



Amplifying actions for food system transformation: insights from the Stockholm region

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Abstract

Food is essential to people and is one of the main ways in which people are connected to the world's ecosystems. However, food systems often cause ecosystem degradation and produce ill-health, which has generated increasing calls to transform food systems to be more sustainable. The Swedish food system is currently undergoing substantial change. A varied set of local actors have created alternative sustainability initiatives that enact new ways of doing, thinking, and organizing. These actors can increase the transformative impact of their initiatives through multiple actions and a variety of amplification processes. We analyzed the actions adopted by 29 food initiatives active in the Stockholm region using information available online. We conducted 11 interviews to better understand the amplification processes of *speeding up* (i.e., accelerating impact), *scaling up* (i.e., influencing higher institutional levels), and *scaling deep* (i.e., changing values and mind-sets). Our results indicated that the initiatives mainly seek to *stabilize* and *grow* their impact while changing the awareness, values, and mind-sets of people concerning the food they consume (*scaling deep*). However, these approaches raise new questions about whether these actions subvert or reinforce current unsustainable and inequitable system dynamics. We suggest there are distinct steps that local and regional governments could take to support these local actors via collaborations with coordinated forms of initiatives, and fostering changes at the municipality level, but these steps require ongoing, adaptive approaches given the highly complex nature of transformative change and the risks of reinforcing current system dynamics.

Keywords Food systems · Sustainability transformations · Amplification · Scaling · Socia-Ecological systems · Innovations

Introduction

Transformations of food systems are required to address complex sustainability challenges, such as biodiversity loss and climate change (Rockström et al. 2016; Gordon et al. 2017; Springmann et al. 2018; Willett et al. 2019). Deliberate food system transformations can broadly be described as fundamentally realigning key interactions and feedbacks in food-related social-ecological systems towards sustainability (Gunderson and Holling 2002; Walker et al. 2004; Olsson et al. 2014). However, the complexity and inertia of food systems make fundamental changes difficult (Ericksen 2008a, b; Allen and Prospero 2016). A food system perspective recognizes the multiple types of actors, levels of governance, outcomes, and drivers of change that are relevant for food (Zurek et al. 2018), as well as relations and coordination among actors (Sonnino 2016). Food production is a major driver of global environmental change, generating 20–35% of greenhouse gas emissions (Vermeulen et al.

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2012; West et al. 2014) and driving the conversion of natural ecosystems to agricultural land (Foley et al. 2005). Food is argued to be a main lever to improve human health and environmental sustainability on Earth (Willett et al. 2019) and it is of growing relevance for politicians, civil-society, practitioners, and scholars. Recently, there is an increasing interest among politicians and scholars in the numerous sustainability initiatives that seek to foster change in food systems (Hermans et al. 2016; Guerrero Lara et al. 2019; Sellberg et al. 2020).

Sustainability initiatives play a crucial role in food system transformations if they provide alternative ways of doing, thinking, and organizing. These types of initiatives often emerge as a direct response to current patterns of unsustainable production and consumption (Guerrero Lara et al. 2019; Sellberg et al. 2020). Such initiatives vary in the problems they address and the approach they adopt. While the relative merits of specific approaches are debated (Born and Purcell 2006; Brunori et al. 2016), individual food system initiatives can either mutually reinforce one another to create alternative food systems that can challenge, alter, or replace incumbent and unsustainable food systems, or conversely, counter one another (Pereira et al. 2018; Sellberg et al. 2020). For decades, scholars have analyzed how local, bottom-up initiatives can potentially drive transformations towards sustainability (e.g., Westley et al. 2006; Westley et al. 2017; Hawken 2007; Hopkins 2008; Jiménez-Aceituno et al. 2020; Palomo et al. 2021). Transformations are often viewed as consisting of a preparation phase, a navigation phase, and a stabilization phase (Olsson et al. 2004; Moore et al. 2014). Research suggests that local, bottom-up initiatives are essential to the preparation phase of transformations, in which actors make sense of unsustainable trajectories, envision new innovations and visions for the future, and gather momentum around promising innovations by establishing “proto-regimes”, which are loosely integrating systems that have the potential to consolidate into a new regime (Gelcich et al. 2010; Moore et al. 2014; Moore 2017; Pereira et al. 2018). The preparation phase continues with a navigation phase in which proto-regimes are selected, tested, and adopted at broader meso- or macro-scales, and a consolidation phase in which proto-regimes are routinized, strengthened, and stabilized into a more defined regime (Moore et al. 2014). Building on this, we seek to examine the specific actions food initiatives take to amplify their impact to actually realize transformative change.

Previous scholarship has reviewed the range of processes described across the transformations literature about how initiatives can increase their impact (Lam et al. 2020). The subsequent typology described eight amplification processes, including actions that: (1) prolong the impact of initiatives (*stabilizing*), (2) accelerate the speed at which impact occurs (*speeding up*), (3) increase their impact range (*growing*), (4)

copy the same initiative to dissimilar contexts (*replicating*), (5) create new independent and adopted initiatives (*transferring*), (6) inspire other initiatives to use alike principles or values in dissimilar contexts (*spreading*), (7) influence higher institutional levels (*scaling up*), and (8) change values and mind-sets of people (*scaling deep*) (Lam et al. 2020). There is a sophisticated understanding of processes that lead to the consolidation of initiatives (i.e., *stabilizing*) and an increase in the number of initiatives (i.e., *growing*, *replicating*, *transferring*, and *spreading*). However, our understanding of how initiatives accelerate their impact (i.e., *speeding up*), influence higher institutional levels (i.e., *scaling up*), or change values and mind-sets (i.e., *scaling deep*) remains limited (Westley et al. 2014; Moore et al. 2015; Olsson et al. 2017; Pereira et al. 2018; Lam et al. 2020). For example, Olsson et al. (2017) argue that the literature needs to move beyond only discussing processes that increase the number of initiatives as this perspective reinforces a growth paradigm, and may invisibilize whether initiatives lose their “game changing” elements or be co-opted during growth processes (Avelino et al. 2017). Further, the literature highlights the relevance of altering institutional structures, and the norms, values and paradigms underpinning them but questions how to achieve this with an increased pace (Westley et al. 2014; Frantzeskaki et al. 2017; Loorbach et al. 2017; Horcea-Milcu et al. 2019; Augenstein et al. 2020).

This study investigated the actions employed by a variety of food initiatives to amplify their impact (i.e., amplification processes) in an urban context (Hölscher and Frantzeskaki 2021). We gathered and analyzed available online information about the amplification processes implemented by 29 food initiatives active in the Stockholm region in Sweden. Furthermore, we interviewed 11 food initiatives to generate an empirically grounded understanding of what they do to *speed up*, *scale up*, and *scale deep* as these processes are less understood but highlighted as important by recent research (Olsson 2017; Olsson et al. 2017; Gorissen et al. 2018). For example, sustainability transformations literature highlights the urgency to *speed up* (i.e., accelerate change), *scale up* (i.e., influence higher institutional levels), and *scale deep* (i.e., change values, mind-sets of people, norms, and paradigms) to cope with complex sustainability challenges (Olsson et al. 2017; Pereira et al. 2018; Herrfahrdt-Pähle et al. 2020; Lam et al. 2020). Thus, our research will contribute to an empirically grounded understanding of amplification processes applied by food initiatives in an urban context, especially for those processes that so far are fairly unexplored and of great urgency.

Case study: the Stockholm region

This study focuses on food initiatives in the Stockholm region, Sweden. Stockholm is an important market for producers in the region. The definition of the Stockholm region that we use in this study is used by local food governance actors (e.g., Länsstyrelsen Stockholm 2018) and is based on Eastern Sweden [NUTS1, see SCB (Statistics Sweden) (2008)] in the European regional division. This includes six counties covering 50,300 km² in the south-central part of Sweden. Along with the capital city Stockholm, the region also includes the cities of Uppsala, Västerås, Örebro, and Linköping. This region has approximately 4 million inhabitants, which corresponds to about 40% of the Swedish population (SCB 2008).

The Stockholm region is experiencing challenges that are similar to many other regions in Western Europe. In the more productive areas, agricultural production has become more intensified and specialized, in this case, primarily dominated by wheat and hay (Jordbruksverket 2018a). In more marginal lands, the trend is towards land abandonment and loss of semi-natural grasslands, such as pastures (Jordbruksverket 2018b), which are among the most species-rich nature types in Sweden and many other parts of Europe (Röös et al. 2014). This leads to a loss of diversity on the landscape level and of species (Björklund et al. 2009). Moreover, Sweden is not meeting its goals for healthy and sustainable diets with, for example, the consumption of red meat being furthest away from EAT-Lancet recommendations (Wood et al. 2019). Structural, political, and economic changes have made the country increasingly dependent on imported food and inputs and have created new vulnerabilities in the food system (Johansson 2005; Eriksson 2018).

At the same time, several conditions prime the Stockholm region for a transformation towards more sustainable food systems. Nordic countries have been identified as potential leaders for global food system change (Wood et al. 2019). For instance, a variety of innovative food initiatives have emerged to address different aspects of the challenges outlined above. Sellberg et al. (2020) identified five opportunities for expanding an emerging food proto-regime for sustainable and resilient food systems in the Stockholm region. First, “making use of favorable regional social-ecological conditions”, such as the high multifunctionality of ecosystem services (Queiroz et al. 2015) and the increasing interest of consumers in healthy and sustainable products (Länsstyrelsen Stockholm 2018). In addition, in a European context, the remoteness of the region and the proximity to urban centers make it less attractive for intensive industrial agriculture and open up opportunities for niche production (Wästfelt and Zhang 2016; Dubois 2019). Second, the potential for “agreeing on a broader vision of sustainable and resilient

food systems” across different parts of the food system. This vision includes increased self-sufficiency and access to local food, a vibrant and inclusive food sector and culture, nutrient-rich and less resource-intensive diets, and agriculture practices contributing to sustainability (Sellberg et al. 2020). Third, “connecting to macro-level narratives” by making use of the national context of relatively high environmental standards and increasing political attention to food systems. Food policy and planning has emerged over the past decades as an important governance area (Morgan 2013) and cities are becoming key spaces for change (Moragues-Faus and Morgan 2015). In Sweden, the recent national food strategy (Swedish Government 2017), and subsequent county-level food policies, have put food higher on the political agenda. Fourth, “using the leverage of key actors in between producers and consumers”, such as supermarkets, new types of local food markets, and chefs can have a large impact in directing change towards both sustainable diets and a vibrant regional food sector. Lastly, “incorporating change at the meso-scale”, such as the municipality level, because several of the municipalities in the region are quite ambitious when it comes to sustainable food (Sellberg et al. 2020). These municipalities are adopting practices that could spread to other municipalities and higher levels of governance. The opportunities identified by Sellberg et al. (2020) are tightly related to several of the amplification processes applied by our sample food initiatives from the Stockholm region. For example, they *transfer* ideas and practices between different regions, *scale up* sustainable ways of thinking, doing, and organizing to government representatives, or *grow* through the establishment of strategic partnerships.

Methods

Selection of food initiatives

The first step in selecting food initiatives in the Stockholm region (hereafter “food initiatives”) was to build on previous work in the region that involved a variety of food actors in a visioning workshop and survey (Stockholm Resilience Centre 2018; Sellberg et al. 2020). This work applied methods developed by the Seeds of Good Anthropocenes project (<https://goodanthropocenes.net>), identifying innovative food-related initiatives that are currently marginal, but might have the potential to catalyze broader transformative change of the food system under the proper conditions (Bennett et al. 2016; Pereira et al. 2018). We used this work to generate a first sample of 46 food initiatives from the 70 participants of the previous study. While most of the food initiatives were clearly based in the Stockholm region (as defined in the previous

section), some of them were more nationally and/or internationally oriented, but had an important presence in this region. In addition, some food initiatives were located in other Swedish regions, but had a regional branch office in the Stockholm region. One initiative was excluded for not meeting the previous criteria, resulting in a sample of 45 food initiatives.

Data collection

Despite the increasing recognition that local initiatives contribute to sustainability transformations (Bennett et al. 2016; Pereira et al. 2018), there is little empirical work that analyses these contributions. Furthermore, results from such empirical analyses are difficult to translate to other locations due to the specificity of their contexts and often a small sample of cases analyzed (Olsson et al. 2006, 2008; Biggs et al. 2010; Loorbach and Rotmans 2010). In September 2018, we collected information from the sample of 45 food initiatives to identify actions related to Lam et al.'s (2020) eight amplification processes. We analyzed a variety of online sources, including websites, reports, and scientific articles. From reports, we screened the summaries (if no summary existed, we screened the conclusion), and from scientific articles we screened the abstracts. If then the information was unclear, we read more in-depth or searched for more information and sources. Finally, 29 food initiatives were analyzed, as we excluded 16 initiatives that did not have sufficient online information available regarding the actions that amplify their impact (see Appendix I).

Between October and December 2018, we conducted open-ended interviews with a subset of 11 initiatives to obtain a deeper understanding of the specific actions carried out by the food initiatives to accelerate their impact (i.e., *speeding up*), influence higher institutional levels (i.e., *scaling up*), and change values or mind-sets (i.e., *scaling deep*). Previous work from our research group showed that the characterization of these three processes was especially challenging when using only written material, which was confirmed by the analysis of online information in this study. We selected our interviewees based on insights from previous research on innovative food initiatives in the region (Sellberg et al. 2020; Rööös et al. 2021), the results from our analysis of online information, and expert consultations within our research group. We looked for initiatives that: (1) would potentially provide us with in-depth information concerning *speeding up*, *scaling up*, and *scaling deep*; (2) included a diversity of actors (e.g., chefs, farmers, big and small food entrepreneurs) and topics (e.g., innovative farming and local food); and (3) were available for an interview. Ten of the 11 initiatives were part of our analysis of online sources. In addition, we interviewed a chef working with a novel initiative on sustainability gastronomy in the

Stockholm region (i.e., a live-in-lab for accelerated innovation within sustainable food and food industry) to assure the presence of this type of actor in our sample. This initiative was initially in the “excluded” cases, as it had not enough information available on its website. The selection of 11 initiatives was not intended to be statistically representative. Instead, we conducted a purposive sampling to select a diverse range of initiatives (White and Marsh 2006), following Guerrero Lara et al. (2019), who applied a similar purposive sampling strategy to identify initiatives in the Seeds of Good Anthropocenes database.

All interviews were conducted in English. We divided the interview guide into five questions: (1) when the initiative was founded; (2) what problem(s) the initiative addressed; (3) how the initiative created impact in the food system; (4) how the initiative amplified its impact within and beyond itself; and (5) what other actions the initiative had taken to increase its impact. When discussing impact, we asked the initiatives how, according to their own estimation and definition, they are creating change in the food system. We coded the initiatives self-stated information about how they are creating change into different amplification processes. We did not assess or verify the impact of the sustainability initiatives through triangulation. While such a project would be useful, it would require focusing on the food system rather than the initiatives and require longer timeframes given the length of time that transformation requires (Westley et al. 2017).

Interviews were recorded and transcribed. In addition, during the interview, a checklist with the different actions that amplify impact was used by the interviewer and notes were taken to clarify some of the responses and allow for new actions to emerge pertaining to amplification processes. Afterwards, we re-listened to the interviews to: (1) ensure that the coding (using the checklist) during the interview was correct; (2) ensure that no information was missed; and (3) collect a detailed explanation of the different actions (including the emergent ones). The coding was conducted by one person, but triangulated by the three lead authors of this paper in unclear cases.

Data analysis

Applying the amplification framework

We used Lam et al.'s (2020) amplification framework to guide coding and structure data into eight amplification processes (Fig. 1). We used this framework because it specifically focuses on the increase of impact from initiatives in urban and rural contexts, and integrates insights on amplification processes from different streams of transformation research (e.g., social-ecological transformations, or socio-technical transitions research). First, we defined eight







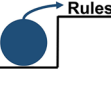

AMPLIFICATION PROCESSES & ACTIONS			
Categories	Processes	Analytical questions	Actions defined (* actions inductively generated during the data analysis; ** actions not found in the data)
Amplifying within an initiative	Stabilizing 	Does the initiative try to have longer impact?	<ul style="list-style-type: none"> • Building an organizational structure • Getting new partners • Getting new members • Optimizing resources • Looking for financial resources • Making members to stay longer • Adapting to the system dynamics*
	Speeding up 	Does the initiative try to have faster impact?	<ul style="list-style-type: none"> • Securing access to financial resources • <i>Increasing number of people involved**</i> • <i>Optimizing processes and efficiency**</i> • <i>Developing a work routine**</i> • <i>Setting clear goals and deadlines**</i> • Developing ready solutions or products* • Providing mentoring/consulting*
Amplifying out an initiative	Growing 	Does the initiative increase its impact range (in a similar context)?	<ul style="list-style-type: none"> • Reaching more people • Covering larger areas • Diversifying portfolio • Covering larger share of market
	Replicating 	Does the initiative replicate the existing initiative (in a dissimilar context)?	<ul style="list-style-type: none"> • Opening other local groups, entities, franchise in other locations
	Transferring 	Has the initiative been transferred to create a similar initiative (in a similar context)?	<ul style="list-style-type: none"> • Another independent initiative emerges with similar profile
	Spreading  Principles	Has the initiative spread principles or approaches to create a new initiative (in a dissimilar context)?	<ul style="list-style-type: none"> • Spreading principles/approaches to create a new initiative
Amplifying beyond an initiative	Scaling up  Rules	Does the initiative impact higher institutional levels?	<ul style="list-style-type: none"> • <i>Influencing rules and laws**</i> • <i>Influencing policy**</i> • Influencing dominant norms, customs, traditions, practices • Advocating/lobbying • Connecting across scales and engaging with key individuals
	Scaling deep  Values	Does the initiative impact values or mind-sets?	<ul style="list-style-type: none"> • Increasing awareness • <i>Fostering critical thinking**</i> • Creating a community of like-minded people (networking) • Reconnecting people to nature • Empowering people in risk of social exclusion • Integrating different kinds of knowledge

Fig. 1 Summary of the typology of amplification processes, analytical questions and specific actions applied by the initiatives

specific yes/no-questions related to the eight amplification processes (for a similar approach to operationalizing sustainability transformations frameworks, see Burgos-Ayala et al. (2020)). Second, we defined specific actions based on Lam et al.'s (2020) examples and definitions of the amplification processes and additional inputs from ongoing research of the Seeds of Good Anthropocenes project. Third, we validated the initial list of actions through an expert review with six experts in sustainability transformations from the Stockholm

Resilience Centre and Leuphana University Lüneburg, ending up with 29 actions (Fig. 1).

Content analysis

We used content analysis of the online documents and information collected during the interviews to identify and describe the different amplification processes carried out by the initiatives to increase their impact. Content analysis is

used to identify patterns and build valid inferences about their meaning (Riffe et al. 1998). It requires three main elements (White and Marsh 2006): (1) sampling units, which identify the population and establish the basis for sampling; (2) data collection units, namely, the components that make up a document, such as phrases, figures, photos, or tables; and (3) units of analysis. Table 1 summarizes these elements for both the desktop study and interviews.

For the amplification processes, we only coded actions that have actually been implemented by the initiatives to increase impact and for which we found evidence (in the online sources) or evidence was described (in the interviews), and no “envisioned or future” actions have been considered. In addition, the coding process allowed for the emergence of new categories of actions that were not initially considered when operationalizing the amplification framework.

Results

Our results combine the analysis of data gathered both through online sources and interviews. First, we provide an overview of the characteristics of the food initiatives included in the study using information from online sources (“[Main characteristics of the Stockholm food initiatives](#)”). Second, we synthesize the main findings in relation to the applied amplification processes using information from both the online sources and interviews (“[Applied amplification processes](#)”).

Main characteristics of the Stockholm food initiatives

Our analysis of online information revealed a wide variety of goals, focus, financing, structure, duration and character across the initiatives (Figs. 2 and 3). Three initiatives (10%) targeted the whole food chain, 15 initiatives (52%) focused mainly on aspects of food production, five (17%) on the distribution/market of food, five (17%) on the consumption of

food, and one initiative (3%) focused on the processing of food. They were mainly financed by their own commercial activities (14; 48%), privately (3; 10%), through member fees (6; 21%), and by European Commission funding (2; 7%). For two of the initiatives, it was not possible to establish their main source of funding. Twenty-one (72%) of these initiatives were business driven, five (17%) were grassroots initiatives, two (7%) were initiatives from foundations, and one (3%) was an initiative from a municipality. More than half of the initiatives (15) had been in existence for less than 4 years (initiatives in incubation phase), 31% (9) existed between 4 and 10 years (consolidated initiatives), and 17% (5) existed for more than 10 years (mature initiatives). Concerning their work, we characterized 19 (66%) initiatives as social-ecological, 8 (28%) as social-technical, 1 (3%) as social, and 1 (3%) as ecological. Their main topics focused on innovative farming practices (11; 38%), local food (10; 34%), ecosystems and biodiversity (5; 17%), gastronomy (5; 17%), sourcing (4; 14%), protein shift (2; 7%), and food waste (2; 7%) (Fig. 3).

Applied amplification processes

Overall, our analysis of online sources and interviews reveals that the food initiatives apply a variety of actions pertaining to amplification processes. Out of the 29 amplification-related actions initially defined (Fig. 1), 22 were implemented by the initiatives. None of the five actions for *speeding up* were identified in our analysis of online sources. Only the action of ‘securing access to financial resources’ was mentioned by one initiative in the interviews. Likewise, out of the five actions for *scaling up*, one was confirmed in both analyses (i.e., ‘advocating/lobbying’) and two only in the interviews (i.e., ‘influencing dominant norms’; and ‘engaging with key individuals’). These results confirmed the relevance of gathering additional information through interviews in the case of *speeding up* and *scaling up*. We found similar results for actions pertaining to *spreading*, which were only identified in the interviews. For the *scaling*

Table 1 Sampling units, data collection units, and units of analysis for the content analysis performed with the data collected by the desktop study and interviews

	Desktop study	Interviews
Sampling units	29 food initiatives	11 purposively selected food initiatives
Data collection units	Phrases, figures, photos, or tables containing relevant information about the initiatives on their websites and related popular and scientific articles	Coded information from a checklist with the 29 actions pertaining to amplification processes filled during the interview; notes taken during the interview; interview text (partially transcribed)
Units of analysis	29 amplification actions (Fig. 1)	29 amplification actions, with a focus on the 16 actions pertaining to <i>speeding up</i> , <i>scaling up</i> , and <i>scaling deep</i> (Fig. 1)

Fig. 2 Summary of main characteristics of the food initiatives: food chain focus, main funding sources, organizational type, age, and type of initiative

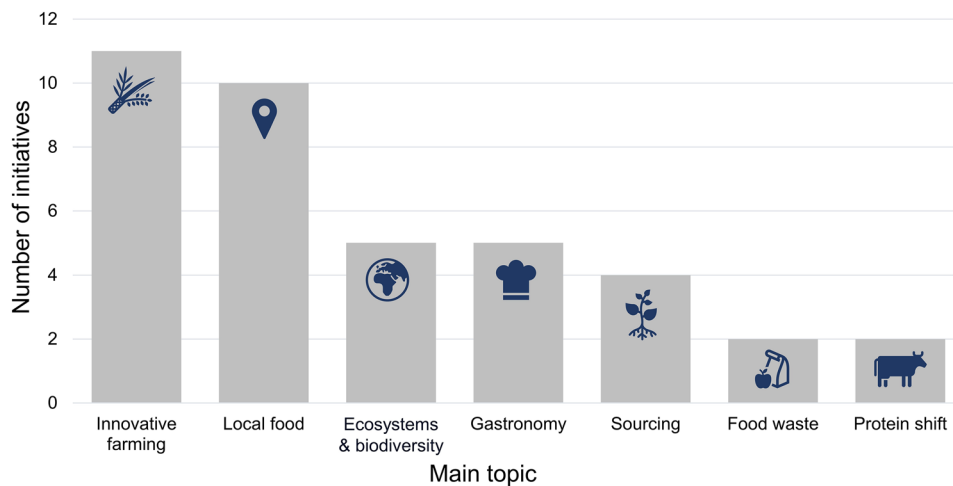
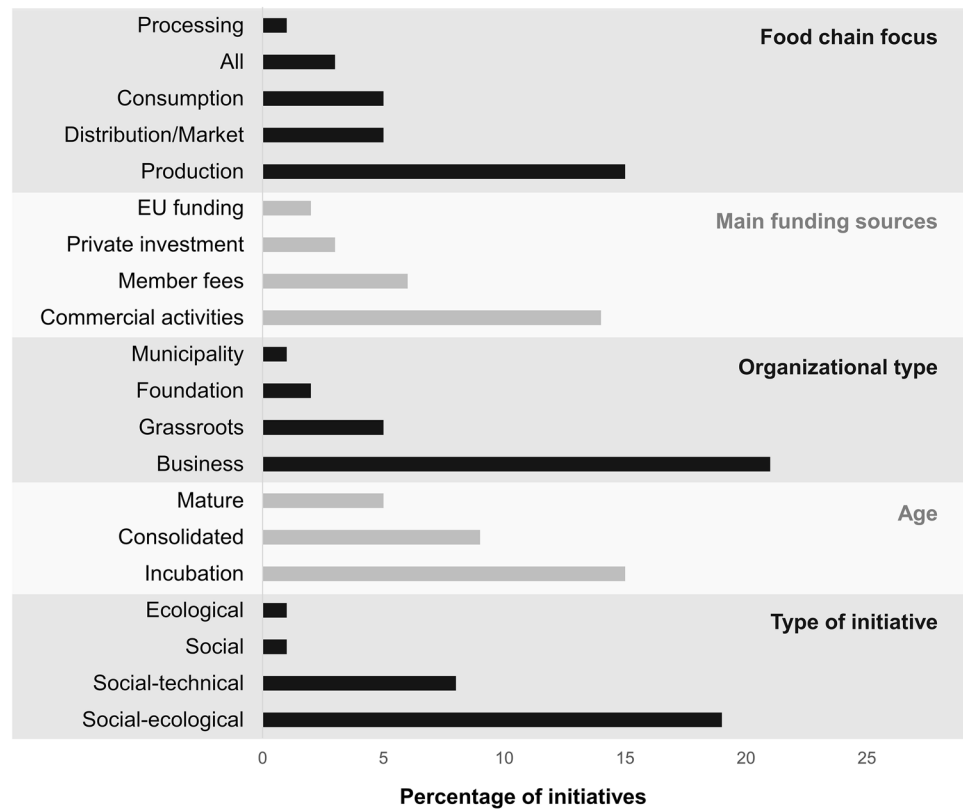


Fig. 3 Main topics addressed by the food initiatives (icons retrieved from PowerPoint). Each initiative can focus on different topics. Innovative farming: initiatives implementing farming practices that are currently not wide-spread, e.g., permaculture practices, community-supported agriculture or vertical farming. Local food: initiatives producing and distributing food at local scales. Ecosystems and biodi-

versity: initiatives with a specific focus on conservation. Gastronomy: initiatives selling cooked food, e.g., restaurants or catering. Sourcing: initiatives focusing on shortening the food chain. Food waste: initiatives seeking to reduce the waste generated in relation to food, e.g., using rescued food from grocery stores. Protein shift: initiatives seeking to reduce the consumption of animal-based products

deep process, many of the actions identified through both analyses were related to raising awareness. Our results also revealed two new emergent actions for *speeding up*, ‘developing ready solutions and products’, and ‘providing

mentoring/consulting’. For the *stabilizing* process, a new action also emerged, ‘adapting to the system dynamics’. See Fig. 1 for the complete list of actions: initially defined, emergent from the analysis, and not found in the data.

Amplification actions from online sources

The analysis of online sources shows that food initiatives in the Stockholm region use actions across all amplification processes, except for *spreading*, in order to amplify their impact (Fig. 4).

Frequently implemented actions: stabilizing, growing and scaling deep *Stabilizing* actions that prolonged and consolidated an initiative's impact were used by sixteen initiatives (55%). Ten of these initiatives sought to 'get new members' for their initiatives and six 'looked for financial resources'. To 'get new members', for instance, the community-supported agricultural initiative F1 offered the possibility of becoming a farm unit holder by buying shares from the farmer in advance to receive part of the harvest in return. To 'look for financial resources', some initiatives had membership systems that included the payment of membership fees (Appendix II for quotes).

Other mechanisms to 'get financial resources' were to search for sponsors and donors (e.g., F3 a beekeeping initiative), or to use funding platforms (e.g., F4 used the funding platform Kickstarter). Moreover, three initiatives tried to 'get new partners' to stabilize their initiatives through an expanded network, such as the network of restaurants of F5. A few initiatives applied other actions to prolong the impact of their initiatives. For example, the permaculture initiative F6 sought to 'make their members stay longer', by offering a more committed membership that allows members to actively contribute to the initiative's design and planning and compels them to work in the initiative a certain number of hours a month (Appendix II for quotes).

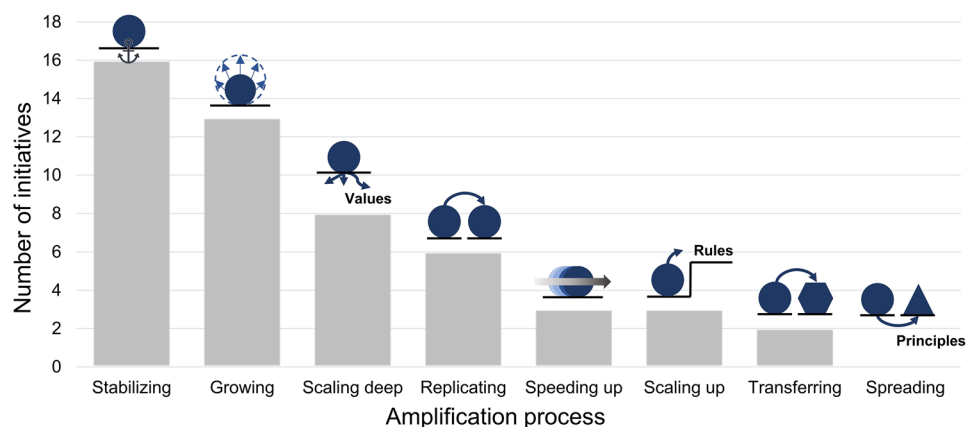
Other stabilizing actions were revealed by F7, which dealt with the challenge of delivering food from chefs working from home to consumers. It 'adapted to the system dynamics' by creating a catering service, which—by securing a certain number of portions per travel and grouping different chefs together—'optimized the delivery activity' to make

it viable from an economic perspective. This initiative also used event catering as a way to 'build their organizational structure', by explaining their new business model to chefs and customers alike.

Growing actions that increase their impact were used by thirteen initiatives (45%). Six of these initiatives sought to 'cover larger areas' by selling their products in more regions. Three initiatives sought to 'reach more users', for example F8 was able to grow the users of their food app up to more than 300,000 users. Two initiatives 'diversified their portfolio', such as F9 who offered a wide range of algae-based products (e.g., tea, dietary supplements, sun-soaked algae sprinkles). Six initiatives increased 'market shares'. For example F10, an initiative that created a meal that contains new, sustainable, and healthy foods developed in collaboration between a municipality and local food companies, was able to distribute the meal to approximately 90 municipal kitchens (e.g., schools, preschools, or museums), and the initiative used strategic partnerships at the wholesale level to reach a broad market.

Scaling deep actions that influence values and mind-sets of people were used by eight initiatives (28%). Six initiatives raised 'awareness' about (un)sustainable food issues. Examples of how this was done include: having conversations on food issues with people visiting projects for longer or shorter moments (e.g., cooperative agriculture initiative F11), fostering consumers' experiential learning by working in the permaculture gardens of F6 or on farms that do community-supported agriculture (e.g., F12), and promoting more sustainable diets among their consumers (e.g., F13) (Appendix II for quotes). Simply increasing awareness will not translate to transformative action however. Therefore, through practical work and direct contact with nature's processes, some initiatives also seek to 'reconnect people to nature' (e.g., F4 promotes growing food in people's homes), 'integrate different kinds of knowledge' (e.g., F6's food growing activities promote knowledge dissemination and production between project members, experts, and people

Fig. 4 Number of initiatives implementing actions pertaining to the eight amplification processes (Lam et al. 2020). Results are from the desktop analysis



with experience), and ‘create a community of like-minded people’ (e.g., F11) (Appendix II for quotes) for longer-term connection and emergent initiatives. In addition, two initiatives encouraged their users to reflect on how their choices can break cultural stereotypes, create jobs and ‘empower disadvantaged minorities’. For instance, the community-supported agriculture initiative F12 seeks to empower local small-scale farmers, and the catering initiative F7 involves immigrants who cook and sell their traditional food.

Other implemented actions *Replicating* actions that reach more people and places by ‘opening new entities’ were used by six initiatives (21%). To increase their impact, initiatives opened new groups, offices, or franchises in other places that belong to their own initiative (e.g., F2). Most of these initiatives sought to reach out to other cities or countries. For example, F13, a Swedish originated initiative opened offices internationally in England, Germany, and China.

Speeding up actions to accelerate impact were used by three initiatives (10%). These initiatives focused on catalyzing the impact of other people or initiatives, to foster a broader transformation of the food system. For instance, F14 was a test-farm, which ‘developed ready solutions’ for identified problems for farmers to use on their farms when producing food in sustainable ways. F15 provided ‘mentorship and consultation’ programs in which other food initiatives got access to crowdfunding possibilities, relevant knowledge and expertise, networks, and general support (Appendix II for quotes).

Scaling up actions to influence higher institutional levels were used by three initiatives (10%). These initiatives ‘lobbied’ for their respective issues by having ongoing dialogues with government representatives. For example, F13 invited politicians to visit their factories that produce plant-based products and participated in seminars both in parliament and government offices where opportunities for sustainable food production and consumption were discussed (Appendix II for quotes).

Transferring actions to inspire other people to create new but similar initiatives in other places appear to have been used by two initiatives (7%). These two initiatives were among the first community-supported agriculture projects in Sweden (F11 and F12). Although we could not find evidence of active actions towards the creation of new community-supported agriculture projects, their mere existence may have served as an example for later founded community-supported agriculture projects in Sweden to produce and consume food differently by sharing risks among all parties involved (Appendix II for quotes).

Speeding up, scaling up and scaling deep actions from the interviews

Speeding up *Speeding up* actions that accelerate impact were mentioned by five of the eleven interviewees. For

instance, F3 and F14 ‘developed ready-to-use solutions (e.g., biodiversity measurement tools) and products (e.g., seeds for farmers to grow feed)’ that can be quickly implemented by farmers, businesses, or authorities. Instead of accelerating the impact of their own initiatives, these two initiatives drew on their own experiences to support other people, initiatives, institutions, or authorities to accelerate their processes (Appendix II for quotes). Rather than being approached by people who needed support, they actively contacted farmers or authorities they wanted to support. For example, F3 worked as an accelerator by developing a set of practices that can be used and implemented by the agricultural department to increase the number of feeding habitats for wild bees on agricultural land. For this purpose, they developed and tested the idea of planting stripes with wildflowers along agricultural fields so that wild bees can feed on them. Wildflowers produce different types of pollen and nectar which commonly cannot be found in high-productivity agricultural landscapes.

Two initiatives ‘provided mentoring’ to support others to implement change, find access to funding, and further develop their initiatives (Appendix II for quotes). The initiative F16 (i.e., a network of Swedish food-related actors from farm to fork) mentioned that ‘access to financial resources’ helped them run projects faster by providing rapid access to markets. Thus, access to the financial resources of Swedish feed companies in the network of F16 allowed them to take action and pay an external party for the assessment and verification of the sustainability of an external market. It was a way to drive change because they could quickly move to this new, sustainable market. Previously, they first had to discuss who would fund this and this would prolong the process.

Scaling up *Scaling up* actions that influence rules and higher institutional levels were mentioned by eight of the eleven interviewees. Five of them did ‘advocacy work and lobbied’ to influence social-economic and political systems or institutions to get support for their work. For instance, meeting with politicians, inviting them to visit their initiatives (e.g., farm), and presenting to them ready sustainability solutions that could be rolled out (Appendix II for quotes). F3 heard that politicians were planning to make an inventory of insects in the city. They met these politicians and presented them their study in which they inventoried insects. Another example is from F17, an organic farmer, who met policy makers, used the opportunity to urge them to take action in transforming the current food system, and informed them about how current legislations (e.g., European Common Agricultural Policy) were constraining change towards a sustainable food system.

Along with advocacy work and lobbying on their own, five initiatives ‘collaborated with other initiatives and relevant actors to talk with politicians and increase pressure

on other actors of the food system’, such as suppliers. For example, F17 teamed up with processing companies, retailers and researchers with whom they shared common interests to inform and lobby more effectively in the media about the needs of sustainable food systems. F18 offers a catering and restaurant service using ingredients from rescued food waste. They are in contact with other initiatives in our sample, and together, they are striving for the same goals, inspiring each other and sharing ideas, generating an “exponential positive vibe for all different directions, with more and more people getting aware” (Interview with F18). Another example is from F14, who facilitated a dialogue with farmers, wholesalers, companies, researchers, and authorities to overcome the issue of denying or pointing at individual responsibilities when fostering sustainable food systems (Appendix II for quotes).

Three initiatives also tried to directly ‘influence dominant norms, practices, or technologies’. For instance, F19 is a chef who influenced the evaluation criteria of the ‘Årets kock’ (Chef of the year) award to implement sustainability as an additional evaluation criteria. This award is an important reference that guided the restaurant scene and consequently could potentially influence the whole sector. In comparison, F14 influenced dominant technologies by being a forerunner (e.g., developing new solutions such as plant-based non-processed meat substitutes and showing that they are well received within gastronomy and by consumers) and nudging the industry to invest more in food development and research.

Scaling deep Actions that aimed to influence values and mind-sets were mentioned by eight of the eleven interviewees. Eight initiatives inform and seek to ‘increase awareness’ about food-related issues. They share information through seminars, lectures, social media channels, websites, and in direct dialogs with people in farms, gardens, point-of-sales, events, restaurants, or schools. For instance, F17 gave lectures about planetary stewardship by farmers and food transformations at agricultural schools and high schools. F17 also gave talks at the Swedish Board of Agriculture and showed a practical example of how a Swedish farm can diversify and transform from producing only (lamb) meat to growing increasingly plant-based proteins. Besides this more formal way of sharing information via lectures and talks, some initiatives pursued more embodied, practical ways of ‘learning-by-doing-or-seeing’, such as working on farms or in permaculture gardens (Appendix II for quotes). Initiatives claimed this awareness raising was important to transmit a vision and inspire sustainable food production and consumption, but there were no data that indicated how or whether this will accumulate sufficiently to truly *scale deep* and create a paradigm shift in the food system.

Four initiatives specifically sought to connect diverse actors of the food system (e.g., from producer to consumer) to ‘create a community of like-minded people’. For example, F15 organized big events to provide space and time to set up collaborations and to share knowledge and spirit in order to inspire and find sustainable alternatives for the current food system. Often the initiatives built a community consisting of very diverse stakeholders where the values or vision were the connecting factor (Appendix II for quotes).

Through activities such as nature walks or practical work on farms or in gardens, three initiatives also sought to ‘reconnect people—especially from cities—with nature’ and the way their food is produced. For example, the permaculture urban garden F6 gave people the opportunity to grow and harvest food themselves, thus reconnecting them with nature’s processes. Such a place in the middle of a big city reminded people how food is produced, in a context in which cities are disconnected from food production. In this way, F6 also fostered critical thinking by providing a space where people can question the current food system and explore alternative ways of consuming food (Appendix II for quotes).

Discussion

An emerging alternative food proto-regime seeking to stabilize and grow while changing values

The food initiatives we analyzed in the Stockholm region are mainly businesses or grassroots initiatives following social-ecological or social-technical approaches to foster change in the food system (Fig. 2). While we did not assess their specific sustainability impact, they intend to provide alternative solutions (e.g., innovative farming practices, and local food sourcing; Fig. 3) that, under the right conditions, could foster the transformation of the incumbent and unsustainable food regime in place. The initiatives are mainly engaging in three amplification processes to increase their impact: *stabilizing* (i.e., prolonging their existence), *growing* (i.e., expanding their impact range), and *scaling deep* (i.e., seeking to change the values and mind-sets of people concerning food).

To *stabilize*, food initiatives often search for new people to join or support them (e.g., to jointly grow vegetables), to provide financial resources (e.g., as members, donors), and to recruit new partners for collaborations (e.g., sustainable restaurant network). These actions enable initiatives to become more resilient to challenges so that they do not collapse in their first years (Chatterton and Pickerill 2010; Gorissen et al. 2018). This basic level of stability or resilience for the initiatives is needed but challenging, given that initiatives need to both persist while not fundamentally adapting to, or being co-opted by the existing system, i.e.,

keeping the potential disruptive capacities (Hargreaves et al. 2013; Gorissen et al. 2018). The mere existence and survival of initiatives though makes the possibility of alternative types of food systems visible as they show their own vision of a future society through their actions and practices (Gibson-Graham 2006; Monticelli 2018).

To *grow*, initiatives try to reach more people, cover larger areas, or increase market share. They generate alternative ways of producing and consuming food at the micro-scale with the intent to increase the number of people with access to sustainable food solutions, services, or products, which in turn potentially contributes to the further development of the emerging sustainable food proto-regime (see also ‘niche-regime development’, Smith and Raven 2012; Hargreaves et al. 2013). However, there are some issues to consider linked to *growing* actions. First, literature on the amplification and scaling of initiatives highlights that some initiatives (e.g., grassroots initiatives) do not seek to *grow* (Hargreaves et al. 2013; Augenstein et al. 2020). They want to retain their place-based, unique, and personal character, which they could lose by *growing* (Augenstein et al. 2020). In our sample, we had predominantly business-oriented initiatives, which may explain the dominance of this amplification process in our results. Second, there are different ways of *growing*. Chatterton and Pickerill (2010) differentiate between quantitative growth (i.e., *growing* in size and number) and qualitative growth (i.e., *growing* personal relationships and self-organization developed among its members), both of which were observed in different initiatives. Although beyond the scope of this paper, further research on this amplification process should look into the possible trade-offs between quantitative and qualitative *growth*. For example, the hierarchical and quantitative growth of an initiative may compromise the qualitative growth of relationships and self-organization among its members (Juris 2008; Chatterton and Pickerill 2010). The cultivation of relationships, solidarity, and emancipatory practices within an initiative, addresses not only what should be achieved, but also how it can be achieved, thereby paying greater attention to the processes underlying transformations towards sustainability and the type of society we want to live in. Third, there is a tension in pursuing *growing* because it merely mimics the dominant growth paradigm that some initiatives criticized as being responsible for contemporary sustainability problems (Olsson et al. 2017; Lam et al. 2020). While initiatives seek to *grow* in order to foster sustainability in the food system and to avoid a “chronic poverty trap”, the emphasis that these initiatives place on selling products or services instead showed them engaging with, and actively reproducing, the dominant market dynamics that some initiatives initially criticized or attempted to avoid (Shove 2012; Turnheim and Geels 2012, 2013).

Along with *stabilizing* and *growing* actions, food initiatives also try to *scale deep*. In this study, initiatives focused on changing the values or mind-sets of people concerning sustainable food production and consumption, but did not directly try to change the broader paradigms, institutional cultures, or worldviews dominating global food systems. They inform people about unsustainable production and consumption of food to increase awareness. For example, they discuss the advantages of supporting small-scale organic food producers, or provide experiences through practical work on farms that do community-supported agriculture. In this way the initiatives seek to influence how people are locally connected to their food, with the hope this may have an influence on their values and mind-sets (Moore et al. 2015; Bennett et al. 2016; Horcea-Milcu et al. 2019) (see “Advancing our understanding of how *speeding up*, *scaling up*, and *scaling deep* contribute to proto-regime building during the preparation phase” for a detailed discussion on influencing values to transform). These results portray a focus on developing new practices and tangible strategies of surviving and growing in size among the food initiatives in the Stockholm region while also spending efforts to change values, which may be a deeper and more powerful area of intervention, albeit a difficult one to realize and assess (Abson et al. 2017).

The focus of our initiatives on *stabilizing*, *growing*, and *scaling deep* indicates that the transformation of the food system in the Stockholm region is still in the initial preparation phase of a transformation (Olsson et al. 2004; Pereira et al. 2018; Sellberg et al. 2020; Herrfahrdt-Pähle et al. 2020; Folke et al. 2021). If they can become more connected and organized, they may begin to form a proto-regime at the micro-scale that can potentially get institutionalized at the meso-scale if possibilities open up (Geels 2002; Olsson et al. 2004; Pereira et al. 2018; Herrfahrdt-Pähle et al. 2020). Actions to *stabilize* are important when new regimes get institutionalized during the consolidation phase (Moore et al. 2014), and actions to *stabilize* are important during the preparation phase in which initiatives increase their resilience and robustness, while gathering momentum and networks around new ideas and being ready for opportunities for change.

Advancing our understanding of how *speeding up*, *scaling up*, and *scaling deep* contribute to proto-regime building during the preparation phase

Our results indicate that initiatives do at least three actions to *speed up* impact. First, securing access to financial resources to accelerate the building of the initiative. This could be important when enough alternative initiatives create a proto-regime. This pattern reinforces findings by Guerrero Lara et

al. (2019) who highlight access to large financial resources as an enabling factor for quickly implementing sustainability projects and initiatives to change the agri-food system in Spain. Second, initiatives catalyze the impact of other initiatives to support the proto-regime building. They provide mentorship and access to funding, knowledge, expertise, networks, and general support for other initiatives with whom they share a similar vision for the food system in Stockholm. This creates a network of support, which ultimately contributes to gathering of momentum for change and mobilization of diverse initiatives emerging at the micro-scale, and specifically indicates they are thinking about systemic change rather than focusing only on their own initiative (Moore et al. 2014). Third, initiatives develop ready solutions, services, or products that can be used by, for instance, farmers or municipalities. This contributes to a faster proto-regime building because innovative ways of doing, thinking, and organizing are shared among actors with similar aims. Surprisingly, initiatives do not only *speed up* their own internal organizational and project implementation processes (Gismondi et al. 2015; Rosenthal et al. 2017), but in doing so, may catalyze the proto-regime building through supporting and collaborating with other initiatives.

To *scale up*, initiatives conduct a variety of actions. They dialogue and meet with government representatives, either at parliaments, municipalities, or their initiatives (e.g., farms, factories) to influence social-economic and political systems. They collaborate with other like-minded people and initiatives to put pressure on key actors of the local food system, such as politicians or suppliers. They also try to directly change dominant practices (e.g., integrating sustainability as an evaluation criteria for food-related awards) and technologies (e.g., by being a forerunner). All these actions potentially create more momentum for change during the preparation phase, and indicate first actions pertaining to the consolidation phase of a transformation because the initiatives seek to strengthen cross-scale relationships and legitimize alternatives as a proto-regime (Moore et al. 2014). Moore et al. (2015) have found similar actions conducted by social non-governmental organizations to impact law and policy. Such actions could potentially influence the dominant unsustainable food regime by aligning old and new ways of thinking, doing, and organizing by embedding them into regional governance patterns (Ehnert et al. 2018; Loorbach et al. 2020). In this way, the work from the food initiatives potentially gets formalized and diffused by aligning the efforts, strategies, and agendas of the initiatives and the local government across scales (Frantzeskaki et al. 2017). But also, by having individual and collective dialogues on food-related issues with politicians and municipalities, the initiatives strategically shape their context to be more sustainable and supportive (Moss et al. 2015). However, the data at this time do not point clearly to evidence that the regime level is

actively trying to scale initiatives to transform the way the rules, regulations, and policies are designed and governing the system.

To *scale deep*, initiatives conducted a broad set of actions. However, despite the recognized importance of values and mind-sets of people as a powerful leverage point to foster transformative change (Seidl et al. 2013; Nyborg et al. 2016; Abson et al. 2017), value change is difficult to capture (Horcea-Milcu et al. 2019). Changing values of people through actions as a means to foster transformative change is about activating (Raymond and Raymond 2019), nurturing, and shifting beliefs; more precisely transcendental values, which are “held, first-order preferences—that transcend specific situations and guide selection or evaluation of behavior and events” (Brown 1984; Horcea-Milcu et al. 2019). To achieve this, initiatives in the Stockholm region raise awareness about food-related issues (e.g., giving lectures, seminars on local and organic food), reconnect people to how their food is grown (e.g., working on farms), and connect like-minded people (e.g., jointly working in initiatives). Such actions may potentially activate, nurture, or shift the values of people toward more sustainable food systems (Moore et al. 2015; Bennett et al. 2016; Horcea-Milcu et al. 2019). In addition, they integrate different kinds of knowledge (e.g., practical and scientific knowledge concerning food), and empower small-scale food producers (e.g., farmers), which can foster new mind-sets concerning food (Abson et al. 2017; Fischer and Riechers 2019). These actions are practically in line with Moore et al.’s (2015) understanding of *scaling deep*, which highlights the importance of shifting people’s narratives and fostering learning to achieve transformative change, but do still miss other important dynamics shaping broader paradigms, institutional logics, and dominant norms. During the preparation phase, such actions potentially influence the values and mind-sets of people on the micro-level as well as the meta-narratives on the macro-level (Benessaiah and Eakin 2021), which ultimately may shift cultures and social structures (Moore et al. 2015). Previous research from Kristianstads Vattenrike in Sweden demonstrated how a key political leader changed his view on the surrounding wetlands from regarding them as “waterlogged” to “water-rich” (from “vattensjukt till vattenrikt”) after talking with local niche actors (Olsson et al. 2004; Hahn et al. 2006), which triggered regime-level changes. The rationale is that values (i.e., transcendental values) and mind-sets underpin the behavior of individuals and at the collective level “the societal paradigms from which institutions, rules, and norms emerge” (Horcea-Milcu et al. 2019, p. 1431). A previous study in the Stockholm region found that among food initiatives in the region views differ regarding localization of food systems and the need to increase production; however,

there was surprisingly high agreement around issues such as the need for low carbon agriculture, the need to close loops of nutrients, and diversifying agricultural production (Sellberg et al. 2020). Such areas of agreement could help formulate shared objectives and narratives.

The role of local and regional government in enabling the emerging food proto-regime

Cities and local governments are becoming increasingly engaged in food governance (Sibbing et al. 2021; Zerbian and de Luis Romero 2021). In the Stockholm region, local and county-level government actors can play a key role in interacting with and strengthening the emerging food proto-regime. First, county governments and administrative boards could collaborate with “coordinated forms of initiatives”, such as networks or bridging organizations, to shape the implementation of the county-level food strategies so that they enable the amplification of initiatives and expand the food proto-regime (Sellberg et al. 2020). County-level food strategies are new in the region and the impact they will have on the food system is still unclear. This presents a possible opportunity for initiatives to connect with them and shape their implementation. Measures to implement the food strategies, such as strategic collaborations, financial support and capacity building efforts could be designed in a way that enable initiatives to increase their impact. This would contribute to the building of momentum that characterizes the preparation phase of a system transformation (Moore et al. 2014). In our study, we have examples of initiatives influencing policy (i.e., *scaling up*), but we do not know the extent to which they participated in the development of county-level food strategies. We hypothesize that many small-scale actors would lack the capacity to participate in policy processes and have to focus on *stabilizing* their initiatives, rather than on lobbying, advocating, or participating in consultation. They could further strengthen their impact by organizing, for instance, in networks, associations, and bridging organizations (Crona and Parker 2012). The EU-funded project MatLust is one example of a bridging actor that reaches out to numerous small and middle scale food companies in the region. Such bridging actors could become key collaborating partners with the food strategy coordinators and contribute to shaping how the recently decided county-level food policies are being implemented. These partnerships could help the coordinators (usually civil servants at the county government or administrative board) to better understand how they can amplify the impact of the food initiatives and strengthen enabling conditions, rather than dampening or hindering them.

Second, changes could be incorporated at the municipality-level that support the initiatives. In Sellberg et al.’s (2020) study, municipalities received the highest score in

terms of the perceived opportunity for change among different levels of governance. Our results also show examples of how initiatives were supported by the municipality through access to land to cultivate (e.g., F6), and through using public school meals to make eco-gastronomy appealing and available for a broader group of people (e.g., F10). Swedish municipalities are responsible for many areas that directly or indirectly influence food systems, such as public meals in schools and elderly care, food waste, drinking water, food safety controls, and spatial planning. Larger or ambitious municipalities in the Stockholm region have changed policy, organization, and physical infrastructure to shift towards sustainable and healthy diets (Södertälje municipality) or a local circular economy (Eskilstuna municipality). However, we argue that a lot of the potential impact of Swedish municipalities to support sustainable food initiatives has not yet been realized because their work is still compartmentalized across different municipal departments and has been concentrated in a few, more resourceful municipalities. A similar situation has been observed in municipalities in the Netherlands, where integration of food across policy sectors is limited (Sibbing et al. 2021). Municipalities could take an integrated and strategic approach to food systems by coordinating across their different functions, such as Södertälje’s local food strategy. County governance actors could support the municipalities, spread lessons and tools, and particularly support the municipalities with less capacity to ensure that they are not left behind.

Reflections: dilemmas of amplifying, how to amplify, and inclusivity

We share three reflections on how our work with food initiatives in the Stockholm region contributes to sustainability transformation and amplification theory. First, while amplification is recognized as a key aspect of transformative change among scholars, practitioners, and policy makers (Leach et al. 2012; Lam et al. 2020), the concept of amplification is complicated. While amplification is essential to sustainability transformations, the process of amplification can dilute or destroy the essential identity of initiatives resulting in non-transformative change. This leads some initiatives to shun opportunities for amplification (Augenstein et al. 2020). Understanding the role of amplification in successful and unsuccessful cases needs more work that addresses how amplification processes can be better conceptualized, measured, and compared. Future research should investigate the specific role of amplification processes during the preparation, navigation, and consolidation phases of a transformation in order to understand their specific importance and roles in each phase.

Second, understanding how amplification processes can foster or subvert sustainable transformative change when

they are embedded in an unsustainable system is a key question for further work (Feola 2019). While this question was not the focus of our study, understanding how and when amplification processes either amplify the unsustainable, bend the sustainable towards unsustainable, or amplify the sustainable and equitable is a key area for further comparative research. Given that many initiatives choose to first focus on *stabilizing*, stabilization into a problematic regime may actually just create a feedback and lock-in to the existing system rather than amplifying transformative potential. Such research is particularly important as amplification processes are part of the normal logic of business and capitalism, and therefore, likely have a higher risk of being captured than other processes. We expect that analyzing how ownership, decision making, and other institutions promote or inhibit amplification that promotes sustainability or capital accumulation could be a useful way to reveal these differences.

Third, transformations of the food system towards sustainability should enhance justice and equity, and help reduce existing structural inequalities. Many food initiatives focus primarily on the quality of food, food production, climate change, or distribution methods, yet analyses of how these foci affect their ability to achieve these goals is needed in order to better understand food system transformations. Analyzing how food initiatives and their interactions impact justice and equity is challenging because the impact of food initiatives needs to be distinguished from simultaneous change, and such impacts, especially negative ones, may be borne by distant people who are indirectly impacted by an initiative, not just its users or neighbors. Culture is an important part of food, and of justice and equity (Haider and van Oudenhoven 2018). There needs to be more work to conceptualize and measure how food initiatives promote or inhibit various food cultures and practices, especially in terms of whether they are opening space and providing opportunities for marginalized people and communities, or whether their practices are inhibiting cultures and practices.

Conclusion

Amplification processes describe actions applied by sustainability initiatives to increase their transformative impact. Our study shows that the initiatives we analyzed in the Stockholm region are applying actions to *stabilize*, *grow*, and *scale deep* their transformative impact. Our results also shed light on the less understood amplification processes and actions of *speeding up*, *scaling up*, and *scaling deep* as well as the challenges of achieving broader systemic impact from niche-level initiatives. This contributes to research on transformations and amplification processes specifically dealing with the potential of food initiatives to foster change in food systems.

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