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Sustainable urban food system policies as a new realm for transnational city networks

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ABSTRACT

Transnational city networks (TCNs) are pivotal in shaping global governance, notably in implementing sustainable urban food system policies (SUFSPs), stressing the enhancement of inter-city relations and urban capabilities. However, significant gaps persist in political science research regarding the understanding and development of SUFSPs by TCNs. This research, utilising qualitative case studies, explores these aspects within two prominent TCNs – C40 and ICLEI. It aims to fill existing scholarly gaps, providing insights into the conceptualisations and strategies employed by TCNs in advancing SUFSPs, addressing crucial questions regarding their perceptions and policy approaches of sustainable urban food system transformation.

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Sustainable food system; inter-city relations; urban capabilities; C40; ICLEI

1. Introduction

We are living in an era of rapid urbanisation. Since the mid-2000s, more than half of the Earth's population resides in cities. By 2050, it is projected that two thirds of the world's population will live in urban areas. The global megatrend of urbanisation intersects with numerous sustainability issues – economic, environmental, and social aspects – positioning cities as pivotal actors for transformation towards sustainability (UN-Habitat 2020; Bailey and Otsuki 2025). This trend, along with related impacts like the emergence of a global urban agency and the efforts by transnational city networks (TCNs), which are institutionalised forms of city-to-city cooperation, to establish themselves as global autonomous governors (Acuto 2013a; Gordon 2020), valorises the role of cities as collective actors in global governance. This fuels discussions in political science about cities and TCNs as new leaders and sustainability agents (Acuto 2013b; Curtis 2016; Johnson 2017). Within global sustainability politics, the crucial role of cities is prominently acknowledged in the normative framework of the Sustainable Development Goals (SDGs). SDG 11 stipulates to '[m]ake cities and human settlements inclusive, safe, resilient and sustainable' (UN 2015, p. 14). This includes participatory planning and management of human settlement, improved urban air quality and waste management and access to green spaces.

For a long time, political science research predominantly focused on the link between urbanisation and actions against climate change (Johnson 2017). Only recently, the focus has shifted to other policy areas, such as health (Jakobi and Loges 2021), migration (Durmus and Oomen 2022) or food (Moragues-Faus 2021; Partzsch et al. 2022). The latter is particularly important for answering the following question, which remains a key challenge for cities: How to feed the growing urban population? Questions related to urban food supply are not restricted to the availability of food and, thus, SDG 2 (zero hunger) but stretch along the entire axis of the double burden of malnutrition phenomenon, which entails the coexistence of undernutrition and obesity (WHO 2017) and is, thus, also related to health issues (SDG 3). Furthermore,

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food insecurity and malnutrition are still largely caused by poverty (SDG 1) and affected by the immediate (built) environment (Jonah and May 2020), such as the type of housing (SDG 11) and a lack of access to clean water and sanitary facilities (SDG 6). Due to the complex and multifaceted character of urban food issues and their interlinkages with various SDGs, comprehensive sustainable urban food system policies (SUFSPs) are pivotal to addressing these challenges. These SUFSPs must accommodate the multifaceted nature of urban food issues and offer integrated policies that include different actors and consider economic, environmental, and social aspects (Sonnino et al. 2019). Otherwise, '[f]ood system policies and interventions will not achieve desired results unless they challenge nutritional challenges in cities' (FAO 2019a, p. 8).

From the global to the local level, various efforts of SUFSPs development and implementation can be observed. Perhaps the most striking examples at the global level are programmes and initiatives developed and advanced by the Food and Agriculture Organization of the United Nations (FAO), such as the City Region Food Systems Programme, the Urban Food Agenda or the Green Cities Initiative. However, the success of such programmes and initiatives is ambiguous: On the one hand, studies show that they can create a certain degree of urban food system resistance to external shocks, such as the COVID-19 pandemic (FAO 2020). On the other hand, studies point to the need to enhance coherence in implementing such programmes and initiatives (Blay-Palmer et al. 2021). At the national level, a growing number of states are addressing issues related to urban food governance. Yet, many of these efforts lack integrated policies (Candel and Pereira 2017). At the local level, an increasing number of SUFSPs are being developed, recognising the impact of food production and food consumption on the environment, as well as social and socioeconomic aspects. Such initiatives include, among others, local food strategies and food councils, as well as the promotion of urban agriculture, which means e.g. that citizens can grow food themselves in public urban gardens. Although these activities can have an impact on urban food security, they are often fragmented and depend on individual initiatives within cities' administrations (Doernberg et al. 2019; Polman and Bazzan 2023). In summary, the findings echo the results by Sonnino et al. (2019), who identify the need for cross-sectoral and cross-institutional integration as a major challenge for the implementation of comprehensive food policies in cities (Candel and Pereira 2017; Doernberg et al. 2019; Sibbing and Candel 2020; Sonnino 2023).

Dynamics in SUFSPs development draw attention to the transnational level, most notably to TCNs (Moragues-Faus 2021). These networks are institutionalised forms of city-to-city cooperation. TCNs are neither fully state nor fully private. Operating between different political spheres, they are assumed to 'overcome the constraints imposed by national decision-making and international bureaucracies, while not being bound to party interest or political timetables' (Hickmann 2021, p. 216). Regarding SUFSPs, one prominent example is the Milan Urban Food Policy Pact (MUFPP), which is an agreement initiated by mayors in 2015 and signed by more than 290 cities around the world to date. By signing the MUFPP, cities commit themselves to 'encourage interdepartmental and cross-sector coordination at municipality and community levels, working to integrate urban food policy considerations into social, economic and environment policies, programmes and initiatives' (MUFPP 2015, p. 2). Besides this prominent example, a growing number of TCNs are active in SUFSPs development. Building on the main functions of city networks – enhancing communication and exchange among cities, increasing cities' capacity, and articulating and representing cities concerns' in political arenas – TCNs have started to add the development of SUFSPs to their agendas. Yet, political science scholars have only recently started to examine these TCNs food policy activities.

By focusing on two of the most prominent TCNs – C40 Cities Climate Leadership Group and ICLEI – Local Governments for Sustainability – the paper poses the two following research questions: 1) How do TCNs understand sustainable urban food systems? 2) How do TCNs develop and foster SUFSPs? The paper proceeds as follows: First, *Chapter 2* describes the theoretical background and sheds light on TCNs as well as on SUFSPs. Second, *Chapter 3* includes basic information about case selection, methods, the two case studies and the analytical framework which is applied in assessing TCNs' understandings of sustainable urban food systems as well as their activities to develop and foster SUFSPs. The empirical analysis in *Chapter 4* adopts a qualitative document and website analysis. It shows how two global issues –

urbanisation and food – are connected by transnational city networks and it explores possible differences in SUFSPs understandings of both C40 and ICLEI as well as their levels of activity in the development of SUFSPs. In *Chapter 5*, the paper formulates conclusions and identifies areas of further research.

2. Theoretical background

This chapter first sheds light on how TCNs are discussed in the literature with special regard to their functions and agency in the global arena. Second, the chapter takes a closer look at SUFSPs and their potential elements.

2.1. Transnational city networks (TCNs)

TCNs are networks between municipalities that operate at different political levels (Fenton and Busch 2016). In contrast to national municipal interest groups TCNs are particularly active at the international and global level. In so doing, TCNs represent and involve cities directly in policy issues at the international [. . .] level and across national borders" (Bulkeley et al. 2003, p. 236).

There are now several hundred active TCNs worldwide, which can differ in terms of the number of members, their thematic and regional focus and whether they are designed to be permanent or temporary networks (Keiner and Kim 2007; Haupt and Coppola 2019; Acuto and Leffel 2020). Some of the major TCNs, such as C40, represent more than 700 million people and one quarter of the global economy (C40 2019). Since most of the existing TCNs focus on environmental issues (Acuto and Rayner 2016), studies in political science often concentrate on the role of TCNs in global environmental and climate governance. In consequence, TCN activities in other policy areas, such as health, migration or food policy, are only gradually receiving attention in political science literature.

TCNs are voluntarily founded networks of city-to-city cooperation (Kern and Bulkeley 2009). Literature considers TCNs as powerful agents, able to exercise influence on their member cities and on global policy processes (e.g. Lecavalier and Gordon 2020; Durmus and Oomen 2022; Partzsch et al. 2022; Jakobi et al. 2024). Over time, researchers have developed various typologies and classifications of TCNs and their intended functions (Keiner and Kim 2007; Niederhafner 2013; Haupt and Coppola 2019; Jakobi et al. 2024). However, these can be categorised into three overarching governance roles: city networks aim to (i) enhance the communication and exchange among member cities, e.g. about knowledge, norms, and values; (ii) increase cities' capacity, e.g. by helping them access public funds or by supporting them in project implementation and manage different interests and preferences of their members; and (iii) articulate and represent cities' concerns in the international arena (Kern and Bulkeley 2009; Busch 2015; Fenton and Busch 2016; Hickmann 2021). These roles have various implications and reinforce the assumption of TCNs being critical agents to overcome obstacles in SUFSPs development.

TCNs' governance role of *communication and exchange (i)* enables cities to bring in and discuss local demands and problems as well as exchange gathered knowledge and information from best practice examples and successfully implemented policies at the local level (Haupt and Coppola 2019). As various studies demonstrate, the discursive character of TCNs helps developing novel approaches, innovative technologies and (new) policies (Papin 2020), which can 'scale out' (Smeds and Acuto 2018) horizontally among the TCNs' members and lead to replications and learning processes (Hakelberg 2014). Besides functional scaling-out-effects, TCNs can also contribute to the spread of norms and, thus, alter the behaviour of their member cities (Johnson 2017; Durmus and Oomen 2022; Jakobi et al. 2024). Scholars of TCNs stress that thematic proximity of cities within a TCN can create a shared identity that manifests itself in urban agency 'capable of exerting influence on world affairs' (Acuto 2013b, p. 838).

The *capacity building and management governance role (ii)* helps to support cities in project implementation. TCNs can provide technical assistance or help members access public funds to facilitate project implementation (Kern and Bulkeley 2009). They can also support their members with managerial resources. In addition to increasing the capacity of individual cities, this governance role enables networks to 'tie member municipalities more closely together through day-to-day dealing in projects' and assists 'networks in achieving their goals on the ground by providing additional financial resources to enable local action' (Kern and Bulkeley 2009, p. 321).

TCNs' *governance role of articulating and representing cities' concerns (iii)* refers to external interactions

(Kern and Bulkeley 2009). It echoes the perception of TCNs as autonomous global governors, 'capable of transforming nominal commitments into practical action' (Gordon and Acuto 2015, p. 64). The institutional embeddedness of TCNs within the global governance system, coupled with related inter-institutional interactions with other actors, allows approaches, technologies and policies to 'scale up' (Smeds and Acuto 2018) to national, regional, and global levels. Consequently, TCNs are viewed as potential global agenda-setters and policy advocates, able to contribute to global norm building (Toly 2008; Durmus and Oomen 2022; Jakobi et al. 2024).

While many political scientists perceive TCNs as influential policy actors, their governance contributions are also called into question. Some scholars argue that TCNs' 'initiatives often lead to nothing because of constraining factors in the national political-economic system as well as the lack of commitment from mayors and local public officials' (Hickmann 2021, p. 216). Others consider TCNs as subjects of orchestration by more powerful actors, such as states or international organisations (Hale and Roger 2014). TCNs are also criticised for reproducing (global) inequalities through a North-South divide in the composition of their membership (Bouteligier 2013) or by reproducing – an thus manifesting – unequal market positions (Curtis 2016). These findings mainly apply to global environmental and climate governance. But global food and agricultural governance does not form a legal governance structure as environmental treaties do. It rather forms dialogue at the international level (Clapp 2017). Hence, there is a need to assess more deeply how TCNs perform in this governance area and to scrutinise their impact on SUFSPs development (Moragues-Faus 2021).

2.2. Sustainable urban food system policies (SUFSPs)

TCNs are considered important agents in developing SUFSPs and influencing international food governance processes (FAO 2015, p. 2020). In fact, various TCNs have started to add food policies to their agenda (Moragues-Faus 2021; Partzsch et al. 2022). Key international organisations in global food policy consider TCNs as able to actively shape SUFSPs development and ascribe political agency to city networks. FAO, for instance, regards cities and TCNs as key actors (FAO 2015) that, especially in the context of the COVID-19 pandemic, play a vital role in developing sustainable and resilient food systems (FAO 2020). This echoes recent political science research, stating that locally grounded actors are able and well positioned to deal with complex problems in the context of climate change (Bulkeley 2021).

TCNs pursue SUFSPs by different means, such as declarations (C40 2019), tool kits and handbooks (ICLEI 2021a), monitoring frameworks (FAO, MUFPP, RUAF Foundation 2021), pilot projects, and the integration of food issues in local strategies. SUFSPs address a wide range of issues that are prevalent in urban contexts, e.g. ensuring security of food supply, tackling hunger and malnutrition, shortening supply chains, preserving scarce resources, considering issues of rural development, equal food distribution, enhancing sustainable consumption, and reducing food waste (Szabo 2016; Dubbeling et al. 2017).

SUFSPs adopt a food system approach to address the fragmentation of food policies and the lack of structural linkages to other sectors and resources (Sonnino et al. 2019). The food system approach incorporates different disciplines and actors as well as 'the wide range of economic, social and environmental dynamics that interact with each other at various scales' (Sonnino et al. 2019, p. 111). A food system 'gathers all the elements (environment, people, inputs, processes, infrastructures, institutions, markets 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 2014, p. 29). It consists of several sub-systems and interacts with other systems, such as the health, energy, or trade system. In addition, food systems relate to different geographical and organisational scales, addressing different actors and considering specific challenges, e.g. rural-urban interfaces and economic, environmental, and social circumstances. Various food systems can thus be differentiated, e.g. traditional, modern and mixed (HLPE 2014) or traditional, modern and globalised, and informal food systems (FAO, World Bank 2017).

However, these coexisting food system conceptualisations share certain elements critical for policies in the urban context. The HLPE (2017) conceptual framework of food systems focuses on diets and nutrition. It is composed of three core elements – food supply chains, food environments, and consumer behaviour,

which 'shape diets and determine the final nutrition, health, economic and social outcomes of food systems' (HLPE 2017, p. 24). Five main drivers of food system change – biophysical and environmental; innovation, technology and infrastructure; political and economic; socio-cultural; and demographic (Ingram 2011) – affect the elements. FAO's (2018) food system wheel framework is structured around FAO's main goals of poverty reduction and food security and nutrition. These goals are embedded in the broader performance of the food system referring to economic, social and environmental sustainability. This, in turn, is influenced by the actors' behaviour within the structure of the system, consisting of a core system that includes activities and services for the flow of food products, a social context, and a natural environment. A third relevant framework by UN Environment (2019) in the context of the Sustainable Food Systems Programme captures food systems as encompassing activities ranging from production to consumption. It considers the drivers influencing these activities (e.g. socioeconomic, environmental or institutional) and their impact on food security and nutrition as well as socioeconomic (e.g. health, social justice, resilience) and environmental (e.g. resource efficiency, climate change mitigation) outcomes.

Adding sustainability to the food systems perspective 'ensures food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition of future generations are not compromised' (HLPE 2014, p. 31). This definition considers both current and future generations and incorporates all three dimensions of sustainability – economic, social and environmental. While the economic dimension implies that sustainable food systems are profitable and generate income and livelihoods, the social dimension refers to societal benefits, such as the eradication of hunger and the provision of health and adequate nutrition. The ecological dimension involves ensuring a positive or neutral impact on the natural environment and the recovery of urban resources within planetary boundaries (Keuter et al. 2021). The sustainable food systems approach thus applies a complex, holistic perspective to the stages of the food value chain. According to the SFS Programme (2020, p. 20), a sustainable food systems approach 'can bring about more coherent, holistic food systems policies [to] ensure that sufficient nutritious, sustainable, culturally acceptable, desirable, and affordable food is produced and consumed, while generating decent incomes for producers and other value chain actors, as well as protecting natural resources both domestically and abroad'. Developing SUFSPs through the lens of the sustainable food systems approach helps identifying synergies and trade-offs among different elements, activities, drivers and actors of the food systems and ensures a holistic understanding of sustainability.

3. Case studies, method and analytical framework

This research work empirically explores a relatively new phenomenon in the analysis of TCNs – SUFSPs as an emerging realm. The TCNs under analysis – C40 and ICLEI – were selected for two main reasons: (i) their activity and importance in the global food policy arena as well as in the field of sustainable food systems and the development of SUFSPs, and (ii) the composition of their member cities – C40 as a TCN of large and highly engaged cities and ICLEI as a TCN open also to small cities and regions.

3.1. Case studies

C40 was founded in 2005 by 18 cities at the initiative of Ken Livingstone, the then mayor of London, with the aim of connecting the world's megacities. Today, the network includes nearly 100 member cities. C40's main objectives are combating climate change and adhering to the 1.5 degree Celsius goal. To become a member, cities must present a 'Climate Action Plan' that outlines concrete targets and approaches for mitigating greenhouse gas emissions. In addition, members are encouraged to actively use the network as a platform for sharing best practices. C40 is active in various thematic areas linked to climate action, e. g. water, heat and nature, air quality, energy and buildings, transportation, urban planning, and food systems. The thematic sub-network on Food Systems was established in 2016 (2016). *ICLEI* is a global network, founded in 1990, encompassing more than 2.500 local and regional governments from more than 125 countries. Its world secretariat resides in Bonn, Germany. Among ICLEI's members are cities, towns and regions. These members commit 'to scale up and expand the model of sustainable cities and regions to create a sustainable urban world' (ICLEI 2018a, p. 25). ICLEI's work is organised around five

'critical, strategic and interlinked pathways', which the network considers 'the basis of sustainable urban development' (ICLEI 2021b, p. 25): (i) low emission development, (ii) nature-based development, (iii) circular development, (iv) resilient development, and (v) equitable and people centred development. These pathways were introduced in the Montreal Commitment and Strategic Vision (ICLEI 2018a) and then strengthened and refined in the Malmö Commitment and Strategic Vision (ICLEI 2021b). Each pathway is linked to a set of SDGs.

C40 and ICLEI are both members of the Urban Food Systems (UFS) Coalition. This expertise platform emerged from the 2021 UN Sustainable Food System Summit and aims to support governments form the local and national levels in implementing sustainable and inclusive urban food policies. To date, the UFS Coalition comprises 12 members representing TCNs, UN institutions, non-governmental organisations, and academia (UFS Coalition 2023a). Being part of this global coalition clearly underlines the agency of C40 and ICLEI in the global food policy arena. Although the member cities of both TCNs are from industrialised countries as well as from the Global South, they differ concerning the number of dwellers. C40 considers itself a network of world leading cities, with Heidelberg, Oslo and Rotterdam being the cities with the smallest populations. In contrast, ICLEI presents itself as a network of local governments that is also open to small-sized towns.

3.2. Methods and data

The analytical framework takes up the twofold research question. In order to answer the first research question – how do TCNs understand sustainable urban food systems – the framework addresses four separate elements in a comparative manner to both TCNs: the fundamental understanding of sustainability, of the urban level, of food systems, and the salience of calling up the SUFSPs topic (see Figure 1). Although we assume that the selected TCNs consider sustainability and food systems inseparable in the light of recognised concepts, we are interested in potential different focuses, since political science research has revealed that even widely recognised concepts or norms are not stable and, thus, open to different interpretations and prioritisations (Wiener 2014; Breitmeier et al. 2021). Therefore, this first step will help to better understand the possibilities of

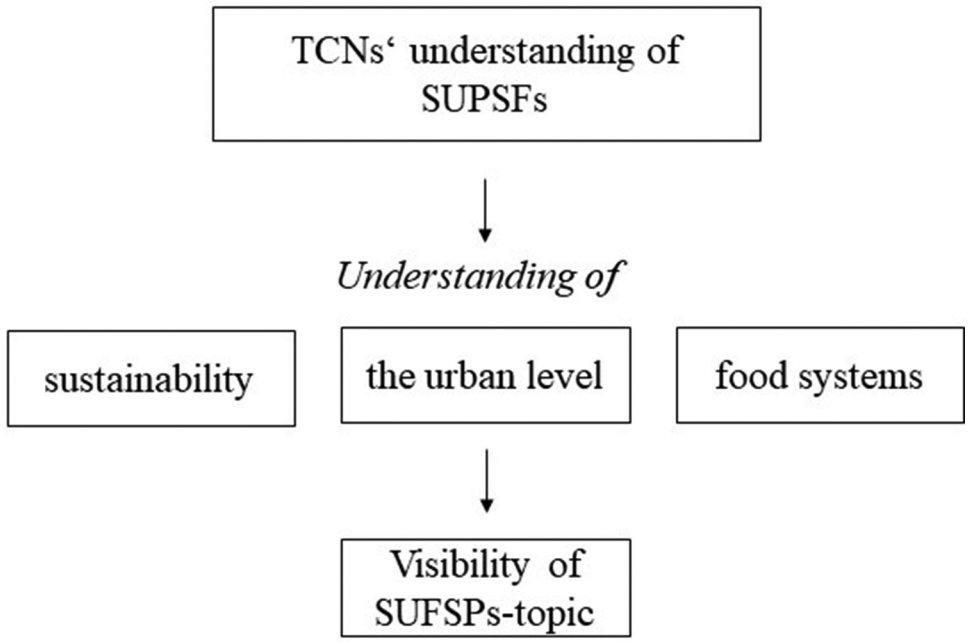

Figure 1. Analytical framework: analysing TCNs' understanding of SUFSPs.

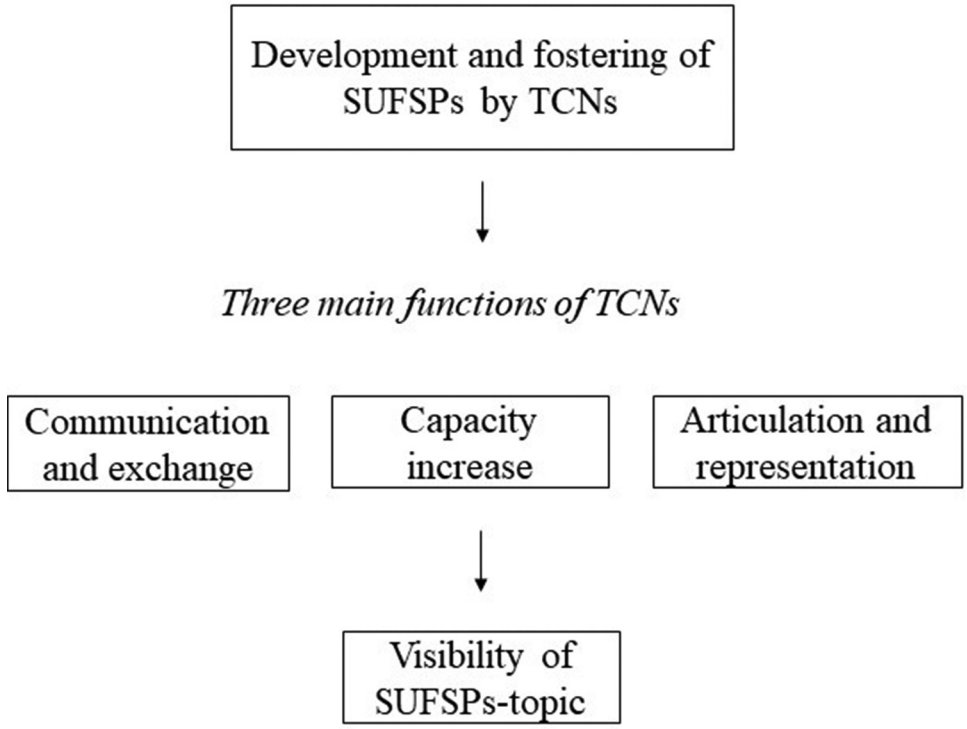

Figure 2. Analytical framework: analysing the development and fostering of SUFSPs by TCNs.

designing SUFSPs by outlining their potential elements addressed by the TCNs under analysis.

As for the second research question – how do TCNs develop and foster SUFSPs – the analytical framework refers to the three main governance roles of TCNs – (i) communication and exchange, (ii) capacity building and management, and (iii) articulating and representing (see Figure 2). In detail, it examines the driving force with regards to communication and exchange in this particular policy field – do TCNs operate on the network level or do they leave the initiative to their members when it comes to developing SUFSPs? Furthermore, the analytical framework scrutinises the activities addressed by TCNs as well as potential capacities that are increased for developing SUFSPs. Looking at the global arena, in which TCNs represent their members and articulate their interests in the field of sustainable urban food systems, the framework also sheds light on remarkable impacts. The analytical dimensions and related guiding questions described above direct the qualitative analysis. As a first analytical approach to explore a relatively new field of research, we decided to focus on the content of publicly available documents. We started the analysis by gathering information about the origin and institutional setting of the two TCNs. Afterwards, we focused on how both case studies deal with SUFSPs. The process of data collection revealed the following types of documents relevant for analysis: strategic programmes and plans, official declarations, thematic publications and policy papers, handbooks and other tools as well as the TCN's websites. In sum, 22 documents were deductively analysed, guided by the analytical framework.

The following sections first present the results for each of the two-fold research question in a comparative manner before giving more details and references to the analysed documents for each of the three governance roles of TCNs.

4. Results and discussion

After presenting the results of the empirical work along the two research questions, this chapter

Table 1. Overview of C40's and ICLEI's SUFSPs understanding.

	C40	ICLEI
Sustainability Understanding	Focus on contribution of local actions and network actions to climate mitigation and adaptation	Focus on contribution of local level to sustainable urban development
Urban Level Understanding	Cities as critical actors to limited global temperature rise to 1.5° C	Cities as complex systems able to impact national and global sustainable development; emphasis of city-region food systems
Food Systems Understanding	Systemic understanding, nexus approach with a special focus on climate and health aspects	Systemic understanding, emphasis on city-region relation, nexus approach taking up climate and energy aspects
Salience of SUFSP topic	SUFSP as thematic issue present but few documents available	References are visible in strategic programmes, focus on network creation

discusses how TCNs connect the two global issues urbanisation and food.

4.1. SUFSPs understanding

Concerning the first research question – the overall SUFSP understanding –, the study finds similarities and differences between the two TCNs under analysis by comparing the identified elements of SUFSPs (see Table 1).

4.1.1. C40

C40's sustainability understanding emphasises action against climate change. The network's overarching goal is to limit temperature rise to 1.5 degree Celsius. The network aims to reach this goal by getting into action the so-called C40's mission, which is 'to halve the emissions of its member cities within a decade, while improving equity, building resilience and creating the conditions for everyone, everywhere, to thrive' (C40 2021, p. 4). According to C40, cites are critical actors for a 'climate safe future', since they can 'deliver around 40% of the savings needed to achieve the ambition of the Paris Agreement' (C40; Arup 2016, p. 7). Since an 'estimated 13% of cities' total greenhouse gas (GHG) emissions' are associated with food consumption (C40 2019), C40 considers sustainable urban food systems an important field for actions against climate change. Consequently, the sector Food Systems is one of the eight thematic policy sectors in which C40 clusters its actions. The network applies a systemic food system understanding with special attention to five focus areas: (i) food procurement (with a focus on public facilities such as school canteens and hospitals), (ii) food environment (with the aim to transform the social and physical environment that affects the types of food available within neighbourhoods, the affordability of food, and the nutrition information that people have access to), (iii) food waste, (iv) regenerative agriculture (aiming to increase food security, reduce production emissions and close yield gap), and (v) governance (support for cities to develop and implement food strategies) (C40 2023). Furthermore, in 2019, the C40 World Mayors Summit unanimously launched the Good Food Cities Declaration. Signing the declaration is voluntary for C40 member cities. However, the 16 cities that have signed the declaration so far commit to "work with our citizens to achieve a 'Planetary Health Diet' for all by 2030 (C40 2019). The Planetary Health Diet is a concept developed by the EAT-Lancet Commission and refers to a diet that is healthy for people (balanced and nutritious food) and the planet (reduced greenhouse gas emissions through food production and consumption) (C40 2019).[1] By signing the declaration, cities also commit to developing an action plan within two years to develop:

> "healthier and most sustainable food systems by implementing the following measures by 2030: (i) Aligning food procurement to the Planetary Health Diet, ideally sourced from organic agriculture (ii) supporting an overall increase of healthy plant-based food consumption cities by shifting away from unsustainable, unhealthy diets, (iii) reducing food loss and waste by 50% from a 2015 baseline. (C40 2019, p. 2)

To sum up, C40's understanding of sustainable urban food systems is strongly emphasised by the network's focus on climate actions. However, as the incorporation of the planetary health diet concept underlines, the network focuses also on health aspects of food systems. All in all, C40's understanding of sustainable food systems manifests as systemic with a special focus on climate and health aspects.

4.1.2. ICLEI

ICLEI's sustainability understanding builds on the 'goals and values laid out in the global sustainability agenda' (ICLEI 2018a, p. 2). In this regard, ICLEI strives for sustainability as a 'permanent framework, informing all development decisions' (ICLEI 2021b,

p. 35). ICLEI's work is centred on the question of how the local level can contribute to the SDGs and especially to sustainable urban development. Given this perspective, ICLEI views cities as complex systems with the potential to play a pivotal role in achieving sustainability by influencing both national and global levels. Food systems are approached from a systemic perspective, utilising a nexus approach, e.g. in activities related to the food-water-energy nexus or intersections of food systems, natural resources, and climate change (ICLEI 2018a). In the context of the Resilience Cities Congress Series, convened by ICLEI and the Federal City of Bonn, emphasis is put on city region food systems – as highlighted in the ICLEI Seoul Declaration (ICLEI 2015a; see also FAO, RUAF Foundation 2015; FAO 2016) – and on the issue of food waste (ICLEI 2019). In terms of food-related policies, ICLEI supports its members in developing individual food policies, offering information on best practices and success stories of food policy councils. ICLEI also provides policy guidance and advice, e.g. by a handbook and toolkit on circular food systems (ICLEI 2021a) and an implementation guide for improving the food-water-energy nexus by adopting green and blue infrastructure (De Macedo et al. 2022). ICLEI's food-related activities also encompass a variety of networks, partnerships and coalitions, often involving external partner organisations or other TCNs, such as C40 (e.g. ICLEI 2015a, p. 6, ICLEI 2021a, p. 116).

In sum, we find that the two TCNs under analysis slightly differ with regard to their respective viewpoints on the terms sustainability, urban and food systems. Put simply, C40 uses the climate lens, while ICLEI focuses on development. The foundational themes of each TCN influence their viewpoints on central terms and issues. Although it can be assumed that both TCNs focus on different aspects in the urbanisation-food nexus, we find a similar level of policy activity as well as similar topics.

4.2. Development and fostering of SUFSPs

Regarding the second research question – the development and fostering of SUFSPs by TCNs, the study shows that both networks use the three main functions of TCNs for SUFSPs (see Table 2). However, while both TCNs use the same measures and network functions to develop SUFSPs – such as partnerships, knowledge exchange and coalition building – their SUFSPs understanding builds on slightly different prioritisations.

Both TCNs under analysis have taken up issues related to SUFPs in the last decade. In 2016, C40 declared its intention to establish a new series of thematically focused sub-networks, including one dedicated to food systems (C40 2016). Furthermore, C40 announced to create this sub-network in partnership with the EAT Forum, a science-based global platform committed to transforming food systems. The official formation of the C40 Food System Network took place at the EAT Stockholm Food Forum in 2016 (EAT 2017, p. 20). After its formation, the food network grew rapidly and was the largest sub-network within C40 in 2018 with 41 members (EAT 2018, p. 22). The Food System Network is open to all interested C40 city members. Yet, there are so-called accelerator cities within the Food System Network, e.g. Barcelona, Los Angeles, Lima, and Guadalajara. These accelerators are highly engaged in the development and strengthening of SUFSPs and are also signatory cities of the aforementioned Good Food Cities Declaration. Accelerator cities commit to work together with 'residents to achieve a "Planetary Health Diet" for all by 2030, with balanced and nutritious food, reflective of the culture, geography, and demography of their residents' (C40 2025).

Already in 2013, *ICLEI* drew attention to the subject of urban food systems: The Bonn Declaration of Mayors, signed at the Resilient Cities Day – a global conference organised by ICLEI – calls 'for the development and implementation of holistic ecosystems-based approaches for city-region food systems that ensure food security'

Table 2. Development and fostering of SUFSPs by TCNs in relation to the three main functions of TCNs.

	C40	ICLEI
Communication and exchang among cities	Thematically sub-network, calls for engagement and research projects	Conferences and congress series leading to the foundation of a flagship program
Increasing cities' capacity	Best-practice and knowledge exchange	Best-practice and knowledge exchange, tools for guidance and advice
Articulating and representing cities concerns'	Partnerships among TCN members and external actors	Alliances with external actors

(ICLEI 2013, p. 1). Also in 2013, the Resilient Cities Congress series, organised by ICLEI, took up the topic of sustainable urban food systems in specific Urban Food Forums. The first forum laid the foundation for the CityFood network in cooperation with the RUAF Foundation (see below). The Seoul Plan, ICLEI (2015b, p. 5) strategic plan for 2015–2021, includes CityFood as an example of embracing new themes, initiating 'local action and cooperation on urban food and agriculture'.

In its latest strategic documents, ICLEI (2018a, 2021a) addresses urban food systems in four of five so-called thematic pathways: low emission development, nature-based development, circular development, and equitable and people centred development. The Montréal Action Plan (ICLEI 2018a) lists a number of entry points at which different members become active. On a global level, more than 20 members contribute to the entry point 'Food systems' that aims to 'promote food security, social inclusion, economic development and environmental resource management by combining networking with training, policy guidance and technical expertise on city-region food systems worldwide' (ICLEI 2018a, p. 60). Further related entry points in the action plan are 'Food systems, policy and advocacy', 'Food systems, water, energy' and 'Policy and advocacy, food systems'. The entry point concept intends to draw attention to important fields of action from which the network and its members can start to elaborate integrated solutions. An example illustrating the intended logic with regard to sustainable urban food systems can be found on ICLEI's *City Talk Blog* (ICLEI 2018b):

> City A has a thriving farmers market in the heart of the city center. The market is a draw for the 9 to 5 lunch crowd and increasingly so for tourists. The city recognises the financial and social potential of the market, but has never invested in it, and they have limited capacity to develop policies and light infrastructure to ensure it flourishes. ICLEI experts welcome this initiative as an entry point for a broader conversation on food systems and the role they play in a comprehensive urban sustainable development agenda.

The current Malmö Action Plan (ICLEI 2021b) no longer adheres to the entry point concept. Instead, each activity described in the action plan is linked to the specific SDGs to which the activities relate. In sum, 12 activities are connected to SDG 2 (zero hunger) and five to food systems.

4.2.1. Governance role: communication and exchange

C40 aims to find solutions for cities 'most pressing food challenges' (Watts 2016). One important means by which C40 aims to achieve this goal is through sharing 'information about new policies that enhance food security, enable local and low-carbon food production and distribution, advance food waste management solutions, and develop food systems options that result in carbon reductions and improved health equity' (Watts 2016). The C40 Food System Network is 'the key mechanism for support, for cities to engage with other global cities to share and learn from best practice solutions' (C40 2024, p. 38). Important tools are thematically focused working group meetings, workshops, and webinars that bring together technical staff from C40, other food policy experts and managers, municipal decision-makers, urban planners, etc (C40 2022, 2024). Another important instrument is the C40 Knowledge Hub. This hub is an online based library which offers policy briefs, spotlight series, best practice examples, etc., covering four food system related topics – building strategies towards sustainable food systems, food waste management, sustainable diets, and food production and distribution. Perhaps the most prominent and visible outcome of C40's communication and exchange efforts are the reports published in the context of C40 Good Food Cites Declaration (C40 2019, 2023). These reports show best practices from cities that have signed the declaration and provide information on the status of implementation of the individual local action plans.

The Urban Food Forums organised by *ICLEI*, which are described above, also served to share 'tools, resources and frameworks developed to support local and regional governments to identify challenges and opportunities to transition food systems towards sustainability' (ICLEI 2019). The CityFood Network in cooperation with the RUAF Foundation (see below), brings together practitioners and people engaged in policy development both from the Global North and South. Its activities also include exchanges and learning among cities as well as awareness raising. Learnings from the CityFood network as well as other best practices are presented in the 'City Practitioners Handbook: Circular Food Systems' (ICLEI 2021a). Celebrating its 10th anniversary in 2023, representatives from member

cities from Africa, Europe, and Latin America – Cape Town (South Africa), Curitiba (Brazil), New Haven (USA), and Torres Vedras (Portugal) – came together to discuss their strategies for transforming urban food systems in the context of the 'Daring Cities' convention in Bonn (ICLEI 2023b). Overall, ICLEI's main activities related to SUFSPs focus on CityFood, offering a framework for exchange and learning.

4.2.2. Governance role: capacity building and management

Beyond sharing information, *C40* aims to help cities formulating clear measures concerning sustainable food systems and to 'accelerate city action notably by strengthening engagement with research, business and technical support, including the development and implementation of metrics to track progress' (EAT 2017). Concerning the latter, development and implementation of metrics to track progresses, C40 has started to develop an integrated food system methodology to measure consumption-based emissions in the local food sector (EAT 2018). To implement the stated goals of the C40 Good Food City Declaration (aligning public food procurement to a Planetary Health Diet, shifting consumption patterns, reducing food waste), the signatory cities commit to develop local action plans (see above). These action plans can include measures such as trainings on sustainable food and sustainable food procurement, updating procurement guidelines considering aspects of a Planetary Health Diet, awareness campaigns aimed at different target groups (children, adolescents, adults, gastronomy, etc.), food waste reduction in public kitchens, and supporting access to healthy and local food via creating collective kitchens and social and solidarity grocery stores. Signatory cities are required to report on the progress of the measures every two years. According to the latest progress report, seven reporting cities have reduced their purchase of higher-emission foods (e.g. meat) by 19 % and increased the procurement of plant-based protein sources by 44% (C40 2024, p. 9). Besides progress, the report also points out hurdles in the implementation of the action plans. To overcome these hurdles, C40 develops and offers targeted measures (C40 2024, p. 38).

The already mentioned CityFood Network, led by *ICLEI* in cooperation with the RUAF Foundation, is a lighthouse example of the TCN's approach to sustainable food systems. Founded in 2017 with almost 30 active ICLEI members (Moragues-Faus 2021), the initiative provides technical assistance, policy guidance and training for its members to plan and design city food strategies (ICLEI, RUAF Foundation 2013). The set-up of the CityFood network was accompanied by a programme to support ICLEI's member cities in implementing resilient city-region food systems, the establishment of an annual urban agriculture summit, and the provision of online information material.

4.2.3. Governance role: articulating and representing

Concerning the governance role of articulating and representing cities' concerns in the international arena, C40 collaborates with different external partners, such as research institutes, international and society organisations, and other TCNs, to generate and disseminate knowledge as well as to formulate possible implications for city leaders and planners (UCCRN, C40, Acclimatise, Global Covenant of Mayors 2018, 2019). The collaboration with FAO and other TCNs to develop an urban food actions platform is one example of C40's global commitment in building SUFSPs. The platform, which was established in 2019 for a period of four years, had a particular focus on strengthening SUFSPs in cities of the Global South, for example through city-to-city exchanges, knowledge dissemination and practical trainings (FAO 2019b). Another example is the Transforming Urban Rural Food Systems Consortium (TURFS). Within TURFS C40 works together with various organisations, such as the Club of Rome, World Wild Fund for Nature (WWF) and EAT (TURFS 2023). A particular focus of TURFS is on strengthening cooperation between cities and their surrounding rural areas, with the aim of 'creating the conditions for systematic change'. The aim is to 'create the conditions for systematic change at national and global level while positively influencing all actors in the food system' (TURFS 2023, p. 17). For their activities to foster SUFPs C40 and the C40 Food System Network won the Food Planet Prize 2024, awarded by the Curt Bergfors Foundation and endowed with 2 million dollars (Curt Bergfors Foundation 2024).

ICLEI provides a formal cooperation with FAO and the Global Partnership on City Region Food Systems through the CityFood Network (ICLEI 2015b). Among the activities of this network is also lobbying at the international level. Another instance of ICLEI's involvement in global SUFSPs is its contribution to the

'Glasgow Food & Climate Declaration' in preparation of COP 26, with the objective of adding food systems to the official agenda and emphasising their significance in addressing climate change. The three main commitments of this declaration involve 'developing and implementing integrated food policies and strategies as key tools in the fight against climate change; [reducing] greenhouse gas (GHG) emissions from urban and regional food systems [and calling] on national governments to establish supportive and enabling policy frameworks and multiple-level and multi-actor governance mechanisms on food systems' (IPES-FOOD, Nourish Scotland 2020). To date, ICLEI's homepage lists eight activities related to the keywords 'food', 'food systems', 'food loss and waste', and 'food security', two of which are already completed (ICLEI 2024). This list includes a dialogue series on food systems in cities of Latin America in cooperation with FAO. Other activities relate to e.g. a conference on procurement practices, a campaign for a commitment to sustainable development and climate action for candidates of the Mexican elections, a project on strengthening African local fresh food markets, funded by the German Development Cooperation (GIZ). On the national and global level, ICLEI strategically allies with actors from the civil society and the private sector, governments, international organisations as well as financial and academic institutions. These activities can be seen in the context of the TCN's aim to 'push for robust policies that reflect the interests of local and regional governments and apply global policy to sustainable urban development strategies at the subnational level' (ICLEI 2023a).

All in all, C40 and ICLEI demonstrate substantial activity in the development of SUFSPs and support activities at local, national, regional and global levels. Concerning the governance role of communication an exchange, both TCNs provide knowledge tools, best practice examples, webinars and workshops and handbooks for their city members. With regard to the governance role of capacity building and management, C40 and ICLEI both develop and provide tools of technical assistance, e. g. process tracking systems. While ICLEI funds activities and provides a guide to find suitable climate financing tools (ICLEI 2020), there is no evidence suggesting that C40 provides similar direct financial assistance. Concerning the governance role of articulating and representing cities' concerns, both TCN engage in individual cooperation with global food governance actors like FAO, RUAF, the Club of Rome and the World Bank. Furthermore, C40 and ICLEI have been members of an informal urban food systems working group led by FAO and The Global Alliance for Improved Nutrition (GAIN) since 2020. This working group includes members from TCNs, UN institutions, non-governmental organisations, and academia and has been particularly active as the UFS Coalition in context of the 2021 UN Sustainable Food System Summit (UFS Coalition 2023a). In its declaration of engagement, the UFS Coalition (2022, p. 2) prioritises by 2026 to '[s]upport local and regional governments to engage in global policy debates' at the global level and to '[s]upport national, local and regional governments in meaningfully engaging with one another with the aim of harmonizing policies and programs related to food systems [including the] implementation of their national food systems pathways and other relevant agreements'. While there are no insights to the UFS Coalition's activities, its website (UFS Coalition 2023b) lists actions that include the key governance roles of TCNs, namely enhance dialogue and exchange, leverage financial resources, and advocate locally and globally. Furthermore, both TCNs report to a broader public, e.g. via strategic documents, policy papers and declarations.

5. Conclusion

Cities play a pivotal role in the sustainable transformation of food systems. However, they are not yet fully included in the development of related policies at the regional or national level. Hence, there is a need for transnational cooperation between cities. The creation and enhancement of synergies among cities, varying in size and geographical location, through TCNs emerge as a potent strategy to incorporate cities more integrally in the development of SUFSPs and thus in the solution of global challenges. Against this background, this study has shed light on an emerging field of transnational cooperation. It has explored how TCNs understand, develop and foster SUFSPs. We found that SUFSPs are an emerging field of activity in the two TCNs under analysis. C40 introduced the issue of food to its agenda in 2016, while ICLEI began to approach the topic in 2013. Since then, both TCNs have initiated and supported a number of related projects and actions. At the same time, slight differences regarding the SUFSPs understanding were

observed, which are likely to be rooted in the networks' self-understandings.

Our results point to a diverse and as yet largely untapped research agenda in political science. Regarding the internal mechanisms and decision-making processes in TCNs during the development and implementation of SUFSPs, it remains to be elucidated whether the development of SUFSPs predominantly adheres to a top-down agenda, or alternatively, if TCNs integrate inputs and conceptualisations regarding urban food system transformation from their members, allowing them to initiate the first step. In a complex world with complex global challenges, cities need to make their claims if they do not want to lose connection to global politics. While some cities seem to have taken up the task and actively engage in TCNs addressing SUFSPs – potential examples are Barcelona, Copenhagen, Medellin or Seoul – others face the risk of being left behind. At this point, we see mixed results with regards to the role of TCNs as change agents in food politics, whereas we also find lots of dynamics in the emerging field of the urbanisation-food nexus.

The realisation of equal participation and procedural legitimacy also necessitates further analysis. For instance, the ability of TCNs to ensure they represent all their members, both large cities and small-sized towns, and deal with diverging interests from member cities of the Global North and South should be taken into account. Furthermore, the question of an equal representation in SUFSPs development among cities from differing regions arises. With regards to more actively engaged cities, the role of cities assuming a forerunner position within the networks, capable of influencing or even directing internal discourses, are also aspects for future research.

Subsequent studies could also assess the democratic considerations of power and justice, potential representation discrepancies in SUFSPs development, and the negotiation of divergent interests within TCNs from cities of varying geographic and economic contexts. Are there cities strategically positioned within the networks, capable of influencing or even directing internal discourses in alignment with their interests?

Further research is imperative to ascertain whether the criticism levied at the independent political agency of TCNs in the realm of SUFSPs holds merit. This especially pertains to the external impact of TCNs in global food policy. Our analysis has revealed existing interactions between TCNs and other actors in SUFSPs development and implementation in the global arena. It remains to be explored to what extent specific procedures and influence distributions within TCNs might also impact the external articulation and representation of the concerns of (certain) cities in global politics, particularly in collaboration with other entities like international organisations.

Note

1. The declaration defines a ‚Planetary Health Diet" as follows: '*Planetary Health Diet' for all citizens by 2030*, with balanced and nutritious food providing up to 2,500 calories a day for all adults, not to exceed 16 kg of meat per person per year or ~300 g per week, and 90 kg of dairy per person per year or ~250 g per day, and low in ultra-processed food' (C40 2019).

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