environmental outcomes, as well as improved nutrition, is Odisha's Gram Panchayat tank co-management approach, which relies on coordination across multiple sectors and levels of government and devolves resource management power to local women's groups (WorldFish, 2022). Another example is the Nairobi Water Fund, an integrated landscape governance initiative that coordinates food production with sustainable use and management of Kenya's Upper Tana watershed (Arndt et al., 2021). Malmo's approach to sustainable food procurement also demonstrates coordination across sectors and outcomes, as well as commitment to inclusivity (Box 5).

Coordination between multiple governing institutions working on a particular issue can support better decision-making and more effective, equitable and environmentally sustainable governance (Ostrom, 2010; Baldwin et al., 2016). Although there are policy options at each stage of the food system that can promote linkages between environmental sustainability and other objectives such as nutrition and health, the collaboration between sectors required to implement them is still rare (Hospes and Brons, 2016; Ruben et al., 2021).

BOX 5. REDUCING GHG EMISSIONS THROUGH A COORDINATED FOOD PROCUREMENT POLICY

In the context of a broader vision for becoming a sustainable city and leader in climate mitigation, Malmö's policy for sustainable development and food — approved at a meeting of the municipal assembly in 2010 — aimed to ensure that all food purchased and served by the municipality was organic[2] by 2020, and to reduce greenhouse gas (GHG) emissions relating to food procurement by 40% by 2020, relative to 2002 levels (Moragues-Faus & Morgan, 2015). Development of the policy was led by the city Environment Department in collaboration with several other city government departments, and in consultation with relevant stakeholders including NGOs, farmers, unions, schools and caterers. The policy used the 'S.M.A.R.T' model developed by Stockholm's Institute of Public Health for healthy and environmentally friendly diets and prioritised ethical procurement in line with Malmö's commitment to become a Fair Trade City in 2006. It also called for food councils or similar to be established in each organisation where meals would be served, to enable consumers to have a voice. By 2021, meals were 70% organic and GHG emissions had been reduced by 30%.[3]

Regional governance inherently requires collaborative approaches to addressing shared problems, and may present an opportunity to strengthen food systems governance and its contribution to the environmental agenda, by addressing this 'missing middle' (Thow *et al.*, 2022). Food and nutrition security are often part of the agendas of regional bodies such as ASEAN, ECOWAS and SADC, but they tend not to take integrative approaches to governance (Guijt, de Steenhuijsen Piters and Smaling, 2021). An example of change in a positive direction is the EU's launch of the Farm to Fork (F2F) strategy, the clearest indication from a major regional body of its commitment to an integrated, systemic approach to food systems transformation. The F2F strategy explicitly aims to tackle environmental issues such as climate change, biodiversity loss and food loss and waste. Whereas earlier EU governance structures had been criticised as inappropriate for addressing the complexity of food systems challenges, the F2F strategy explicitly calls for policy integration and a joined-up approach including political, financial and technological enablers (De Schutter, Jacobs and Clément, 2020; Bazzan, Daugbjerg and Tosun, 2022).

2.2 Adaptive capacity

Adaptive governance is a key concept in the literature on social-ecological systems, and refers to the need to increase their resilience, by improving their capacity to address uncertainty and complexity associated with system changes, including environmental changes (Hospes and Brons, 2016; Visseren-Hamakers *et al.*, 2021). It is thought to be one of the main ways in which food systems governance could be strengthened, in order to cope with environmental threats and better contribute to positive environmental outcomes (Hospes and Brons, 2016). The capacity to respond and adapt to ecological change is central to natural resource and ecosystem management by Indigenous Peoples and local communities, and therefore particularly relevant to food production and local food systems (Schultz *et al.*, 2015; Berkes, 2017; Visseren-Hamakers *et al.*, 2021).

There are few documented examples demonstrating how adaptive food systems governance can deliver improved environmental outcomes, particularly in the global South (Hospes and Brons, 2016). In the Solomon Islands, some adaptive governance principles were institutionalised through the Fisheries Management Act (2015), which formally incorporated local communities and their practices into national fisheries management (Barange *et al.*, no date). This example illustrates how adaptive governance approaches often emerge first through informal practices, which may then be formalised into policy and practice; however, pathways to formalisation depend on local, national and supra-national legal systems and governing norms. The work of the Toronto Food Policy Council on community food initiatives also features principles of adaptive governance which have helped to build resilience (e.g., bridging communities and the municipality, leadership, and supporting self-organisation) as well as several aspects of integrative governance — a good example of how different governance approaches are used in combination (see Box 6).

[2] The city defines 'organic' food as that produced without chemical pesticides and artificial fertilizer, and fish with environmental certification (eg MSC label), so this objective targets both pollution and biodiversity.
[3] https://malmo.se/download/18.d8bc6b31373089f7d9800018573/1491301724605/Foodpolicy_Malmo.pdf

BOX 6. THE TORONTO FOOD POLICY COUNCIL

The Toronto Food Policy Council (TFPC) was established in 1991 as a subcommittee of the City of Toronto Board of Health, to advise the City on food policy issues, connecting food, farming and community actors and providing a forum for action across the food system (TFPC, 2022).[1] It was the first food policy council to be established at the municipal level in North America. The TFPC models an integrative approach to food systems governance, working both across sectors and levels. It has been involved in several collaborative initiatives with environmental dimensions that have influenced Toronto city policy. This includes the Toronto Community Gardening Network, which encouraged Toronto's City Council to adopt the 1999 Community Garden Action Plan calling for the creation of a community garden in a park in every ward (Mulligan *et al.*, 2018). TFPC's many working groups address environmental issues such as climate change, food waste and urban agriculture, and have contributed to policymaking at different levels of governance — for example, a framework for food waste for the province of Ontario. It has also collaborated with other Canadian municipalities and with other organisations on the development of a national food policy.[2]

2.3 Inclusivity and collective action

Food systems governance that is inclusive can help ensure equity and lead to higher quality and more legitimate decisions, including on environmental challenges (Pimbert, 2012; Huttunen, Turunen and Kaljonen, 2022). Food systems governance often lacks adequate representation from citizens and civil society (Hospes and Brons, 2016). Power imbalances in the food system may act as a barrier to managing food systems and environmental challenges in an integrated, cross-sectoral way (Swiderska, 2021). Together with the consolidation of power in the hands of a shrinking number of transnational companies, this is thought to be a major weakness of current food systems governance, with negative implications for the environment (Hospes and Brons, 2016; Howard, 2016). However, there is an increasing number of multi-stakeholder governance initiatives, such as Food Policy Councils (FPCs) emerging across the globe, striving to foster inclusivity and redress power imbalances (Alliance of Bioversity & CIAT, UNEP and WWF, 2021).

Evidence from environmental governance shows that in order for governance to support transformation towards sustainability, it must integrate diverse value systems and perspectives of all stakeholders, including rights-holders, Indigenous Peoples and local communities, and people of all genders (IPBES, 2019b). **Stakeholder and citizen participation can increase the effectiveness of natural resource management and decision-making related to climate change, and enhance resilience** (IPBES, 2019b; IPCC, 2022). However, inclusive governance arrangements do not always produce more equitable or sustainable outcomes, and often fail to be truly inclusive of marginalised groups (Grey and Kuokkanen, 2020).

Inclusive governance is particularly critical in contexts where communal ownership over natural resources is the norm (for example, in rangelands where pastoralism is dominant), and in aquatic food systems, which face a unique set of governance challenges due to the common pool and fluid nature of marine resources. In these contexts, top-down, hierarchical approaches are often ineffective (Ahmed *et al.*, 2016; Chuenpagdee and Jentoft, 2018). Devolving power to lower-level actors and developing cooperative partnerships for co-management has been shown to promote self-enforcement through collective action, with positive results for environmental sustainability — as in the cases of Chile's system of territorial user rights for fisheries (TURFs) (Gelcich *et al.*, 2019) and Costa Rica's Marine Areas for Responsible Fishing (AMPRs) (Carrillo *et al.*, 2019).

While women in particular are actively involved in food systems, they are often excluded from the governance institutions, policies and processes that affect them, particularly in small-scale and informal sectors where their work is often undervalued and undocumented (Quisumbing *et al.*, 2021). For example, women make up nearly half of the workforce estimated to be involved in all aspects of small-scale fisheries value chains, yet they are hugely underrepresented in fisheries governance institutions and decision-making processes (Ogden, 2019; FAO, 2022a). An approach to food systems governance which is considerate of gender dynamics is a fundamental component of equality and sustainable development and can also support sustainable practices and strengthen environmental outcomes (Torre-Castro, 2019). Understanding the work and needs of women and empowering them to participate in decision-making can improve conflict resolution, build acceptance of rules and regulations, promote sustainable practices, and ultimately improve environmental governance (Siles *et al.*, 2019). For instance, **evidence suggests that mixed-sex natural resource management groups are more effective in strengthening resource governance and conservation than male-only groups** (Leisher *et al.*, 2015).

The recently adopted 2022 Kunming-Montreal Global Biodiversity Framework (GBF) pays attention to the role of inclusive governance, particularly the active participation of women, youth, and Indigenous Peoples and local communities. Two targets (22 and 23)

reflect the need for a gender-responsive approach to implementing the framework, as well as the importance of the inclusion of women and girls in decision-making related to biodiversity. Several targets (1, 3, 5, 9, 19, 21 and 22) also emphasise the importance of respecting the rights of Indigenous Peoples and local communities, over their territories, traditional knowledge and customary use of resources, as well as their right to information about biodiversity, and to participate in decision-making.[4]

Including perspectives from civil society movements, such as alternative food networks, food policy councils, and food sovereignty movements, can make food systems more equitable, sustainable and resilient by enabling the public to participate in or better influence food production, distribution and consumption (Huttunen, Turunen and Kaljonen, 2022). Alternative food networks tend to focus on making food systems more sustainable by connecting diets, local economies and sustainable practices (e.g. through initiatives like community growing spaces and consumer cooperatives) (Huttunen, Turunen and Kaljonen, 2022). Although research has focused more on the socioeconomic aspects of alternative food networks, there is some evidence that they can enhance environmental sustainability, for instance through promoting shifts in consumption to local, organic foods produced through sustainable practices (Michel-Villarreal et al., 2019).

2.4 Pluralism and diversity of knowledge

Evidence from food systems, climate adaptation, and biodiversity conservation shows that governance approaches that incorporate a diversity of knowledge can support more legitimate outcomes and increase the likelihood that knowledge will be used (Lemos and Agrawal, 2006; Sandover, 2020; Singh *et al.*, 2021). If food systems are to contribute to environmental agendas, non-scientific evidence must be accounted for too, and this will necessarily require participatory and collaborative approaches to knowledge production (IPBES, 2019b; Visseren-Hamakers *et al.*, 2021; IPCC, 2022).

Indigenous and local knowledge is crucial for those parts of the food system where scientific data is limited, such as traditional food systems and small-scale fisheries (IPBES, 2019a; IPCC, 2022). Over many generations, Indigenous Peoples and local communities have accumulated food systems knowledge that enable them to maintain agrobiodiversity, manage natural resources for sustainability, and adapt to changing conditions. Recognising and supporting this capacity is crucial for sustainable, just and resilient food systems. **Using Indigenous and local knowledge and including those who hold this knowledge in resource management and decision-making can therefore support sustainability** (FAO, 2022c; Silvano *et al.*, 2022).

One governance arrangement that tends to incorporate Indigenous and local knowledge is alternative food networks (Michel-Villarreal *et al.*, 2019). A study of Italian Food Assemblies found that online local knowledge sharing influences customers towards more sustainable purchasing and consumption behaviours (De Bernardi, Bertello and Venuti, 2019). Cooks and chefs also have potential to leverage their local knowledge to work with local producers and increase consumption of under-utilised indigenous and local foods, whose production can preserve biodiversity as well as traditional culture (Pereira *et al.*, 2019). The Committee on World Food Security (CFS), which seeks to incorporate diverse knowledge of stakeholders including food producers and Indigenous Peoples and local communities, has also been successful in shaping international environmental policy agendas on agroecology (Box 7).

BOX 7. INCLUSION AND DIVERSE KNOWLEDGE IN THE COMMITTEE ON WORLD FOOD SECURITY (CFS)

The CFS is widely viewed as the pinnacle of inclusive food systems governance (Canfield et al. 2021; McKeon, 2021). It was reformed in 2009 to include a High-Level Panel of Experts (HLPE) and a Civil Society and Indigenous Peoples' Mechanism (CSIPM). Through the CSIPM, organisations representing specific civil society groups (e.g. smallholder farmers, Indigenous Peoples, consumers) participate in CFS policy processes. The CSIPM and its participating organisations have advocated for agroecology — which itself combines Western science and indigenous knowledge — within the CFS and other global policy spaces for over a decade (Canfield, Duncan and Claeys, 2021; Wilkes, 2022b). This has culminated with the adoption by CFS Member States of the Policy Recommendations on Agroecological and other Innovative Approaches in June 2021. The inclusive and participatory structures of the CFS, **as well as its pluralist approach to knowledge**, appear to have contributed to the mainstreaming of agroecology within the CFS. However, the final Policy Recommendations have also been criticised by the CSIPM for diluting the messaging on agroecology as central to a food systems transformation, and inserting caveats around language pertaining to the protection of rights (e.g. of women, Indigenous Peoples) (CSM4CFS, 2021).

[4] https://www.cbd.int/gbf/targets/

Case studies: seven sustainable food system multi-stakeholder mechanisms and their contribution to environmental agendas

3

Having looked at how key features of transformative governance can enable food systems to tackle environmental challenges, this section looks at practical case studies of how a specific food systems governance arrangement — multi-stakeholder mechanisms — is contributing to environmental agendas and policymaking. A multi-stakeholder mechanism is a governance arrangement that brings together 'stakeholders' — or people with different interests — to collaboratively tackle a shared challenge in the interest of the common good. Multi-stakeholder governance is a form of 'deliberative' or participatory governance that aims to include people and organisations from across society — it therefore aims to be inclusive, informed and integrative. However, multi-stakeholder approaches have also been criticised for undermining democracy and ignoring real differences in power, legitimacy and authority between different interest groups (Alliance of Bioversity & CIAT, UNEP and WWF, 2021).

This section builds on a study of Sustainable Food Systems Multi-Stakeholder Mechanisms (SFS MSMs) around the world, to further explore how they are integrating environmental issues into their work and helping to tackle environmental challenges, directly and indirectly (Alliance of Bioversity & CIAT, UNEP and WWF, 2021). The original study, commissioned by the OPN SFSP CoP-FSAG, found that environmental issues appeared in some way in the work of all 10 SFS MSMs analysed (e.g. in activities on sustainable diets, sustainable food production and food loss and waste). Additionally, topics related to the environment — such as climate change, short supply chains, food loss and waste — were among the top issues that stakeholders wanted to work more on in the coming years, suggesting an appetite to further strengthen the environmental angle in their initiatives.

The insights presented in this section are based on the findings of an online survey (n=12) and interviews (n=5) with focal points and stakeholders from 7 out of the original 10 SFS MSM case studies, as well as a review of relevant reports, policy documents and academic literature (see Box 2 for a summary of the methodology and Appendix 2 for a copy of survey and interview questions).[5] This study explored what environmental topics the MSMs are working on; how they have contributed to environmental policy or the inclusion of environmental issues in food and other policies and their implementation; what is driving SFS MSMs to address environmental issues; and the barriers they face in doing so. The 7 case studies analysed are: 1) the Antananarivo Food Policy Council, 2) Eat Right India, 3) the Gent en Garde Food Policy Council, 4) the French National Food Council, 5) the La Paz Municipal Food Security Committee, 6) the Los Angeles Food Policy Council, and 7) the Quito Agri-Food Pact. A summary table of the SFS MSMs in the study, as well as detailed individual case studies, are in Appendix 1.

There is a bias in the study towards sub-national SFS MSMs, with 5 out of 7 MSMs situated at this level — and towards cities, with all 5 of the sub-national MSMs based in an urban centre. There has been much interest about the potential for sub-national food systems governance arrangements to tackle environmental challenges in recent years. For example, the Glasgow Food and Climate Declaration is premised on the idea that local and regional sub-national governments have been 'pioneers' in reducing emissions and promoting biodiversity through food systems policies.[6] A major innovation in sub-national food systems governance has been the 'food policy council' (FPC), one of the most common forms of multi-stakeholder mechanism, of which there are three examples in this study. FPCs encourage 'deliberative democracy' and the participation of citizens in shaping and implementing food strategies, and their tendency to be grounded in integrative, cross-sector, systems approaches to governance contributes to their potential to advance an environmental agenda (Halliday, Torres and van Veenhuizen, 2019). Rising urban populations around the world have also led to a renewed focus on the role of cities in addressing global challenges such as food systems transformation, climate change and the SDGs (Hospes and Brons, 2016; Moragues-Faus and Battersby, 2021b). In this context, there has been a lot of interest in the specific contribution of urban food systems governance to environmental sustainability outcomes, although evidence of material improvements (e.g. improved food security or reduced GHG emissions) is so far limited (Moragues-Faus and Battersby, 2021a).

3.1 About the SFS MSMs in the study

The composition of the MSMs in this study, including representation of civil society and marginalised groups, varies considerably from one to another, but most MSMs include representation from different sectors (e.g. agriculture, environment, urban planning, health, education) and different kinds of actors (e.g. academic institutions, NGOs, private sector, civil society). This is important because studies of food systems multi-stakeholder platforms have found citizen, consumer and

[5] All of the 10 case studies were approached, but not all were able to participate in the study.
[6] https://www.glasgowdeclaration.org/_files/ugd/fef8dc_673ef074e0dc49769cad57f538c6333c.pdf

'Swasth Bharat Yatra', a pan-India cyclothon, was flagged off on 16th October 2018, on the occasion of World Food Day, to deliver the messages of the 'Eat Right India' movement and sensitise people about eating safe food and maintaining a healthy lifestyle. Credit: Food Safety and Standards Authority of India.

private sector actor inclusion to be limited in many cases (Herens, Pittore and Oosterveer, 2022). All of the MSMs have mechanisms in place to ensure that principles of 'good governance' — such as transparency, trust and accountability — are adhered to, but a smaller number have conflict resolution mechanisms in place, and even fewer have a means of dealing with power imbalances (Alliance of Bioversity & CIAT, UNEP and WWF, 2021: 51).[7]

Of particular relevance for the aims of this study is the fact that several SFS MSMs also include representation from environmental departments and organisations. For example, the French Minister for the Ecological Transition is a (non-voting) member of the French National Food Council, and the Mayor for Environment, Climate, Energy and North-South of the City of Ghent is a member of Gent en Garde.

Most of the MSMs play a role in policy formulation, but only half are involved in policy implementation. Almost all have been involved in the creation of a food systems policy, strategy or action plan for the geographical area they work in (see Appendix 1 for an overview of the policy contributions of SFS MSMs). At the same time, most of them have contributed to the development of an environment-related policy, most frequently in relation to climate change and sustainable urban planning. More information about the SFS MSMs, including their broader history, structure and governance, can be found in the original study (Alliance of Bioversity & CIAT, UNEP and WWF, 2021).

3.2 How are SFS MSMs advancing environmental agendas and tackling environmental challenges?

All interviewees, and most of the survey respondents, saw a clear link between food systems and the environment, and agreed on the need to tackle them together. Through their convening power, policy influence, and engagement with local action on food systems and the environment, SFS MSMs are having direct and indirect impacts on the triple planetary crisis. Almost all (n=11) survey respondents thought their MSM had helped to promote environmental causes, and most (n=10) felt it had contributed to positive environmental impacts, although several respondents did not actually distinguish between the two.

[7] Here 'good governance' refers to general principles for governing an organisation. For more information see: https://www.ohchr.org/en/good-governance/about-good-governance.

As discussed in Section 2, collaboration between stakeholders from different sectors is a key feature of integrative governance. One of the main ways in which respondents thought their MSM had contributed to advancing environmental agendas was through facilitating connections between people working on food and the environment — be that between people working in the same sector, or across different sectors. Eat Right India has been able to facilitate dialogues between stakeholders of the hospitality industry, in order to tackle the food and drink industry's plastic waste footprint. This contributed to the publication of an Order by the Food Safety and Standards Authority of India (FSSAI) in 2019, allowing hotels to re-use paper-sealed glass bottles to serve drinking water to guests. Similarly, through its broad membership, the French National Food Council has brought together actors from the catering and food service sector, enabling them to take action to improve the sustainability and proportion of organic meals served in public canteens, a key lever of change within France's National Food Plan (Plan National de l'Alimentation, PNA).

Collaboration through SFS MSMs has also led to synergies and increased coherence among groups working within and between different sectors, thereby avoiding duplication of efforts, and allowing them to achieve greater environmental impact through collective action on complex issues, e.g. reducing food waste. The LAFPC has worked with the City of Los Angeles, the Los Angeles Bureau of Sanitation (LASAN) and community-based organisations to mobilise $1 million in funding to support food rescue NGOs, with the aims of addressing food insecurity and reducing GHG emissions associated with food going to landfill.[8] Such examples demonstrate the potential for SFS MSMs to contribute to environmental action through collaborative or integrative governance (see also 3.2.1).

Several respondents explained the impact of their MSM on the environment through their engagement with policy. For example, respondents from the French CNA suggested it was through their contributions to the environmental objectives of the 'EGAlim law' that the MSM has had a positive effect on the environment (see Appendix 1). Likewise, the contributions of Gent en Garde to the city of Ghent's climate policy was perceived to have increased the policy's level of ambition regarding the role of food systems in environmental policies, and set a high bar for the organisations involved.

More generally, SFS MSMs appear to be contributing to increased awareness of the connections between food systems and the environment, and the environmental dimensions of food systems, among the general public, authorities and the media. For respondents, this included not only giving voice to environmental and food systems problems, but also to solutions and possible pathways for transformation. The nature of MSMs is also such that messages about food and the environment can have greater reach when individual stakeholders convey them back to their respective organisations or professional circles.

Most SFS MSMs do not consistently measure their direct impacts on the environment, but most had an idea of the impact of their initiatives and the policies they had contributed to formulating and implementing. The most commonly reported positive environmental impact among survey respondents was reduced food waste (n=6), followed by a reduction in GHG emissions (n=2) and reduced meat consumption (n=2) (open-ended question). Respondents generally viewed diverting food waste from landfill as a means to reduce GHG emissions. For example, the Foodsavers project in Ghent is estimated to have prevented close to 2,540 tonnes of CO2 emissions through food redistribution (Alliance of Bioversity & CIAT, UNEP and WWF, 2021). Another common way in which SFS MSMs are contributing to a reduction in CO2 is through the promotion and creation of short supply chains for food, which reduce transport-related emissions.

Some stakeholder groups likely have more influence over — or are more vocal about — the uptake of environmental agendas within SFS MSMs. Several respondents mentioned the influence of environmental protection organisations and associations. For example, in the French case the Climate Action Network (Réseau Action Climat, RAC) has pushed for the alignment of climate and food policy, and openly criticised the CNA in the past for the brevity of its consultation on the revised National food and nutrition programme (Programme national de l'alimentation et de la nutrition, PNAN) (Réseau action climat). In the case of France and Quito, some respondents thought that actors pushing for action on agroecology and sustainable agriculture, including producer associations, had been influential in getting environmental issues on the agenda. In Quito, representatives of the agroecology movement (e.g. rural farmers' associations) managed to get food sovereignty and agroecology included in the MSM's revised plan in 2018, despite opposition from food and agricultural industry stakeholders. Other respondents also noted the influence of consumer associations on the inclusion of environmental issues in the work of the French CNA.

Several respondents indicated that government actors, mostly at the sub-national level, had influenced the inclusion of environmental topics in the work of the SFS MSM. In the case of Gent en Garde, this was linked

[8] https://clkrep.lacity.org/onlinedocs/2022/22-0397_rpt_BOS_04-5-22.pdf

to the fact that the Ghent Food Strategy was housed in the city's Climate and Environment Department. In other cases (Antananarivo FPC, PAQ in Ecuador and French CNA), this influence more likely came from the participation of government actors as stakeholders in the MSM itself.

3.2.1 Connecting stakeholders, sectors and action at different levels

Collaboration across different levels of governance, as well as across sectors, is central to the way that SFS MSMs work, including when it comes to environmental issues. This is generally interpreted as working with actors at different levels of government. In some cases, MSMs include government agencies from different levels. For example, the French CNA includes representatives of territorial authorities (e.g. mayoral offices), who are instrumental in maintaining a link between the national secretariat and the work being done on the ground in the regions.

In other cases, MSMs engage with actors from different levels of government in the development of specific policies. For example, the Antananarivo FPC's core strategy development team comprised technical officers from the city, region and national level; CMSA-LP worked with both the local district office and the city municipal government to develop their policy proposal for the Hampaturi district; and PAQ worked with both city-level and national-level government actors on climate change policies. At the international level, three MSMs (PAQ, Los Angeles FPC and Antananarivo FPC) reported participating or engaging with the Milan Urban Food Policy Pact, a global initiative. The CNA has also contributed to the European Commission's Farm to Fork strategy, specifically on issues of international agri-food trade within the framework of the Green New Deal.

Interviewees were split on the question of whether this cross-scale engagement helped or hindered the successful application of a food systems approach. For one interviewee, bringing together a range of perspectives from different levels, particularly the more grounded views of citizens and food producers, fostered the adoption of a food systems approach by ensuring that its many dimensions were represented in the deliberations of the MSM. By contrast, another interviewee's experience was that actors in environment departments had limited awareness of the role of food

Photo caption

systems in environmental degradation and improvement — often limited to just a few specific issues, such as transport-related emissions and deforestation — and that this was an obstacle to introducing a food systems approach. Likewise, a third interviewee felt that despite national government actors being interested in taking a food systems approach to policymaking, there was limited in-house technical capacity to do this successfully.

3.2.2 Policy formulation and implementation

The previous study found that many of the SFS MSMs are addressing environmental challenges through their contributions to sustainable food policy. In addition, a key finding was that several MSMs had contributed not only to policies and strategies on food and agriculture, but to other kinds of policy processes too, particularly on climate change, the environment, and territorial development and urban planning (Alliance of Bioversity & CIAT, UNEP and WWF, 2021).

Several MSMs have developed or contributed to food systems policies with an environmental component or focus, and vice versa. For example, Gent en Garde contributed to the Ghent Climate Plan, which includes objectives on reducing indirect GHG emissions related to food. PAQ was successful in getting food issues, such as urban agriculture, into the Quito Climate Change Action Plan, including the most recent plan for 2020–2050; it has also contributed to Quito Vision 2040, a strategic plan for the city. The LAFPC has contributed to the inclusion of food system topics, such as food waste, urban agriculture, and resilience of food system infrastructure, into the LA Green New Deal (GND).

In some cases, it is clear when it is food systems that are being integrated into an environmental policy, as in the Ghent Climate Plan. But the line between food systems and environmental policies can also be blurry, and respondents did not always view policies as strictly about either the 'environment' or 'food'. For example, the CMSA-La Paz's 'Hampaturi Vivo' policy proposal touches on several different issues including sustainable agriculture, food insecurity, rural-urban connections, socio-economic development and environmental protection (see Box 8).

3.2.3 Multiple wins and multi-pronged approaches

Several of the sustainability issues that MSMs are working on present opportunities to address more than one challenge through the same food systems policy or intervention. For example, the objective within LA's Green New Deal to ensure low-income residents can source fresh food within half a mile of where they live addresses concerns about food access and nutrition as well as climate change. Some MSMs have been able to capitalise on these synergies in order to advance environmental agendas. In its conversations with the La Paz municipality on organic waste, CMSA-LP emphasised the potential economic co-benefits that could come from composting food waste within a

BOX 8. HAMPATURI VIVO

Hampaturi is one of two rural districts within the municipality of La Paz; together these rural districts cover over 90% of the municipality, while 96% of the population lives in the urbanised areas that account for just 9% of the territory.[9] Small-scale agriculture and livestock rearing is common among the communities in Hampaturi, but policy neglect and a lack of road infrastructure has left communities disconnected from urban areas, and has constrained local opportunities for development. Many families have abandoned farming, while Hampaturi has seen increasing urbanisation, posing a threat to its ecosystems.

In 2022 the CMSA-La Paz put forward a policy proposal, Hampaturi Vivo ('Hampaturi Alive'), to create a shared vision for the district's development which safeguards, strengthens and valorises the agricultural and environmental potential of Hampaturi. The policy proposal recommends several actions related to sustainable agriculture, which target environmental, food security and health objectives. The policy proposal development process included working closely with municipal authorities, the La Paz state government, as well as citizens in Hampaturi; in particular, female food producers from the communities of Lorocota, Chicani, Queñuma and Palcoma participated in the process with members of the CMSA-La Paz. If successfully implemented, the policy would model several features of transformative food systems governance — it is inclusive, integrative (multi-level and cross-sectoral), as well as pluralist.

[9] https://www.undp.org/blog/la-paz-and-el-alto-their-way-integrated-urban-development

In 2018, Fundación Alternativas, together with the La Paz Municipal Food Security Committee and Fundación Comunidad y Axión, organised a meeting between municipal authorities and urban and peri-urban producers from the municipalities of La Paz and El Alto. The main objective of the event was to facilitate a space for participatory dialogue on food systems and short supply chains in order to identify public policy proposals focused on strengthening the production, trade and consumption of local and healthy food. Credit: Fundación Alternativas

circular economy model — for example, a reduction in the municipality's spending on waste management — along with reduced GHG emissions and pollution.

Environmental co-benefits are sometimes implicit in the work of MSMs, rather than being the primary objective of a policy or intervention, suggesting that their contributions to tackling the triple planetary crisis are often hidden or indirect. For example, the LAFPC has tended to foreground other priorities, particularly in conversations with stakeholders focused on food access — such as government and community actors. In promoting the 'Farm Fresh LA' programme, which connected local producers with neighbourhood stores, the emphasis was on benefits to the local economy and access to fresh food, despite the potential environmental co-benefits of short supply chains.

Co-benefits of the interventions of SFS MSMs — whether environmental, social or pertaining to health — are sometimes unplanned or unexpected. In Quito, an urban agriculture initiative which initially aimed to support vulnerable residents increase their food security through growing their own food, has since become part of a broader strategy to increase the resilience of the city's agri-food system. In addition, a food recovery initiative that PAQ has helped to establish in the municipal markets of Quito could contribute to improved child nutrition (at the time of writing it had not yet started up in practice).

3.2.4 Tensions and trade-offs

The nature of MSMs is that they bring together a plurality of actors from across the food system — each with their own objectives and approaches to doing things. Respondents generally did not think that individual stakeholders were blocking the inclusion of environmental issues in the work of their SFS MSM — except in the case of the French CNA, where one respondent noted 'the reluctance of manufacturers and some producers'; and the Quito MSM, where stakeholders from food and agricultural industry initially opposed the inclusion of agroecology and food sovereignty (though eventually accepted it). However, they acknowledged that sometimes there were disagreements over which issues should be tackled, and how.

In some cases the disagreement was over how best to approach the same environmental issue; for example, in the French CNA one respondent reported differences in the approach to sustainability among producer

organisations and consumer-focused organisations. In other cases the disagreement was over which issues to focus on, for example, food aid associations often prioritise social issues, environmental associations emphasise environmental issues, and agri-food industries emphasise economic issues.

As noted above, many of the SFS MSMs employ conflict resolution methods in order to increase democratic decision-making in these cases. Due to the limitations of the survey methods, it was not possible to conduct in-depth political economy analyses of these individual instances of conflict — or indeed, of consensus — however, this would be something to explore in future studies.

3.3 Environmental topics in the work of SFS MSMs

Mainstreaming environmental sustainability into other sectors is a key feature of integrative governance; including environmental topics in food systems interventions can therefore contribute to transforming food systems to deliver better environmental outcomes. Issues related to food waste (n=7) are the dominant environmental sustainability challenge that the seven SFS MSMs are working on. Respondents viewed tackling food waste as a means to fight climate change, primarily by reducing the methane emissions associated with organic waste ending up in landfill. Several food waste initiatives take the form of redistribution programmes, in which case they tend to also be linked to efforts to reduce food insecurity. Eat Right India aims to prevent food waste through a donation and redistribution programme called Save Food Share Food, active in 200 cities across India.[10] Likewise, the LAFPC developed the food donation component of the city-wide RecycLA programme, which encompasses both recovery and waste collection. The sustainable use of food packaging (n=3) and waste management more generally (n=3) were also relatively common areas of work. This focus on food waste and loss and food packaging is reflected in the contribution of SFS MSMs to environmental policies, as well as their perceived impact on environmental challenges. The French CNA has contributed to several strategies, laws and policies related to the use on food packaging, particularly single-use plastics, and the use of plastic containers (see Appendix 1 for more information).

Urban and peri-urban agriculture (UPA) — identified as a "hot topic" in the previous study — are a priority for over half of the MSMs surveyed (n=4), likely reflecting the fact that 4 out of 7 of the MSMs studied are based in cities. The creation of areas for urban agriculture, as well as urban gardens more generally, aims to preserve and foster biodiversity, help cities adapt to climate change, sequester carbon, provide environmental and ecosystem services, and increase green spaces and vegetation in cities (see Box 9 for an example). UPA can also reduce emissions and pollution from transport

BOX 9. IMPROVING FOOD SECURITY, CLIMATE CHANGE AND LIVELIHOODS THROUGH URBAN AGRICULTURE

Agricultura Urbana Participativa (AGRUPAR), an urban agriculture programme in Quito, Ecuador, evolved from a social assistance pilot project into an established programme delivering interconnected social, economic and environmental benefits. Created by the municipality in 2002, AGRUPAR aimed to improve food security among the city's poorest residents, by providing them with training in organic agricultural techniques, and locating empty or underutilised pieces of land where they could establish vegetable gardens.

In 2005, with the re-location of AGRUPAR to the economic promotion corporation (Corporación de Promoción Económica, CONQUITO), the programme offered growers training in marketing and business planning and connecting to local markets in order to sell their surplus. More recently, courses in organic agriculture, including composting, have been offered. The initiative has 2,300 active orchards across 63 hectares, cultivated by over 4,500 growers, most of whom are women heads of household.[11] AGRUPAR has been credited with increasing food security (53% of produce is for self-consumption (Rodriguez *et al.*, 2022)), improving the nutrition of growers, their neighbours and consumers, and increasing women's economic empowerment, given that over 80% of growers are women. Quito's urban gardens are increasingly recognised for their potential to increase biodiversity, resilience and the city's ability to adapt to climate change, and have been included in the Quito Climate Action Plan.[12]

[10] https://documents1.worldbank.org/curated/en/949431599153256236/pdf/Eat-Right-India-A-Case-Study.pdf
[11] http://www.quitoinforma.gob.ec/2021/10/15/agricultura-urbana-en-quito-dia-mundial-de-la-alimentacion-2021/
[12] References for AGRUPAR: https://www.idrc.ca/en/research-in-action/case-study-quito-ecuador-quitos-farms-produce-food-enterprise-and-hope; https://resilientcitiesnetwork.org/downloadable_resources/Network/Quito-Resilience-Strategy-English.pdf; https://www.frontiersin.org/articles/10.3389/fsufs.2022.550636/

through shorter value chains. Sustainable agriculture and agroecology (n=5) are often connected to work on urban agriculture, and share some of the same environmental objectives. PAQ has been successful in getting environmental issues into a proposal for a municipal ordinance on 'The Promotion of orchards for agricultural practices based on agroecology and/or organic management in the Metropolitan District of Quito', which is being supported by ConQuito, PAQ's host organisation. Sustainable agriculture and agroecology have also been a focus of a strategy and action plan to strengthen the resilience of Antananarivo's city-region food system, which the AFPC has helped to develop (see Appendix 1).

Several MSMs are also working on sustainable diets, particularly reducing meat consumption/the protein transition, including in the context of procurement and catering (n=3). Perhaps most well-known is Gent en Garde's 'Thursday Veggie Day' (Donderdag Veggiedag) initiative, which appears to have led to a self-reported reduction in meat consumption among those who have taken part, and has been replicated in other cities around the world (see Appendix 1). Climate change was directly mentioned as a topic of focus by only two respondents; agricultural biodiversity was mentioned as a topic in its own right just once.

Looking to the future, half of respondents expressed an interest in working on further topics related to environmental sustainability, including air pollution, water pollution and biodiversity (one mention each). Barriers to addressing further environmental challenges include the absence of necessary or relevant data, the complexity of many topics, constraints on human and financial resources, a lack of political will and pressure from lobbies, as well as a general sense that there are many worthy issues to tackle — but one multi-stakeholder initiative can only do so much.

3.4 Motivations and drivers for tackling environmental issues

For many of the MSMs, environmental sustainability is an explicit aim and a core part of their vision. 'Eat sustainable' is one of three pillars of Eat Right India, and 'sustainability' is one of four pillars of the Los Angeles FPC's official roadmap, the Good Food for All Agenda. In the case of Quito, some of the aims in its Food Charter are to 'promote sustainable agricultural production … based on environmentally responsible management of agroecosystems' and to 'prevent and reduce food loss and waste'.[13] The motivation to address environmental challenges through sustainable food systems interventions has therefore been embedded in the mission of several MSMs from the start.

The political context in which SFS MSMs operate influences their approach to the environment in different ways. In the case of the Gent en Garde, the French CNA and the CMSA-La Paz, perceived public opinion on the environment and sustainability were cited as reasons for including these topics in their work on sustainable food systems. In some cases, public debate has evolved in response to specific events. For example, public debate about environmental protection in Bolivia has shifted since the outbreak of large-scale fires in the eastern region of La Chiquitanía, in 2019. CMSA-La Paz has capitalised on growing media and public attention to the environment and climate change, to raise awareness of the connections between food systems and the environment — for example, the role of some agricultural practices in contaminating soil and water, and air pollution. All of the surveyed MSMs have representation from the government or a public authority among their stakeholders. Public pressure on politicians to tackle environmental sustainability, as well as public and political narratives surrounding high-profile environmental problems — such as plastic waste — appears to be filtering into the work of SFS MSMs. Broadly speaking it is the national political context which appears to be the most influential. In Madagascar, one respondent cited national political agendas on sustainable agriculture and self-sufficiency as factors driving the inclusion of environmental topics, while in France there is widespread interest in the One Health approach and in tackling food packaging waste, which is also high on the public agenda.[14]

Stakeholders' general understanding of how food systems and the environment are connected is a key motivator for engaging with sustainability issues. The adoption of a food systems approach by the French CNA, as well as its recent embrace of the 'One Health' approach, have highlighted the connections between environment, human and animal health, and contributed to the increased mainstreaming of environmental topics within the MSM's work. Awareness and evidence of the climate crisis, and its links to food systems vulnerabilities, emerged as a key driver for the Antananarivo FPC and the CNA. In the case of Antananarivo, an assessment conducted with support from FAO between 2019 and 2020 laid out evidence of the risks from climate change to the city region food system (FAO, 2021). In the case of the CNA, the direct experience of climate change by some members,

[13] https://www.conquito.org.ec/wp-content/uploads/2018/09/carta-1.pdf
[14] See https://www.who.int/health-topics/one-health for an overview of the One Health approach.

particularly agricultural producers, has also shaped the inclusion of environmental topics in the MSM's work.

The institutional 'location' of the SFS MSMs and the organisation that oversees the implementation of related sustainable food policies likely influences how — and how much — environmental sustainability is approached through the MSM's activities. For example, the fact that responsibility for implementation of the Ghent food strategy sits with the city's Climate and Environment Department means that sustainability — in this case especially climate change — is an important focus of the MSM. Similarly, the LA County Food Equity Roundtable, a cross-sector committee formed in 2021 to which the LAFPC belongs, is primarily focused on food access — but the fact that it is co-chaired by the county's Sustainability Office has likely led to greater integration of environmental issues (e.g. Goal 4: support sustainability and resilience in food systems and supply chains, LA County).

The national legal context is important for determining how a small number of MSMs (PAQ in Ecuador and the French National Food Council) tackle specific environmental topics. Within the framework of the French Anti-Waste law (*Loi relative à la lutte contre le gaspillage et à l'économie circulaire, AGEC*), which aims to eliminate single-use plastic by 2040 and ban plastic packaging for fruit and vegetables, the CNA was asked by the ministries it works with to develop an opinion on the sustainable use of food packaging.[15] In this case, the CNA's decision to work on a particular environmental issue was in response to the request from all of its associated ministries.

[15] See Opinions 86, 87 and 88.

Conclusion

4

Food systems depend on, but also threaten, sustainable natural resource management and the healthy functioning of ecosystems. As a result, the way food systems are governed impacts how resources are managed within ecosystems, and by extension, the triple planetary crisis. This paper has sought to demonstrate the links between food systems governance and the environment, and provide insights into how food systems governance is helping to advance environmental agendas and tackle the triple planetary crisis.

In the first part (sections 1 and 2), the report presents a literature review on food systems, environment and sustainability, including the links between food systems governance and environmental challenges. These sections summarise the ways in which food systems and environmental systems depend on, and impact one another, including the specific ways in which food systems contribute to climate change, biodiversity loss and pollution.

The study drew on concepts from the academic literature on food systems governance and environmental governance to discuss how specific features of, or approaches to, governance could lead to the transformation of food systems towards sustainability. Four key features or approaches emerged as central to thinking about the contribution of food systems governance to environmental outcomes, which can be broadly summarised as:

- Collaboration and integration
- Inclusion and participation
- Adaptive capacity and resilience
- Diversity of knowledge

The research borrows the concept of *transformative governance*, which is already being used in the field of environmental governance to talk about the kinds of governance needed to transform food systems towards increased sustainability. Using this concept, which is already common within certain environmental academy and policy circles, could be a useful way to think about the contribution of food systems governance to environmental agendas, and to bridge the gap between researchers, practitioners and policymakers working on food systems and the environment.

The key takeaways from the first part of the report are that:

1. **The shift to a systems approach to food governance has been important for integrating environmental dimensions** with other food system outcomes related to food security, health and livelihoods. This means that food systems governance increasingly explicitly aims to address environmental challenges and produce positive environmental outcomes.
2. **In order for food systems governance to support the transformation of food systems towards sustainability, governance itself will need to change.** Some of the key features of a food systems governance that could support environmental agendas are inclusiveness, integration, cross-sectoral and multi-level approaches, innovation, pluralism, and adaptive capacity. Those forms of governance that have made progress towards influencing the environmental agenda tend to use two or more of these approaches, but it is rare for them all to be used together.
3. **There is still limited evidence of the material impacts of food systems governance on environmental outcomes.** Even though the literature linking food production governance to biodiversity and climate adaptation is growing, there is not much evidence of the broader impacts of food systems governance more generally. This is partly due to the relatively recent adoption of the food systems problem-framing in food governance (which previously focused on single issues and policies), and the relative paucity of studies linking food systems governance to sustainable food systems transformations. Gathering more data, as well as agreeing on how to measure and evaluate the impacts of governance, could help make the case for food systems governance in other arenas — for example, within international environmental fora such as the UNFCCC and the CBD.
4. **Working with, and learning from, Indigenous Peoples and local communities is essential.** A key learning from the literature on environmental governance is that integrating diverse communities, groups, perspectives, value systems and knowledge can support the transformation of systems, such as food systems, towards sustainability. The participation of Indigenous Peoples and local communities in particular, and of stakeholders and citizens more broadly, can increase the effectiveness of natural resource management and increase food systems resilience in the long-term. Likewise, it is important to acknowledge the value of, and respectfully make use of, indigenous and local knowledge, which is an important source of information about biodiversity and conservation.

In the second part of the report (section 3), 7 case studies of sustainable food system multi-stakeholder mechanisms (SFS MSMs) were analysed, with the aim of understanding how they are contributing to environmental agendas and policymaking. The study gleaned lessons and insights into the motivations of SFS MSMs for working on environmental issues, the ways in which they have contributed to environmental policymaking, the kinds of environmental issues they

tend to work on, and the barriers they face in tackling environmental problems relevant to food systems.

SFS MSMs are having an impact on environmental agendas and policymaking in their contexts in which they work, as well as building connections across different levels of governance — including the international level. Although further research is needed into individual cases to understand how MSMs are having material environmental impacts on the ground, the 7 case studies nonetheless provide examples of how food systems governance can be used as an entry point to tackle environmental challenges and influence natural resource management practices. Linking back to the first part of the report, the study found that all SFS MSMs are exhibiting several features of *transformative governance*, particularly inclusivity and collaboration or integration.

Below, six takeaways of the case study analysis are put forward.

1. **SFS MSMs are playing a role in policymaking related to environmental issues, including on climate change, sustainability and recycling.** Many of the SFS MSMs are addressing environmental challenges through the creation of policies on sustainable food systems (e.g. urban agriculture). In addition, several are also contributing to the development of other kinds of policy processes, particularly on climate change, territorial development and urban planning, recycling, and broad sustainability strategies. Several respondents thought that their MSMs on environmental agendas had been realised through their engagement with policy.
2. **These governance mechanisms are advancing environmental agendas by facilitating cross-sector dialogue on environmental issues.** The inclusion of environmental actors in SFS MSMs is a key driver of their work on environmental agendas. Yet, the nature of the MSMs analysed is also that they bring together actors within and across different sectors to collaborate on complex issues, including environmental issues — a key feature of integrative governance. As such, the impact of SFS MSMs on environmental agendas was viewed to be a result of the MSMs power to convene actors from across the food system and beyond, and to facilitate dialogues around environmental challenges.
3. **The SFS MSMs studied are contributing to environmental agendas and outcomes in direct and indirect, and sometimes hidden, ways.** There are many impact pathways through which food systems governance can contribute to tackling the triple planetary crisis, but not all of them are easy to map out or demonstrate. For example, it is more straightforward to track the impact of increasing urban gardens in Quito than the impact of a nationwide citizen consultation on food packaging in France. However, all of these pathways have a role to play. In addition, environmental co-benefits are sometimes implicit in the work of MSMs, rather than being the primary objective of a policy or intervention. This suggests that the contributions of SFS MSMs to environmental agendas may in many cases be hidden, and therefore also difficult to prove in hindsight.
4. **Food waste and loss, urban agriculture and sustainable diets are popular entry points for tackling environmental problems among the SFS MSM case studies.** Although there are many food systems challenges with environmental dimensions, the multi-stakeholder initiatives studied appear to be tackling some more than others. Reducing food loss and waste, increasing food production in urban and peri-urban areas, and shifting diets towards increased plant-based and/or organic foods, were the most popular topics addressed in the case studies. This was reflected in the areas where survey respondents thought their SFS MSM had had positive environmental impacts: reduced food waste, reduced GHG emissions and reduced meat consumption. However, it is important to note that there was a bias in the study towards MSMs working in cities (which likely explains the popularity of working on urban agriculture, for example).
5. **The motivation to address environmental issues is embedded in the mission of SFS MSMs, and is bolstered by citizen, media and political agendas.** Given the 'systems framing' adopted by most of the SFS MSMs, environmental sustainability features as a key pillar and part of their vision, meaning that tackling environmental challenges is explicitly embedded in the work of almost all the SFS MSMs. Additionally, public opinion on environmental issues, made visible through the media, was influential in creating an enabling environment for some MSMs to talk more openly than in the past about environmental issues, such as climate change.
6. **SFS MSMs are raising awareness of the connections between food systems and the environment, and the environmental dimensions of food systems.** Through their interactions with the public, governments and the media, SFS MSMs are helping to show other actors how food systems and environmental issues are connected, and how the triple planetary crisis can be tackled also through food systems interventions. The nature of MSMs is also such that messages about food and the environment are reaching more and more diverse actors, when individual MSM participants convey them back to their respective organisations or sectors.

Appendices

Appendix 1: SFS MSMs' individual policy contributions to the environmental agenda

Table A. Summary of SFS MSMs and their relevant food systems policy (adapted from Alliance Bioversity & CIAT, UNEP and WWF, 2021).

SFS MSM	CITY/ COUNTRY	ACRONYM/ NAME REFERRED TO IN TEXT	START DATE	FOOD POLICY, STRATEGY, ACTION PLAN OR SIMILAR	ENVIRONMENT-RELATED POLICIES THAT SFS MSM CONTRIBUTED TO
Antananarivo Food Policy Council	Antananarivo, Madagascar	Antananarivo FPC	2016	Strategy to strengthen the resilience of the city-region food system of Antananarivo (SARU)	Regional Land-use Plan (Schéma Régional d'Aménagement du Territoire, SRAT) for the Analamanga region
Eat Right India	India	Eat Right India	2018	*Eat Right India is aligned to the National Health Policy 2017*	*Not applicable*
Gent en Garde Food Policy Council	Ghent, Belgium	Gent en Garde	2013	Gent en Garde Food Policy	Ghent Climate Plan
French National Food Council (CNA)	France	CNA	1985	National Food Programme (PNA)	3R Strategy (reduce, reuse, recycle) for single-use plastic packaging ('Stratégie 3R') EGAlim laws 1 & 2
La Paz Municipal Food Security Committee	La Paz, Bolivia	CMSA-La Paz	2013	Municipal Autonomous Law No. 105 on Food Security	Urban and Peri-urban Agriculture for the Cities of Tomorrow (2018) Strengthening and Integration of the Food Systems of the Metropolitan Region of La Paz (2019) An Integrated Food System for the Metropolitan Region of La Paz (2020)

SFS MSM	CITY/ COUNTRY	ACRONYM/ NAME REFERRED TO IN TEXT	START DATE	FOOD POLICY, STRATEGY, ACTION PLAN OR SIMILAR	ENVIRONMENT-RELATED POLICIES THAT SFS MSM CONTRIBUTED TO
Los Angeles Food Policy Council	Los Angeles, United States	LAFPC	2010	Good Food For All Agenda	OurCounty sustainability plan Edible Parkways ordinance Urban Agriculture Incentive Zones Program RecycLA LA Green New Deal (GND)
Quito Agri-Food Pact (PAQ)	Quito, Ecuador	PAQ	2017	Quito Agri-Food Strategy	Territorial Development Plan Quito Vision 2040 Quito Climate Change Action Plan Green-Blue Infrastructure Ordinance (Ordenanza de Infraestructura Verde Azul)

Antananarivo Food Policy Council (Madagascar)

Between 2020 and 2022, the Antananarivo Food Policy Council (AFPC) contributed to the development of a strategy and action plan to strengthen the resilience of Antananarivo's city-region food system (Stratégie de renforcement de la résilience du système alimentaire de la région urbaine d'Antananarivo, SARU). The strategy development took place in the context of the City-Region Food System (CRFS) project led by FAO and RUAF since 2019, and built on a participatory assessment of the city-region's food system (Alliance of Bioversity & CIAT, 2021). The strategy development process was led by a core team composed of the Urban Municipality of Antananarivo (Commune Urbaine Antananarivo, CUA), the Analamanga Region, and the Regional Directorate of Agriculture and Livestock from the Ministry in Analamanga (Direction régionale de l'agriculture et de l'élevage Analamanga, DRAE-Analamanga). The multi-level nature of this team contributed to its success, and their proximity to decision makers aided with getting political buy-in for the strategy and ensuring its success. The strategy was recently validated[16] by stakeholders during a workshop, the final stage of the strategy development.[17]

The strategy development process identified vulnerability to climate change as a key issue, and its intersection with chronic poverty, urbanisation, food insecurity and malnutrition as compounding risks for the city-region. As a result, sustainable agriculture and the sustainable use of resources in food production was a key focus, including agroecology and reducing carbon emissions. In addition, the strategy has been considered in scenario discussions for the development of the Regional Land-use Plan (Schéma Régional d'Aménagement du Territoire, SRAT) for the Analamanga region, led by the Ministry of Land Management, Housing and Public Works. Although not an environmental policy, the SRAT sets out a shared vision for land use in the region, which is relevant for sustainable food systems. Stakeholders involved in the development of the SARU therefore saw an opportunity to work with the technical committee in charge of formulating the SRAT. Although the scope of the SRAT does not allow for the explicit prioritisation of food issues, recommendations were incorporated into the scenario-building aspect of the plan's development, in order to ensure that the strategy contributed to preserving productive and green areas from urbanisation (interview, 2022). Discussions about food systems within the context of regional development planning may have also contributed to the integration of sustainability within the vision for the SRAT (interview, 2022).

[16] https://actu.orange.mg/renforcement-de-la-resilience-des-saru-dantananarivo-aux-chocs-climatiques/
[17] At the time of writing the strategy had not been officially published yet.

French National Food Council (CNA)

The French National Food Council (Conseil National de l'Alimentation, CNA) is linked to four ministries responsible for the environment, the economy, health and agriculture, and has helped to develop and implement the National Food Programme (Programme National pour l'Alimentation, PNA), which was recently linked to the country's health and nutrition policy under the National Food and Nutrition Programme (Programme National de l'Alimentation et de la Nutrition, PNAN) (Alliance of Bioversity & CIAT, UNEP and WWF, 2021). The PNA incorporates environmental challenges such as biodiversity loss, waste and the circular economy; since 2014, it has focused in particular on reducing food waste in line with several other national laws and ordinances.

Institutional catering, which accounts for 3.7 billion meals annually in France, is one of the key levers of change within the PNA, with several measurable targets aimed at the sector — for example, since 1 January 2022, 50% of the food served in public canteens should be sustainable, and 20% should be organic.[18] Two stakeholders who responded to the survey observed that the CNA has contributed to tackling environmental challenges by bringing together actors from public procurement and catering to take action within their sector, and that players from the institutional catering sector themselves have also helped drive the inclusion of environmental issues within the MSM's work.

The CNA has also contributed to the 3R Strategy (reduce, reuse, recycle) for single-use plastic packaging ('Stratégie 3R'), published in April 2022.[19] In 2020, the ministries to which the CNA is attached asked it to develop an Opinion on food packaging, within the framework of the Law against waste and for a circular economy (loi Anti-Gaspillage pour une Économie Circulaire, AGEC), which stipulates that single-use plastics in packaging should be phased out by 2040.[20] This request led to the formulation of Opinion 86,[21] on the exemption of fruit and vegetables from the plastic packaging ban, Opinion 87[22] on the use of plastics in institutional catering, and Opinion 88,[23] on frugality in plastic food packaging use. Evidence on the sale of loose food items ('en vrac') in Opinion 88 is cited in the strategy, and the three Opinions were used more generally by the Ministry of Ecological Transition in its development. The latter was the first Opinion to include the direct views of citizens, gathered through their participation in large-scale consultation, which reinforced the position of the CNA as a 'food parliament'. The citizen consultation (composed of workshops and panels) helped identify recommendations which were then discussed by CNA member stakeholders, and integrated into the Opinion. Over 70% of the recommendations in the Opinions on food packaging can be traced to the citizen debates.[24]

Finally, the 'EGAlim' Law aims to create more balanced relationships between the agricultural sector and the food industry (in particular, by increasing food producers' share of profit in the food and beverage sector) and ensure healthy, sustainable food for all.[25] Several stakeholders who participated in the survey thought that the CNA had contributed to the inclusion of environmental issues in the Law, through collaboration and collective work on issues such as school vegetarian meals and the recovery of food destined for the waste stream. Some of the CNA's recommendations on the use of plastic containers in institutional catering (Opinion 87) were also incorporated in the Law.[26]

Several targets in the EGAlim Law were later consolidated and/or extended in the national Climate and Resilience Law, which emerged from a Citizens' Convention on the Climate — for example the stipulation that all school canteens must offer a vegetarian menu at least once a week. All four CNA stakeholders who responded to the survey thought that the MSM had contributed to positive environmental impacts. In particular, respondents thought that there had been positive impacts on reducing food waste, increasing the consumption of organic food, increasing the consumption of vegetarian meals, and reducing the use of plastic food packaging. Two respondents thought that these positive impacts had come about as a result of the EGAlim Law, to which the CNA has contributed.

Eat Right India

Participants in the 2021 study thought that one of Eat Right India's main achievements was in bringing stakeholders together and providing opportunities for knowledge exchange, networking and cross-sector action. It drew on this convening power to organise multi-stakeholder dialogues with the hospitality industry and other stakeholders, with the aim of reducing the use of single-use plastics for food and drink. Eat Right India

[18] https://agriculture.gouv.fr/la-restauration-collective-en-mutation
[19] https://www.ecologie.gouv.fr/sites/default/files/Consulter%20la%20Strat%C3%A9gie%203R%20pour%20les%20emballages%20en%20plastique%20%C3%A0%20usage%20unique.pdf
[20] https://buildingcircularity.org/the-french-approach-to-circular-economy-and-coherent-product-policies/
[21] https://cna-alimentation.fr/wp-content/uploads/2020/10/CNA_Avis86_intermediaire_Emballages-FL.pdf
[22] https://cna-alimentation.fr/wp-content/uploads/2021/03/CNA_Avis87_contenants_plastiques_restauration_collective.pdf
[23] https://cna-alimentation.fr/wp-content/uploads/2021/07/CNA_Avis88_Sobriete_emballages.pdf
[24] https://cna-alimentation.fr/debats-citoyens/
[25] https://agriculture.gouv.fr/egalim-1-ce-que-contient-la-loi-agriculture-et-alimentation
[26] https://cna-alimentation.fr/download/rapport-annuel-2021/

sits within the Food Safety and Standards Authority (FSSAI), and in 2019 it led to the publication of a national Order by the FSSAI, allowing hotels to re-use paper-sealed glass bottles to serve drinking water to guests.[27] The initiative was part of a broader consumer awareness campaign aiming to reduce the food and drink industry's plastic waste footprint. Other initiatives include the proposal to substitute plastic straws, plates and cutlery with bamboo alternatives, and to remove restrictions on the use of reusable bottles for beverages other than water.[28]

Eat Right India also aims to tackle food waste through a food donation and redistribution programme, Save Food Share Food. As of 2020 there were 84 active food distribution agencies in 200 cities.[29] Other ongoing initiatives include work on repurposing cooking oil for use as a biodiesel, working with the energy industry, particularly biodiesel manufacturers.

Gent en Garde Food Policy Council

The Gent en Garde Food Policy Council provided input and feedback on the food systems aspects of the Ghent Climate Plan, a sub-national policy led by the city's Environmental and Climate Service.[30] The food-related objectives of the plan are to reduce indirect GHG emissions; the plan outlines 12 actions to achieve these objectives, including continued support to the Food Council. The Gent en Garde FPC is housed within the Climate and Environment Department of the City Council, and several food system-related actions within the plan are shared with other departments. For example, Action 61: 'Land policy that stimulates local, sustainable food production', is shared with the deputy mayors of Urban Development and of Social Policy and Poverty reduction. Promoting short food chains, increasing the consumption of plant-based foods, and decreasing food waste are highlighted as priorities for a more sustainable food system.

Gent en Garde and the city of Ghent more generally have been successful in promoting environmental messaging through their work on sustainable food systems (Alliance of Bioversity & CIAT, 2021). The city's 'Thursday Veggie Day' (Donderdag Veggiedag) initiative, a world-first which has since been replicated in other cities in Belgium and internationally, came about through cooperation between the Ethical Vegetarian Alternative, one of 30 members of the Food Policy Council, and the city of Ghent.[31] The fact that the initiative contributed to both climate and health goals appears to have been a motivating factor for its approval, according to an official memo.[32] Meat-free days are also thought to benefit from the support of left-leaning governments, and the initiative may have benefited from the party-political context — a Labour-Liberal coalition was in power at the time — as well as broad social demand.[33] A third of the city's population was thought to participate in 'Veggie Day' in 2013,[34] and a 2022 study found that 50% of Belgians who had taken part in a 'Thursday Veggie Day' claim to eat less meat now.[35]

Municipal Food Security Committee of La Paz

The Municipal Food Security Committee of La Paz (Comité Municipal de Seguridad Alimentaria de La Paz, CMSA-La Paz) has developed several policy proposals which integrate both food systems and environmental concerns, including those on Urban and Peri-urban Agriculture for the Cities of Tomorrow (2018), Strengthening and Integration of the Food Systems of the Metropolitan Region of La Paz (2019), and An Integrated Food System for the Metropolitan Region of La Paz (2020) (Alliance of Bioversity & CIAT, UNEP and WWF, 2021: 144). In particular, the latter integrated environmental sustainability concerns such as the sustainable use of natural resources and sustainable food consumption.

The Municipal Food Security Law of La Paz (No. 105), developed through a participatory process led by the CMSA-La Paz and other stakeholders and citizens, included an ambition to increase the supply of food grown in the city through urban agriculture. Fundación Alternativas, which leads the CMSA-La Paz, has spearheaded these initiatives, by gaining permission from local authorities to create an urban garden in an abandoned park.[36] The Committee built on these efforts by formulating the Municipal Law for the Promotion of Urban Gardens (No. 321), working with the Municipal Secretariat of Environment. The law aimed to provide a legal framework for citizens to access underutilised public land to grow food, as well as provide environmental services through increasing vegetation in the city.[37] It was adopted in 2018, and the number of

[27] https://drive.google.com/file/d/1_SLYI8a5kK6IGRmUQ0jxm7YorKEBOyzZ/view
[28] https://fssai.gov.in/upload/uploadfiles/files/Press_Release_EatRightIndia_12_09_2019.pdf
[29] https://documents1.worldbank.org/curated/en/949431599153256236/pdf/Eat-Right-India-A-Case-Study.pdf
[30] https://www.calameo.com/read/0063954479db097ad1e64
[31] https://wwf.panda.org/wwf_news/?204421/Ghent-meat-free-Thursdays
[32] https://carbonn.org/uploads/tx_carbonndata/detailed%20information%20veggieday.pdf
[33] https://eprints.glos.ac.uk/3794/1/Less%20Meat.pdf
[34] https://www.nycfoodpolicy.org/veggie-thursday-ghent-urban-food-policy-snapshot/
[35] https://www.evavzw.be/nieuws/vleesconsumptie-belgi%C3%AB-blijft-verder-dalen
[36] https://katoikos.world/analysis/the-challenge-of-growing-food-in-the-heart-of-the-bolivian-altiplano.html

documented vegetable gardens has since increased from one to ten, with many more requests for land being processed (interview, 2022). However, urban agriculture projects are threatened by the spectre of land-grabbing by developers, in light of the city's ongoing urbanisation (interview, 2022).

In 2022 the CMSA-La Paz put forward a policy proposal, Hampaturi Vivo ('Hampaturi Alive'), which provides a way of thinking about urban-rural linkages in the context of improving food security and ways of life ('Sistemas de vida').[38] Hampaturi is one of two rural districts within the municipality of La Paz; together these rural districts cover over 90% of the municipality. But 96% of the population lives in the urbanised areas that account for just 9% of the territory.[39] Small-scale agriculture and livestock rearing is common among the communities in Hampaturi, but policy neglect and a lack of road infrastructure has left communities disconnected from urban areas, and constrained local opportunities for development. Many families have abandoned farming, in some cases leaving the area in search of work elsewhere; at the same time, Hampaturi has seen increasing urbanisation, posing a threat to its ecosystems, which are rich in biodiversity and natural resources. Hampaturi Vivo therefore proposes a process of participatory planning to create a shared vision for the district's development, which safeguards, strengthens and valorises the agricultural and environmental potential of Hampaturi. The policy proposal recommends several actions related to sustainable agriculture, which target both environmental, food security and health objectives, e.g. promoting organic food production techniques, fostering greater diversity in production, and encouraging the sustainable use of water. The proposal also promotes the idea of improving the city's food security by increasing the quantity of food entering markets through short supply chains.

The Hampaturi Vivo policy proposal builds on the 'Comprehensive management plan for the conservation of biodiversity and water resources macro-district of Hampaturi', published in 2013, which recognised the need to adapt to climate change, conserve biodiversity and sustainably manage water resources.[40] In formulating the policy proposal, the CMSA-La Paz worked closely with the Hampaturi district office, as well as with the municipal authorities, who already had a small number of initiatives under way in the area, and the La Paz state government. The Committee worked closely with citizens in Hampaturi, ensuring that their voices were included in the discussions; in particular, female food producers representing the communities of Lorocota, Chicani, Queñuma and Palcoma participated in the process with members of the CMSA-La Paz. This was important given that even within the CMSA-La Paz, there was some ignorance about the extent of the contribution of Hampaturi to the socio-economic, environmental and cultural wellbeing of the municipality.

The policy development process therefore contributed to increased awareness of the value and importance of the macro-district for the municipality's socio-economic and environmental resilience, among members of the CMSA-La Paz as well as other NGOs and even academics. The proposal development process also enabled representatives of Hampaturi communities to contact government officials, who have pledged to meet with them to discuss future actions in the area.

Los Angeles Food Policy Council

Sustainability is one of four key principles in the Los Angeles Food Policy Council's (LAFPC) official policy document, the Good Food Agenda, which was created in 2010 and updated in 2018.[41] Its definition of a 'good food system' is one that 'Protects and strengthens our biodiversity and regenerates natural resources' in addition to providing for health, wellbeing and a thriving economy. Among its six areas of action, 'Growing Good Food in LA neighbourhoods' is the one that speaks most explicitly to environmental issues, although others — such as 'Promoting a Good Food economy' — have environmental co-benefits, as noted above.

The LAFPC has contributed to several policies, plans and programmes related to waste, urban agriculture and sustainability, including the OurCounty sustainability plan, the Edible Parkways ordinance, and the Urban Agriculture Incentive Zones Program, which is being implemented at both county and city levels (Alliance of Bioversity & CIAT, UNEP and WWF, 2021). The latter aims to incentivise landowners who do not currently use their land to allow it to be used to grow food, for an initial five-year period, in exchange for a tax break. However, the programme has been unsuccessful so far, with urban agriculture being practised on only a small proportion of the thousands of eligible lots in the city of LA.[42] Weaknesses in the policy design, some of which have only become clear through its implementation, have contributed to the scheme's under-utilisation;

[37] https://foodactioncities.org/case-studies/urban-gardens-promotion-law/
[38] https://alternativascc.org/wp-content/uploads/2022/11/Propuesta-Hampaturi-Vivo.pdf
[39] https://www.undp.org/blog/la-paz-and-el-alto-their-way-integrated-urban-development
[40] http://sitservicios.lapaz.bo/biodiversidad/pig-hampaturi/
[41] https://static1.squarespace.com/static/5bc50618ab1a624d324ecd81/t/5be5fda240ec9a789e87e811/1541799360838/GoodFoodforAllAgenda2018.pdf
[42] https://www.oxy.edu/sites/default/files/assets/UEP/Comps/2021/jenkins_kaye_we_grow_food_and_community_uepseniorcomps2021.pdf

for example, the incentives for both landowners and prospective growers have been criticised for being misplaced and not appealing enough.[43]

The LAFPC has contributed to the development and implementation of food waste policies, which aim to tackle climate change by reducing GHG emissions associated with organic waste going to landfill. The LAFPC's Food Waste Prevention & Rescue Working Group was instrumental in the development of the RecycLA, a city-wide food recovery and waste collection programme adopted by the City in 2014. For example, the group's efforts to collaborate with officials from the Los Angeles Bureau of Sanitation (LASAN) led to being invited to develop the programme's food donation component (Alliance of Bioversity & CIAT, UNEP and WWF, 2021). Although data is only available until 2017, there was a significant increase in the amount of residential and restaurant food waste being recycled after the programme was initiated.[44] The LAFPC is also contributing to California's Short-Lived Climate Pollutant Reduction Strategy (SB 1383). More commonly known as the organic waste reduction strategy, it sets targets for reducing organic waste disposal and recovering surplus edible food. LAFPC is supporting practitioners in identifying best practices as well as barriers to implementing the strategy and achieving its objectives, particularly regarding the diversion of edible surplus food back into the food chain. In 2023, LAFPC partnered with LASAN and Community Health Councils to provide funding opportunities to food rescue NGOs, with the goal of addressing food insecurity and climate change at the same time. The grants aim to increase the capacity and help meet the infrastructural needs (e.g. storage facilities) of actors in the food recovery space.

Finally, LAFPC has contributed to the inclusion of food system issues in the LA Green New Deal (GND), the city's 2019 update of the Sustainable City pLAn. Key food-related objectives within the policy include:

- Eliminate organic waste going to landfill by 2028
- Ensure all low-income Angelenos live within ½ mile of fresh food by 2035
- Increase the number of urban agriculture sites in LA by at least 25% by 2025; and 50% by 2035
- Prepare for natural disasters by increasing the resiliency of [the city's] food systems infrastructure.

There was strong, unquestioned support for including food systems issues in the GND, according to one respondent. The LAFPC will support the City with the GND implementation through its Healthy Neighbourhood Market Network (HNMN), which supports neighbourhood corner store owners in underserved communities to increase their healthy food offer.[45]

Quito Agri-Food Pact

The Quito Agri-Food Pact (Pacto Agroalimentario de Quito, PAQ) has contributed to a number of policies, strategies and ordinances relevant to the triple planetary crisis, such as the Territorial Development Plan and Quito Vision 2040.[46] Notably, PAQ has successfully lobbied for the inclusion of food issues in the Quito Climate Change Action Plan.[47] Urban agriculture was included in both the 2015–2025 plan, and in the most recent plan for 2020–2050, reflecting a long and established history of successful urban agriculture initiatives in Quito (Rodríguez *et al.*, 2022). Although policy implementation challenges have prevented the programme from having a greater environmental impact, PAQ has also lobbied for actions related to sustainable food production, food diversity, waste management (in the context of a circularity framework) and water management. Actions on sustainable agriculture, adaptive water management, circular waste management and organic waste recovery were ultimately included, although there was disappointment among some MSM stakeholders that food waste issues are not included more explicitly.

Through AGRUPAR, one of the members of the PAQ technical secretariat, PAQ has taken part in the development of the Green-Blue Infrastructure Ordinance (Ordenanza de Infraestructura Verde Azul), which is coordinated by the Metropolitan Secretary of the Environment and was drafted jointly with a large number of stakeholders, including ConQuito, the MSM's host organisation. The ordinance seeks to coordinate action to conserve and manage the city's green and blue spaces, in order to increase social and economic resilience in the Metropolitan District of Quito. In particular, the ordinance aims to conserve biodiversity and mitigate environmental risks. AGRUPAR lobbied for the inclusion of issues related to sustainable diets, local food systems and climate justice.

[43] https://www.oxy.edu/sites/default/files/assets/UEP/Comps/2021/jenkins_kaye_we_grow_food_and_community_uepseniorcomps2021.pdf
[44] https://static1.squarespace.com/static/5bc50618ab1a624d324ecd81/t/5e45c5915750af6b4e5e5c4b/1581630905550/2020FoodSystemDashboard.pdf
[45] https://plan.lamayor.org/partners/partners_plan.html
[46] https://www.quito.gob.ec/documents/PMDOT.pdf; https://gobiernoabierto.quito.gob.ec/wp-content/uploads/documentos/quitoparticipa/rendicion/Visi%C3%B3n%20Quito%202040.pdf
[47] http://www.quitoambiente.gob.ec/images/Secretaria_Ambiente/Cambio_Climatico/plan_accion_climatico_quito_2020/Folleto%20Resumen%20PACQ01_mar_21.pdf

More recently, PAQ is contributing to the development of an Agrifood System Resilience Strategy, for which it has proposed the creation of food hubs and healthy food neighbourhoods to further scale-up urban agriculture in the city, increase the city's resilience and reduce food insecurity (Rodríguez *et al*., 2022).[48] It has also contributed to conversations and initiatives related to urban planning and land use in the city. Recently, it was successful in raising awareness among local government actors of the need to create designated food donation drop-off points in the municipality's markets, to prevent traders from wasting edible food that could be diverted back into the food chain. PAQ helped to initiate a collaboration between the Quito Food Bank and the Markets and Municipal Fairs, leading to the design of a pilot initiative to use rescued food from markets in collective kitchens; however, at the time of writing, the pilot had not yet launched (survey response, 2022).

Urban agriculture initiatives have a strong track record of success in Quito (see Box 9). Since May 2022, ConQuito, PAQ's host organisation, has been supporting the technical development of a proposal for a municipal ordinance on 'The Promotion of orchards for agricultural practices based on agroecology and/or organic management in the Metropolitan District of Quito'.[49] PAQ has been successful in clearly including environmental issues in this ordinance, which was recently shared with citizen growers, in order to get their feedback and inputs on the proposal. PAQ has also managed to get urban agriculture onto the urban planning agenda, including some urban development policies; however, implementation has so far proved a barrier to exploiting its full potential to deliver for the environment.

PAQ's links to the municipal government have likely increased its success in contributing to policy formulation related to food systems and the environment. The fact that PAQ has not yet been institutionalised as a formal legal entity is perceived as constraining its potential to have greater influence and impact within the municipal government structures, which remain siloed to some extent. However, legislative efforts are under way to create an agri-food council for Quito, building on the work of PAQ (interview, 2022).

[48] https://ruaf.org/assets/2020/01/Quitos-Resilient-Agrifood-System-1.pdf
[49] http://www.quitoinforma.gob.ec/2023/01/24/socializamos-propuesta-de-ordenanza-de-huertos-urbanos-con-la-sociedad-civil/

Appendix 2: Methodology

Overview

The methods adopted in this study consist of a literature review, survey and interviews. The discussion paper aims to answer the following research questions:

1. In general terms, how can inclusive forms of food systems governance at different levels help tackle the triple planetary crisis?
2. How does adopting a food systems approach to policymaking contribute to the development of food systems policies with an environmental angle?
3. What can we learn from examples of holistic food policies and food action plans where the environmental sustainability dimension has been integrated?
4. How has the adoption of innovative forms (inclusive, participatory, etc.) of food systems governance / the food systems approach advanced the environmental agenda of international conventions and agreements?

Literature review

A conceptual review of the academic and grey literature from the past ten years was conducted to build a picture of the current debate around food systems governance and the environmental agenda, and to develop a high-level understanding of how good systems governance is linked to environmental governance and the triple planetary crisis in the literature. The literature review sought to situate the analysis of survey results and the in-depth case study analysis in the wider context of food systems transformation, inclusive governance and the triple planetary crisis.

A targeted search of academic and practitioner publications was undertaken. An initial search was conducted using the following terms: “inclusive food systems governance”; “innovative food systems governance”; “food systems governance AND environment”; “alternative food systems governance”. Further publications were then identified through bibliographies and reference lists. Relevant online publications libraries (e.g. FAO, IPES-Food) were also searched for key terms and phrases. In addition, case studies on inclusive or innovative governance of both terrestrial and aquatic food systems known to the researchers were sought out and reviewed in more detail. Analysis of the literature then aimed to identify key concepts, themes and terms within the framework of the study.

Survey and interviews

A survey was developed and conducted with the aim of building on the literature review, and to better understand the link between food systems MSMs and the environmental agenda in the ten case studies reviewed in the 2021 OPN-SFSP report. The survey consisted of 13 main questions (24 overall) and gathered information across four main categories: participation of environmental actors, inclusion of environmental topics, contribution to environmental policy and contribution to environmental agenda/ environmental impacts. The survey was available in English, French and Spanish. It was launched on 16th November, initially for one week, but later extended. The survey officially closed on 13th December.

The survey was distributed to the focal point contacts for each case study (an individual in a coordination or management role in the SFS MSM), many of whom had participated in the previous study. In total, 7 out of 10 of the focal points responded to the survey. Focal points were asked to distribute the survey to members or stakeholders of their SFS MSMs, and to specifically target civil society and government stakeholders working on environmental issues. However, due to time constraints and access challenges, only one stakeholder responded to the survey.

Those who undertook the survey were invited to participate in an informal follow-up interview. Out of the 12 participants who took part in the survey, 5 volunteered for an interview. Interviews were semi-structured and in some cases, questions were shared with interviewees in advance. Researchers were able to view interviewees’ survey responses prior to the interview, in order to follow up on specific questions in more detail. Interviews were conducted in English, French and Spanish.

The survey questions and interview guide can be viewed below.

Online questionnaire

1. What is your name? [Open-ended]
2. What is your gender? [Open-ended]
3. What organisation(s) do you work for? [Open-ended]
4. What is the name of the multi-stakeholder initiative you are a part of? [Closed-ended with the 10 case study names]
5. How many environmental departments, organizations or initiatives are part of your multi-stakeholder initiative? [Closed-ended with ranges: none; 1-5; 5-10; 10+]
    1. How many people take part from environmental civil society or grassroots organisations? [Closed-ended with ranges: none; 1-5; 5-10; 10+]
6. What topics related to the environment have been or are being addressed by the initiative, and how? Please be as specific as possible. E.g. consumer food waste, emissions from transporting food, emissions from agriculture [Open-ended]
7. In your opinion, what has driven the inclusion of environmental topics in the initiative?
    1. Did specific stakeholder groups, organisations or individuals influence the inclusion of environmental issues in the initiative? [Open-ended]
    2. Are there any other factors that contributed to how environmental issues were included? E.g. political or public pressure to address environmental challenges, historical or geographic factors, legal context. [Open-ended]
    3. Are there any factors that blocked the inclusion of environmental issues in the initiative?
8. What lessons can be learned from the inclusion of environmental topics in the multi-stakeholder initiative? [Open-ended]
9. Are there environment-related topics that you think the initiative should address, but currently doesn't? [Closed-ended Yes/No]
    1. What topics do you think should be addressed? [Open-ended]
    2. What are the barriers to including these topics? [Open-ended]
10. Has the multi-stakeholder initiative contributed to a public policy, strategy, action plan, law, or other kind of programme **on the environment or an environmental issue**? [Closed-ended Yes/No/Other] [If No, skip to Q.11]
    1. If yes, what is it called? [Open-ended]
    2. What was the contribution of the food multi-stakeholder initiative? [Open-ended]
    3. What level does the policy/strategy relate to? [Closed-ended: town or city; county or sub-national region; national; international]
    4. Can you provide a link to the policy document? [Open-ended]
11. Has the multi-stakeholder initiative engaged with or contributed to an international process or agreement related to either food systems and/or the environment? E.g. the Milan Urban Food Policy Pact, the United Nations Climate Change Conferences, the Convention on Biological Diversity. [Open-ended].
    1. Please describe how the initiative engaged or contributed. [Open-ended]
12. Do you think the food systems multi-stakeholder initiative contributed to positive environmental impacts (e.g. reduced pollution or emissions, reduced food waste) in the geographical area it operates in? [Yes/No/Other]
    1. Please explain what the impacts are and how you think the initiative contributed to them. [Open-ended]
    2. What evidence exists to show that the initiative contributed positively to the environment? Please provide links to studies, documents or other sources if possible.
13. Overall, do you think the food systems multi-stakeholder initiative has helped to provide support for environmental causes? [Closed-ended Yes/No/Other]
    1. Please explain your answer. [Open-ended]

[End of questionnaire]

Interview guide

1) What is the composition of the MSM? [I.e. organisations taking part]
    a) Do all members have equal influence on decision-making?
2) Thinking about the multi-stakeholder initiative's contribution to food systems policy/strategy, do you think there were conflicts between the social, economic and environmental issues in the policy/strategy?
    a) How were those tensions addressed/resolved?
    b) Were there trade-offs between them?
    c) Were there synergies between them? [Prompt: for example, the policy addressed organic food production which targeted health and the environment]
    d) Through what processes were trade-offs and synergies identified?
3) Thinking about the multi-stakeholder initiative in general, do you think it has contributed to advancing environmental causes?
    a) Which environmental causes? [Prompts: waste, energy use, emissions, air pollution, water pollution, biodiversity, ecosystem health]
    b) In what ways did it contribute? [Probe for the contribution of the food systems perspective]
    c) Why do you think it was successful in advancing environmental causes? What were the ingredients for success? [Prompts: the right people, the right mix of stakeholders, inclusivity, innovation, systems approach, civil society buy-in, government buy-in]
    d) Are you aware of any environmental impacts that could be linked to the multi-stakeholder initiative?
4) Thinking about the multi-stakeholder initiative's contribution to environmental policy/strategy, how do you think an integrated approach to food issues contributed to the environmental policy/strategy?
    a) Was a gender lens applied to the policy/strategy? How?
    b) How did the MSM contribute to this?
5) Was there collaboration between different geographical/administrative levels of stakeholders? [Probe: city vs county; city vs national; national vs international, etc.]
    a) If yes, did this facilitate or hinder the adoption of a food systems approach?
    b) In what ways?
6) Were any processes for the development of environment-related policies initiated but later stopped?
    a) If so, why were they discontinued?
    b) What were the triggering elements that caused such processes to fail?

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Food systems are major contributors, but also critically vulnerable, to the triple planetary crisis of climate change, biodiversity loss and pollution. The food sector uses more natural resources than any other sector, which means that the way in which food systems are governed has direct consequences for how natural resources are managed — and for environmental sustainability. Governance therefore plays a critical role in transforming food systems towards increased sustainability. This issue paper aims to show how food systems governance can contribute to advancing environmental agendas. It builds on the findings of the One Planet network's Sustainable Food Systems Programme's research on Sustainable Food System Multi-Stakeholder Mechanisms (SFS MSMs). Drawing on a literature review and a survey with members of 7 SFS MSMs, the paper aims to inform and inspire the use of food systems governance as an entry point to address environmental challenges.

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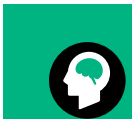

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