Shaping sustainable food systems

Local participation in addressing global challenges

Aniek Hebinck

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Abstract

The current unsustainable trajectory of food systems puts the social and ecological processes and functions on which human flourishing depends at risk. This last decade has seen, on one hand, continued insistence on transformative action and on the other, uncertainty and instability with respect to traditional, established institutions, such as the state. As a response, new configurations of actors are aiming to participate in food system governance. New governance arrangements that increasingly lean on civic actors are considered as windows of opportunity, but their possible pitfalls have received less attention. This thesis seeks to understand and explain how the participation of new actors in the food system contributes to transformative change towards sustainable food systems. In order to achieve this, this thesis develops and applies a novel interdisciplinary approach, which combines: a food systems perspective, theories concerning food system governance, transformation, participation and the creation of transformative futures.

The four papers each investigate essential elements for transformative change towards sustainable food systems. Each paper represents different empirical cases, but the papers' theories build on each other. **Paper I** starts by setting out a transdisciplinary *understanding of food systems* in terms of structure and dynamics beyond existing frameworks, built on co-design through a science-policy dialogue. It unpacks the idea of sustainable food systems across four elements: nutrition and diet, economic impacts, environmental impacts, and social equity. **Paper II** explores food systems *change*, through the case of food banks in Europe; civil initiatives that address food poverty by handing out surplus food parcels. By comparing initiatives from the Netherlands, Italy and Ireland, their transformative impact on food systems is reviewed. **Paper III** goes on to interrogate the role of *participation* in change processes. It does this through an assessment of the extent to which participation is properly executed in policy processes that aim to democratise and 'open-up' the making of an Urban Food Strategy. It does so by comparing the case of Eindhoven, the Netherlands and Exeter, United Kingdom. Finally, **paper IV** is focused on how *imagined futures* affect participatory change processes. It focuses on the use of future-oriented participatory methods, foresight, and their implications for transformative change. The paper contributes to the field of foresight by formulating several levels of ambition for transformative change associated with foresight processes, and a number of different roles for the researcher to take in processes of change.

The papers establish a new understanding of food systems, followed by insights into food systems change, the role of participation in change processes, and how imagined futures affect this participation. Together, they demonstrate the benefits of buildingon food system knowledges from, from different spheres – i.e. public, private and civil as well as across different scientific research disciplines. The thesis concludes that a concrete, actionable understanding of how participatory processes focused on present and future food systems, contribute to transformative change in food systems.

Keywords: *food systems; sustainability; food governance; transformative change; participatory processes; participation; civil society; niche level; food policy; urban food; urban agriculture; food poverty; imagined futures; foresight.*

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Friends sing together
La la la la
Friends do things together
La la la la
Friends laugh together
Ha ha ha ha
Friends make graphs together
La la la la

Bret Mckenzie and Jemaine Clement, Flight of the Conchords.
Episode 4, Season 2, 2009; Dakota pictures, HBO.

LIST OF PAPERS

I. Zurek, M.; **Hebinck, A**.; Leip, A.; Vervoort, J. M.; Kuiper, M.; Achterbosch, T.; Garrone, M.; Havlik, P.; Heckelei, T.; Hornborg, S.; Ingram, J.; Kuijsten, A.; Shutes, L.; Geleijnse, J. M.; Terluin, I.; Van 't Veer, P.; Wijnands, J.; Ziegler, F.; Zimmermann, (**in review**) Assessing sustainable food and nutrition security of the EU food system – An integrated approach. Submitted to *Sustainability*.

II. **Hebinck, A.**; Galli, F.; Arcuri, S.; Carrol, B.; Connor, D. O.; Oostindie, H. (**2018**) Capturing change in European food assistance practices: A Transformative Social Innovation perspective. *Local Environment: The International Journal of Justice and Sustainability*. *23*, 398–413.

III. **Hebinck, A.**; Page, D. (**2017**) Processes of participation in the development of urban food strategies: A comparative assessment of Exeter and Eindhoven. *Sustainability*. *9*, 2017.

IV. **Hebinck, A.**; Vervoort, J. M.; Hebinck, P.; Rutting, L.; Galli, F. (**2018**) Imagining transformative futures: participatory foresight for food systems change. *Ecology & Society*. *23*.

Contributions to papers

I have initiated and led papers II, III and IV. Being lead author, I was responsible for the manuscript that was submitted to the journal. All three papers feature multiple case studies, where the data collection and participatory work done for the Dutch cases was my contribution. My co-authors contributed their own cases. Theoretical framing of the papers was discussed and reviewed with all authors, but in all three papers drafted by me. Regarding paper I, the first author and myself have an equal contribution to writing the paper. The other co-authors contributed with material developed by them and a final review. Visualisations used in all papers have been designed by me.

Work additional to the thesis

Galli, F.; **Hebinck, A.**; Carroll, B. (**in press**) Addressing food poverty in systems: governance of food assistance in three European countries, *Food Security*.

Hebinck, A.; Villarreal, G.; Oostindie, H.; Hebinck, P. (**2015**) National Report: The Netherlands; *deliverable 1.2,* TRANSMANGO: Grant 613532.

Hebinck, A.; Villarreal, G.; Oostindie, H.; Hebinck, P. (**2015**) Case-study selection and methodological guidelines for local level analysis of food and nutrition security pathways; *deliverable D6.1*, TRANSMANGO: Grant 613532.

Hebinck, A.; Villarreal, G.; Oostindie, H.; Hebinck, P.; Zwart, T. A.; Vervoort, J.; Rutting, L.; Vrieze, A. (**2016**) De Urban Agriculture policy-making: Proeftuin040 – TRANSMANGO scenario workshop report, the Netherlands; *deliverable D6.3*, TRANSMANGO: Grant 613532.

Oostindie, H.; Hebinck, P.; Villarreal, G.; **Hebinck, A.** (**2016**) Practice-Led FNS Redesigning in Europe; *deliverable D6.4*, TRANSMANGO, Grant 613532.

Hebinck, A.; Villarreal, G. (**2016**) 'Local' level analysis of FNS pathways in the Netherlands: Two case studies, Urban Agricultural Initiatives and the Food Bank; *deliverable D.2*, TRANSMANGO, Grant 613532;

Zurek, M.; Leip, A.; Kuijsten, A.; Wijnands, J.; Terluin, I.; Shutes, L.; **Hebinck, A**.; Zimmermann, A.; Götz, C.; Hornborg, S.; Zanten, H. van; Ziegler, F.; Havlik, P.; Garrone, M.; Geleijnse, M.; Kuiper, M.; Turrini, A.; Dofkova, M.; Trolle, E.; Mistura, L.; Dubuisson, C.; Veer, P. van 't 't; Achterbosch, T.; Cuaresma, J. C.; Ingram, J.; Götz, C.; Hornborg, S.; Zanten, H. van; Ziegler, F.; Havlik, P.; Garrone, M.; Geleijnse, M.; Kuiper, M.; Turrini, A.; Dofkova, M.; Trolle, E.; Mistura, L.; Dubuisson, C.; Veer, P. van 't 't; Achterbosch, T.; Ingram, J.; Brem-Wilson, J.; Franklin, A.; Fried, J.; Rodriguez, P. G.; Owen, L.; Saxena, L.; Trenchard, L.; Wright, J. (**2017**) Metrics For The EU Food System: A Review Across Economic, Environmental And Social Considerations; *deliverable D1.3,* SUSFANS, Grant 633692.

Zurek, M.; Vervoort, J.; **Hebinck, A.** (**2018**) A systematic review of existing EU-wide scenarios related to the EU sustainable food and nutrition security, identification of most salient features, and resulting synthesis scenarios for exploring sustainable diets; *deliverable D6.2*, SUSFANS, Grant 633692.

ABSTRACT

The current unsustainable trajectory of food systems puts the social and ecological processes and functions on which human flourishing depends at risk. This last decade has seen, on one hand, continued insistence on transformative action and on the other, uncertainty and instability with respect to traditional, established institutions, such as the state. As a response, new configurations of actors are aiming to participate in food system governance. New governance arrangements that increasingly lean on civic actors are considered as windows of opportunity, but their possible pitfalls have received less attention. This thesis seeks to understand and explain how the participation of new actors in the food system contributes to transformative change towards sustainable food systems. In order to achieve this, this thesis develops and applies a novel interdisciplinary approach, which combines: a food systems perspective, theories concerning food system governance, transformation, participation and the creation of transformative futures.

The four papers each investigate essential elements for transformative change towards sustainable food systems. Each paper represents different empirical cases, but the papers' theories build on each other. **Paper I** starts by setting out a transdisciplinary *understanding of food systems* in terms of structure and dynamics beyond existing frameworks, built on co-design through a science-policy dialogue. It unpacks the idea of sustainable food systems across four elements: nutrition and diet, economic impacts, environmental impacts, and social equity. **Paper II** explores food systems *change*, through the case of food banks in Europe; civil initiatives that address food poverty by handing out surplus food parcels. By comparing initiatives from the Netherlands, Italy and Ireland, their transformative impact on food systems is reviewed. **Paper III** goes on to interrogate the role of *participation* in change processes. It does this through an assessment of the extent to which participation is properly executed in policy processes that aim to democratise and 'open-up' the making of an Urban Food Strategy. It does so by comparing the case of Eindhoven, the Netherlands and Exeter, United Kingdom. Finally, **paper IV** is focused on how *imagined futures* affect participatory change processes. It focuses on the use of future-oriented participatory methods, foresight, and their implications for transformative change. The paper contributes to the field of foresight by formulating several

levels of ambition for transformative change associated with foresight processes, and a number of different roles for the researcher to take in processes of change.

The papers establish a new understanding of food systems, followed by insights into food systems change, the role of participation in change processes, and how imagined futures affect this participation. Together, they demonstrate the benefits of building on food system knowledges from, from different spheres – i.e. public, private and civil as well as across different scientific research disciplines. The thesis concludes that a concrete, actionable understanding of how participatory processes focused on present and future food systems, contribute to transformative change in food systems.

SAMMANFATTNING

Den nuvarande ohållbara kursen för matsystem försätter de sociala och ekologiska processerna och funktionerna, vilka mänskligt välmående beror av, i riskzonen. Det senaste årtiondet har å ena sidan visat fortsatt framhärdande av transformativa handlingar, men å andra sidan också osäkerhet och instabilitet när det gäller traditionella, etablerade institutioner, såsom nationalstaten. Som ett svar på problemet med etablerade aktörer och institutioner försöker nya sammansättningar av aktörer delta i förvaltningen av matsystem. Nya förvaltningsstrukturer, som till större del stödjer sig på civila aktörer, anses vara ett möjlighetsfönster, men dess tänkbara fallgropar har fått lite uppmärksamhet. Denna avhandling försöker förstå och förklara hur nya aktörers deltagande i matsystemet bidrar till transformativ förändring mot hållbara matsystem. För att uppnå detta utvecklar samt tillämpar denna avhandling ett nytt tvärvetenskapligt tillvägagångssätt, vilket kombinerar: ett matsystemsperspektiv, teorier om matsystemförvaltning, transformationsteori samt teori om deltagande och skapandet av transformativa framtider.

De fyra artiklarna i denna avhandling undersöker oumbärliga delar för transformativ förändring mot hållbara matsystem. Varje artikel representerar olika empiriska fall, men artiklarnas teorier bygger på varandra. **Artikel I** börjar genom att utarbeta en tvärvetenskaplig *förståelse av matsystem* i termer av strukturer och dynamiker bortom nuvarande ramverk genom att bygga på en gemensam design via en vetenskap-beslutsfattaredialog. Artikeln tydliggör idén om matsystem tvärs över fyra delar: näringslära och kosthållning, ekonomisk påverkan, miljöpåverkan samt social jämlikhet. **Artikel II** utforskar *förändringar* i matsystemet genom fallstudiet av matbanker i Europa; ett medborgarinitiativ som åtgärdar bristen på mat genom att ge bort överskottsmat. Genom att jämföra initiativ i Nederländerna, Italien och Irland har deras transformativa påverkan granskats. **Artikel III** undersöker *deltagandets* roll i förändringsprocesser. Detta görs genom att studera till vilken grad deltagande är riktigt utfört i policyprocessen på så sätt att den syftar till att demokratisera och öppna upp för tillblivelsen av en urban matstrategi. Detta sker genom jämförelsen av fallen Eindhoven, Nederländerna och Exeter, Storbritannien. Slutligen, **artikel IV** fokuserar på hur olika *föreställningar om framtiden* inverkar på deltagandeförändringsprocesser. Artikeln fokuserar på användandet av

framtidsorienterade deltagande-metoder och framsynthet och deras innebörd för transformativ förändring. Artikeln bidrar till forskningsområdet om framsynthet genom att formulera flera ambitionsnivåer för transformativ förändring förknippat med processer för framsynthet samt en rad olika roller som forskaren kan ta i förändringsprocesser.

Artiklarna etablerar en ny förståelse för matsystem, följt av insikter i förändringar av matsystemet, deltagandets roll i förändringsprocesser samt hur föreställningar om framtiden påverkar detta deltagande. Tillsammans betonar artiklarna fördelarna med att vidareutveckla kunskapen om matsystem från olika fält d.v.s. från privata och medborgerliga så väl som över olika vetenskapsdiscipliner. Avhandlingen avslutar med hur en konkret, angripbar förståelse av hur deltagandeprocesser, fokuserade på nuvarande och framtida matystem, bidrar till transformativ förändring i matsystem.

SAMENVATTING

De huidige niet op duurzaamheid gerichte opbouw en richting van voedselsystemen zet de sociale en ecologische processen en functies, waar menselijk welzijn afhankelijk van is, onder druk. Het afgelopen decennium wordt gekenmerkt door aanhoudende vraag om daden die leiden tot transformatie van het systeem aan de ene kant, en onzekerheid en onstabiliteit rondom traditionele en gevestigde instituties, zoals de staat, aan de andere kant. Een reactie op de problemen die geassocieerd worden met reeds gevestigde actoren en instituties zijn nieuwe configuraties van actoren die trachten te participeren in de sturing van voedselsystemen. Zulke nieuwe sturingsarrangementen leunen in toenemende mate op burgers en worden gezien als veelbelovende kansen voor verandering. Er is echter minder aandacht besteed aan de mogelijke nadelen van zulke arrangementen. Dit proefschrift probeert te begrijpen en uiteen te zetten hoe participatie van nieuwe actoren in de sturing van voedselsystemen kan bijdragen aan transformatieve verandering richting duurzame voedselsystemen. Om dit voor elkaar te krijgen zet dit proefschrift een nieuwe interdisciplinaire benadering uiteen die de volgende elementen combineert: een voedselsysteem-perspectief, theorieën betreffende sturing van voedselsystemen, transformatie, participatie en vormgeving aan transformatieve toekomstvisies.

De vier papers onderzoeken elk elementen die essentieel zijn voor transformatieve verandering richting duurzame voedselsystemen. Elk paper behandelt verschillende empirische contexten en situaties. Ze vertrekken ieder op zich vanuit verschillende theoretische kaders, die samen wel een coherent geheel vormen doordat ze elkaar aanvullen. **Artikel I** begint met het uiteenzetten van een transdisciplinair denkkader van voedselsystemen in termen van structuur en dynamiek. Daarin gaat dit verder dan bestaande denkkaders. Dit is voortgekomen uit een dialoog tussen wetenschap en beleid. Het bouwt voort op het idee dat duurzaamheid van voedselsystemen is gebaseerd op vier elementen: voeding en dieet, economische effecten, milieueffecten en sociale rechtvaardigheid. **Artikel II** onderzoekt verandering in voedselsystemen door de rol van voedselbanken in Europa te bestuderen. Dit zijn veelal burgerinitiatieven, met als doel voedselarmoede te bestrijden door pakketten met overtollig voedsel uit te delen. Het transformatieve effect van dergelijke initiatieven is beoordeeld door situaties

in Nederland, Italië en Ierland te vergelijken. **Artikel III** gaat verder door te onderzoeken wat de rol van participatie is in veranderingsprocessen. Dit doet het door de mate van 'correct uitgevoerde' participatie te evalueren in beleidsprocessen, die beogen hun beleid democratischer en 'opener' te maken. In het artikel worden twee situaties vergeleken, waarin gepoogd wordt een stedelijk voedselbeleid op te zetten. De ene situatie betreft Eindhoven in Nederland en de andere Exeter in het Verenigd Koninkrijk. Tot slot concentreert **artikel IV** zich op hoe diverse toekomstvisies participatieve veranderingsprocessen beïnvloeden. Het analyseert het gebruik van toekomstgerichte participatieve methodes, *foresight*, en het effect daarvan op transformatieve verandering. Dit paper draagt bij aan de transdisciplinaire studie van *foresight* door verscheidene ambitieniveaus voor transformatieve verandering, die men van het proces van *foresight* kan verwachten, te formuleren. Daarnaast worden enkele rollen die onderzoekers in dergelijke veranderingsprocessen kunnen nemen uiteengezet.

De vier artikelen tezamen dragen bij aan een nieuw denkkader betreffende voedselsystemen, inzichten in voedselsysteemverandering, de rol van participatie in veranderingsprocessen en de wijze waarop deze door verschillende toekomstvisies worden beïnvloed. Samen onderschrijven ze de opvatting dat het begrip van voedselsystemen gebaseerd moet zijn op verschillende denkwijzen, d.w.z. zowel opvattingen van publieke, private en burgerlijke als diverse wetenschappelijke actoren. Dit proefschrift concludeert dat een concreet, bruikbaar begrip van participatieve processen die kijken naar heden en toekomst, kan bijdragen aan transformatieve verandering van voedselsystemen.

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Previous page: Eating 'Noordzee krab' - brown crab, Texel (2016)

TABLE OF CONTENTS

1 SETTING THE SCENE 1

2 THEORETICAL & CONCEPTUAL BACKGROUND 5

Situating this thesis 5

Food systems thinking 6

Food governance 9

Participation in governance 12

Transformative change 14

Futures thinking 17

Research gap & aim 18

3 METHODS & MATERIAL 21

Methods applied 21

4 SUMMARY PAPERS 27

Paper I: Assessing sustainable food and nutrition security of the EU food system 27

Paper II: Capturing change in European food assistance practices 28

Paper III: Processes of participation in the development of urban food strategies 29

Paper IV: Imagining transformative futures 31

5 DISCUSSION 33

Insight I. Food systems lens as 'transformative space' making 33

Insight II. Combining regime and niche activities for transformation 35

Insight III. Only when the balance is right, is participation crucial 36

Insight IV. Using participatory futures to imagine and enact new food systems 37

Methodological contributions 39

Future research trajectories 41

6 CONCLUSION 45

7 REFERENCES 47

1 SETTING THE SCENE

Food is central to human life – to well-being, to social relations, and to livelihoods. The current unsustainable trajectory of our food systems puts many of these fundamentals at risk, affecting certain groups of people more than others (Mckeon 2015; De Schutter 2017; IPES Food 2015). Especially alarming are the hunger rates across the planet that have increased in the last few years, along with the rising incidence of obesity. This double burden is proving an almost paradoxical challenge (WHO 2017; FAO et al. 2017). Exploitation of our natural environment for the production of food, has led to unprecedented levels of biodiversity loss, soil degradation and pollution of natural resources (UNEP 2016). This in turn threatens livelihoods and food security, which is worsened by the onslaught of climate change impacts (FAO 2017; HLPE 2012). The complexity and interdependence of these challenges are what make sustainability of food systems one of the greatest challenges of the 21st century (IPES Food 2015).

The need for transforming food systems is widely acknowledged among researchers. They urge for an overhaul of the structure and activities, actor configurations and governance (Oliver et al. 2018; Marsden and Morley 2014; Sonnino and Spayde 2014; Lang and Heasman 2004; Clapp 2016; Moragues-Faus and Marsden 2017; IPES Food 2015; Hinrichs 2014; Van der Ploeg 2010; De Schutter 2017). The need for transformation has also been identified by public, private and civil actors across the world. This is reflected in the number of multilateral organisations and agreements (often non-binding) that have been set up in the last few years (UN 2015a; WBCSD 2018; CFS 2015; Milan Expo 2015).

Nevertheless, food system challenges remain very persistent and deep rooted. In fact, many scholars argue that current dynamics will lead to a worsening of social impacts and entrenchment of food system challenges (Clapp et al. 2018; De Schutter 2017; Campbell et al. 2016), and potentially bring us beyond the point of no return when it comes to the state of our biosphere due to scientific evidence of 'tipping points' operating at the scale of the earth

system[1] (Steffen et al. 2015; Springmann et al. 2018). A group of scholars especially stress the urgency with which change needs to take place for us to remain in a "safe and just operating space for humanity" (Raworth 2012; Leach et al. 2013). From a Malthusian perspective global population grows is bound to increase, increasing in turn the pressure on these issues. This leads some to pursue measures that allow the planet to be able to feed an additional 2 billion people by 2050 (Tomlinson 2013; UN 2014). While others come to the conclusion that today's food systems are "no longer fit for purpose" (Marsden 2014) and argue that food systems are in need of transformation.

Barriers to food system transformations are particularly acute due to inaction of governance institutions and a lack of integration of domains (Candel and Pereira 2017; Duncan 2015a). In addition, we currently face rapidly changing global governance dynamics that, in more extreme cases, are leading to a rapid breakdown of traditional governing institutions (Bittman et al. 2017). In some cases, this breakdown is putting global, multilateral agreements at risk of being abandoned or of losing support (Young 2018). Overall, this last decade has seen, on one hand continued insistence on action and on the other, uncertainty and instability with respect to traditional, established governing institutions (Bellamy and Palumbo 2010; Jessop 1998; Majone 1997). Perhaps it is in light of this last tension, that non-state actors have stepped forward to "take up the slack" (Singer 1972; Pijnenburg, L. 2018). This thesis aims to explore the shaping of sustainable food systems by focusing in particular on the role of such non-state actors.

For many years, research has explored processes of change, attempting to find patterns and commonalities, in order to better steer processes of change towards desired trajectories (Moore et al. 2014; Geels 2011; Feola and Jaworska 2018; Hargreaves et al. 2013; Rotmans 2009). A large part of this scholarship has focused on the changes set in motion at a grassroots levels, where people attempt to find alternative ways to shape activities in the food system and acquire their daily foods (Sage 2014; See e.g. Dixon and Richards 2016; Renting and Markus 2012; Kneafsey et al. 2017). Some of these local-scale changes represent "bright spots", which can be regarded as positive "seeds of the future" (Bennett et al. 2016; Pereira et al. 2018). The hypothesis is that building on such developments, can allow us to change 'business as usual' and current trajectories, to more sustainable pathways. Participation of local actors in change processes has been an important focus in many strands of literature. In transition studies, local actors are generally termed *grassroots niche actors* (Smith et al. 2017) and are an important source of

[1] Moving away from the stable state the earth system has resided in for almost 12 thousand year: *the Holocene*. Continuation of this trajectory "could lead, with an uncomfortably high probability, to a very different state of the Earth System, one that is likely to be much less hospitable to the development of human societies" (Steffen 2015, 1).

innovation within systems. Innovation results in the formation of an alternative to, or improvement of the mainstream and dominant practices (i.e. the regime; Geels 2002). Indeed, possibly even overtaking dominant practices eventually (Van Der Ploeg 2016; Patterson et al. 2017).

Some emphasise the 'bottom-up' origin of such innovation, accentuating its emergence from non-dominant actors and thus the increased likelihood for inclusive knowledge incorporation (Smith et al. 2014). In other sources of literature, such as part of the governance and development field, this inclusiveness and bottom-up development is appreciated for its potential to 'democratise' sustainable development (Gaventa 2004; Scholte 2011): As opposed to 'top-down development', which would be more susceptible to finding its foundation in the voice of already powerful actors. Indeed, the role of such new actor configurations and practices is essential to change (Wittmayer et al. 2017). Nevertheless, change cannot be expected from one actor group alone. "Only by connecting different pathways", combining both public, private and civil efforts, "can lasting food systems reform be achieved" (De Schutter 2017, 1).

There have been increasing calls for cohesion and integration of policy and action for development of sustainable food systems (Lang and Barling 2012; Candel 2017; Duncan 2015a; Marsden 2016). So far, policy responses remain fractured and often contested. This is partly complicated by the many different narratives and visions on the future of food that are associated with the diversity of actors in the food system (Lang 2004). Each leading to different ideas of transformation, differently impacting actors in the food system (O'Brien 2012; Leach et al. 2010). Narration of these different images of desired futures would allow making explicit how they impact the present and therefore better inform processes of change (Vervoort and Gupta 2018).

While the scholarships theorising these different elements around food systems governance, have been moving towards one another, integration of all elements is lacking. While each exploring essential pieces of the puzzle, their connection will contribute to the called for cohesion and integration. This thesis sets out to contribute to this research gap by connecting these different perspectives, based on empirical material. It asks whether participation in food systems governance leads to transformative change towards sustainable food systems. By asking this broader question, it brings together various perspectives, from dynamics within food systems, changing food governance mechanisms, dynamics of transformation, to futures of food. With it, this thesis furthers integration and provides insights into future directions for integrated food systems research.

This thesis builds on four papers, that have a focal point in each of these different theoretical streams. the next chapter, will set out these various perspectives that have informed the line of thinking this thesis builds on. It

does so by touch upon food systems thinking, and how this perspective leads to the uncovering the links between food systems and social inequalities and environmental pressures. Followed by an overview of food governance and its dynamics of change due to new, more participatory, governance arrangements. This continues with an overview of transformation theories and how these different streams have been combined for a future-oriented analysis of change in food systems.

2 THEORETICAL & CONCEPTUAL BACKGROUND

Situating this thesis

Food and agriculture are studied across different disciplines. However, these disciplines have mostly kept to certain silos (Hinrichs 2014; Marsden 2014; Clapp 2014). This thesis is written within the broader field of sustainability science, which has a number of implications for the methodological approach. It aims to advance the understanding, both theoretical and applied, of the transformative change food systems need to undergo if they are to contribute to long-term sustainable development. Sustainability science is characterised as being driven by transdisciplinary, problem-driven research (Clark et al. 2003; Clark et al. 2016; Folke et al. 2016). It attempts to generate solutions that are tailored to particular purposes and contexts, while bringing about an enriched understanding of the sustainability challenges we face. It does so through drawing on the confluence of different knowledge systems, providing a range of ecological, social, and political perspectives that may not be gleaned through more rigidly disciplinary approaches. It has proven to be an arena for experimenting with new ways of doing research and trying to negotiate epistemological tensions that arise in interdisciplinary research. A specific challenge for sustainability science research is its relative nascent scholarly tradition and therefore its limited supply of articulated theoretical frameworks (Haider et al. 2018; Enqvist 2017).

The more specific objective of this thesis, is to deepen the understanding of food systems' sustainability-related issues and challenges, but it also aims to contribute to the understanding and governing of food system transformations with respect to new actor configurations (Stirling et al. 2007). This has necessitated an approach that builds on several theories and methods drawn from different disciplines. Aiming to understand how non-state actors' initiatives influence and change food systems (and vice versa), requires the bridging of macro and micro scales. Consequently, I depart from structuration theory (Giddens 1984; Long 2001), which argues that everyday practices shape structures, that in turn influence practices again. In other words, departing from the notion that practices can change structures. Needing to bridge these different scales, by exploring how these scales interact and create a variety of food situations, justifies a fundamentally

interdisciplinary approach to *food* (Hinrichs 2014). One that is grounded in food systems thinking and on more social science grounded notions of transformative change and governance. Especially a food systems perspective builds on diverse visions of food and the processes that shape food. Thereby highlighting the social and environmental injustices that are embedded in food systems.

Food systems thinking

I define food systems as systems made up of networks of actors performing food related activities (growing, harvesting, processing, packaging, transporting, marketing, consuming, waste disposal and governance). The food system is influenced by social and environmental 'drivers': processes determining how these activities are performed. As summarised in figure 1, activities by networks of actors in food systems *should* result in certain outcomes that together make up 'sustainable food and nutrition security' (**paper I**). This entails components of social equity, balanced nutrition, environmental sustainability and economic prosperity. However, these food system outcomes in turn result in feedbacks to environmental and social drivers (Tendall et al. 2015; Ingram 2011; Ericksen 2008; FAO 2008; Ingram et al. 2010). Such feedbacks include, the ability to have a livelihood, or an increase in greenhouse gas emissions. As shown in figure 1, social and environmental drivers are affected by and impact on food systems, marking the complex and dynamic relations within the food system.

Regardless of the amount of steering and interventions for food security to date, food systems have hither to been unable to deliver on 'sustainable food and nutrition security'. In aiming to address the ability of food systems to deliver on their purported outcomes, food scholars have been attempting to get a grasp on the food system. Scholarship on food has evolved in the past two decades from being production-focused, to integrating consumption, to attempting to include the complexity related to multiple actors, processes, scale-interactions and theories (Moragues-Faus 2017). The emergence of this more integrated perspective on issues of food was set in motion by rural sociologists, who were driven by social and political concerns (Tovey 1997; McMichael 1994). Towards the end of the 1990s, interests in connecting food security and global environmental change research grew (Ingram 2011), allowing for interdisciplinary perspectives on food security to emerge.

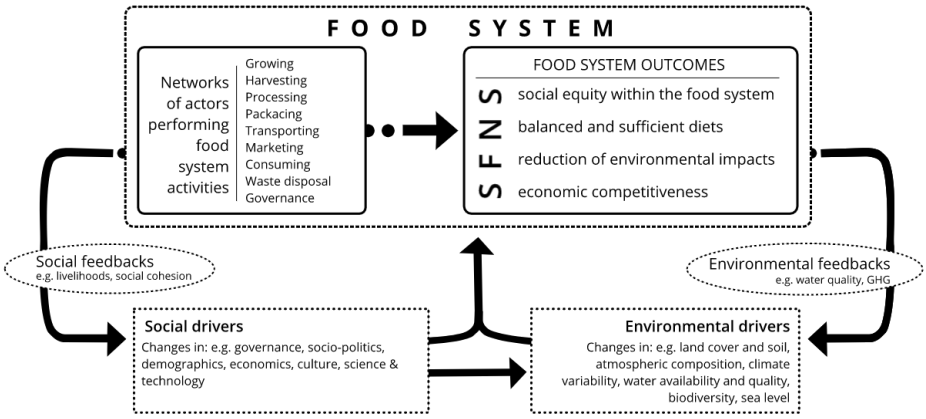

Figure 1. The food system depicted as networks of food system actors resulting in food system outcomes related to sustainable food and nutrition security (SFNS), while producing feedbacks and being impacted by drivers. Figure adapted from Ingram (2011).

The food systems approach is regarded as the most effective perspective to develop a strategy that enhances food and nutrition security in a sustainable manner (Gustafson et al. 2016, 2), for two key reasons. First, through a food systems analysis one can focus on impacts, trade-offs and leverage points in the different domains that make up sustainable food and nutrition security (Vervoort et al. 2012), allowing for an integrated assessment (**paper I**). Building on the first, it provides a framework to structure debates of complex food challenges (Ingram 2011). Departing from the fundamental concept of food systems, I briefly set out some of the complexities and dynamic relations that are associated with food systems challenges. I focus in particular on some examples of interlinked social and ecological consequences and impacts related to food systems.

Environmental pressures of and on food systems

Global environmental change has already undermined global food security and will continue to do so (HLPE 2012; IPCC 2015). It has caused massive ecological changes and climate uncertainties (Steffen 2015) and this has resulted in increased vulnerability in the livelihoods of farmers across the world (Pelletier et al. 2016; Schipanski et al. 2016; Ingram 2010; Vermeulen et al. 2012). Furthermore, a long-standing focus on agricultural intensification and increased production, has led to the degradation of natural resources globally (UNEP 2016; Clapp 2016). Food systems are a major contributor to climate change and natural resource degradation and rely on them at the same time. This "two-way nature" of interaction asks for more sustainable forms of agriculture (Clapp 2018).

The Paris Agreement represents a political consensus on the need to address causes of climate change and as such reduce its risks and impacts (UN 2015b). By signing the Paris agreement, 194 states and the European Union commit to implement policy strategies (UN 2015b). How to lower these emissions, is a huge topic of debate: ranging from 'tech-fixes', such as soil carbon storage to climate-smart agriculture (Newell and Taylor 2018). Food systems are considered to be responsible for an estimated 19 to 30% of GHG emissions. An additional 17% originates from mainly agriculture driven global deforestation and forest degradation (Vermeulen 2012; Garnett 2013; Newell 2018). This means there is huge potential for change within food systems to contribute to meeting the emission reduction enshrined in the Paris agreement. To date, the attempts to 'green' global food governance have been limited and fragmented, regardless of the growing acknowledgement of the need to "move away from 'business as usual'" (Duncan 2015a, 336; Oliver 2018).

Food systems occupy approximately 40% of global land (Braimoh 2013). They greatly depend on the world's natural resources and ecosystems, and simultaneously impact upon them (Newell 2018). Globally, food systems are the most dominant pressure on natural resources: in particular, it uses 70% of fresh water, contributes to 75-80% biodiversity loss, is responsible for nearly all nitrogen and phosphorus pollution, and is a major driver of climate change (25%) (UNEP 2016; Gordon et al. 2017). A growing demand for meat and dairy projected in the future will also put further pressure on natural resources and drive emissions (Dijk and Meijerink 2014; Regmi and Meade 2013; UNEP 2016). Changing levels and types of resource use is as equally contentious as reducing GHG emissions, as it is tied to economic growth. As of yet, while key for sustainable development, there are no signs of complete 'decoupling' of resource use from the economy (Breitenfellner 2013).

Social inequalities within food systems

The most persistent social inequalities embedded in food systems are related to food security and livelihoods, and power imbalances amongst groups of people. Globally, the livelihoods of around 2.5 billion people rely on agriculture as a main source of income or even for subsistence (Scoones 2009; FAO 2013). The majority of whom are smallholder farmers, who coexist amongst some of the most threatened and diverse landscapes on the planet (Samberg et al. 2016). Considering agriculture is directly dependent on the climate and natural resources, climate change impacts links directly to food security (HLPE 2012). This is especially worrisome, considering the significance of smallholder producers to global food production[2] (Samberg

[2] Samberg et al. (2016) emphasise the importance of agriculture as a source for income and food security. They show that within Latin-America, Sub-Saharan Africa and South and East

2016), who often have less access to information or technologies for adaptation (Newell 2018). The inability to access the global market is problematic, as currently many strategies to combat these issues take for granted the ability to access the global market. It is especially the ultra-poor amongst the small farmers who are disconnected from global markets (Barrett 2014; Meyfroidt 2017).

Equal access to sufficient food that is safe and nutritious remains a challenge, leading to different forms of malnutrition (Lindgren et al. 2018). In 2016, the FAO reported that an estimated 815 million people were undernourished (FAO 2017), while 2 billion people suffered from chronic micronutrient deficiencies (UNEP 2016). Overall, the recent global economic downturn has led to a deterioration in food security, affecting mostly export-dependent countries, and worsening access to food among the poor (FAO 2017). This growing food insecurity is in contrast to another 2 billion people who are overweight or obese (WHO 2017; Ng et al. 2014). Changing dietary preferences including an increased consumption of processed foods globally, is resulting in the growing prevalence of unhealthy diets and non-communicable diseases[3] (Lindgren 2018; FAO 2017). Obesity in particular is linked to more deaths worldwide than being underweight (WHO 2017; Herring 2015). This has become a concern for countries that are undergoing rapid nutrition transitions, towards cheap processed foods and increased meat and dairy intake combined with physical inactivity (Herring 2015; Lindgren 2018).

Food governance

These global issues associated with food systems make up the context for contemporary food governance. Governance is a crucial element of food systems. It is considered an important lever, able to greatly influence food systems dynamics and adjust pressures and impacts (Moragues-Faus 2017; Hospes and Brons 2016). In this thesis, governance is conceptualised as the "processes of decision making and implementation" (Kersbergen and Waarden 2004, 143) that take place among (or between) public, private and/or civil actors (Termeer et al. 2015; Mckeon 2014). Traditionally,

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Asia, smallholder-dominated systems "make up roughly 30% of the agricultural land" and "produce more than 70% of food calories produced in these regions". The latter equals "more than half of the food calories produced globally" of which 70% is direct consumed as food locally.

[3] Diet-related noncommunicable diseases are disease such as diabetes, coronary heart disease, and certain types of cancer. (Herring 2015)

governance is associated with more linear planning processes[4] that take place specifically at the public level (Scrase and Smith 2009, 718; Voß and Kemp 2006). However, these traditional approaches are not geared towards addressing challenges in dynamic complex systems (Leach 2010). It is argued that traditional governance efforts are too fragmented (Duncan 2015a, 336; Oliver 2018), too siloed (Candel 2017), not reflexive enough (Marsden 2013) or not pluralistic enough (Stirling 2010). On top of that, "governance has become post-sovereign, in the sense that policy processes are institutionally diffuse and lack a single locus of supreme, absolute and comprehensive authority. Today no regulatory body–including a state–constructs public policy on its own" (Scholte 2011, 18).

Collaborative forms of food governance

In order to deal with the complexity and various spatial and temporal conditions that are associated with food systems (Marsden 2014, 3), scholars call for integrated approaches to food governance. New governance mechanisms are destabilizing traditional forms and creating new governance arrangements. These changes in governance arrangements greatly influence the extent to which food systems can be steered (Kersbergen 2004). New governance arrangements centre on collaboration between various actors from the public, civil and private sectors. These collaborative governance models share an objective to address the criticism that are associated with dominant, more traditional governance structures (Stirling 2014a; Marsden 2013; Voß et al. 2009). The literature describes various characteristics that are found within these new governance models: integration of the now fragmented domains; reflexivity and adaptability; and participation and inclusiveness (Termeer et al. 2018; Candel 2017; Duncan 2015a).

Essential to collaborative forms of governance, is their ability to include a range of different actors from different backgrounds, who would otherwise potentially not be included. In doing so, these approaches can build on a more diverse range of perspectives and give voice to marginalised groups, at least in theory (Scholte 2011; Duncan 2015b). These more radical forms of participation espoused by these collaborative governance approaches, can also enable the integration of various domains that span the same food-issue. What's more, the adoption of a more collaborative framework which is more flexible compared to more rigid, circumscribed and traditional state institutions, it can create space for innovation (Voß and Bornemann 2011).

[4] Scarse and Smith (2009) show how policy for technology promotion follow a rather linear process of "research, design, development, deployment and diffusion", ultimately intended to result in economic growth.

Such models address what is seen as the inability of practitioners and policy-makers to sufficiently cope with complexity and uncertainties, often leading to the application of simplistic solutions to multifaceted problems (Emerson et al. 2012; Rijke et al. 2012). This is partly addressed in reflexive governance, which emphasises the need for reflexivity with respect to (problem) framing, patterns of action and structures embedded in governance (Duncan 2015a; Hendriks and Grin 2007; Sonnino, Lozano Torres, et al. 2014; Marsden 2013). Closely related is adaptive governance. This approach is more focussed on addressing governance from a complex systems perspective and addressing uncertainty as inherent to these systems and to do so via various processes and tools of adaptation (Folke et al. 2005; Olsson 2006; Rijke 2012). Similarly, transition management, which describes the steering of governance processes towards a particular sustainability transition, argues that the steering requiring constant review of governance practices (Kemp, René et al. 2007; Wittmayer et al. 2016). Mentioned to a lesser extent are concepts such as place-based governance, describing governance dynamics that are aimed at empowering local communities (George and Reed 2017) and, governance which is focussed on private, non-state actors such as transnational corporations (Pattberg 2006; Fuchs et al. 2011). All of the approaches outlined above describe the need to revisit decision-making processes and to review their politics, trajectories, and inclusivity (Leach 2010).

Within this thesis, I use the notion of collaborative forms of governance to firstly politicise the initiatives and practices that aim to address food system challenges from a niche level. Moves towards collaborative governance allow for participation of non-state actors in decision making. The private sector, as represented by large transnational corporations (TNC's) have long found ways to negotiate and participate in decision-making. Especially in food governance, where global partnerships between TNC's and governments have taken up the responsibility to set up norms and guidelines for sustainable development (Bäckstrand 2006). Although currently to a lesser extent included, civil actors can also play a more decisive role in collaborative governance. While civil initiatives are often regarded at 'playing on the margins', I frame them as actors acting upon concerns they have about others' or their own wellbeing. They do this by finding (and sometimes creating) spaces for participation (Gaventa 2006). In doing so, I explicitly connect literature on collaborative forms of governance to that of participation. In the following section, I interrogate the conceptualisation of participation in two strands of literature. This sets out how I understand participatory processes in governance.

Participation in governance

Within collaborative governance, there is explicitly more space for civil actors, whose activities would otherwise be considered marginal in comparison to traditional governance arrangements. These new forms of governance allow for a repositioning of citizens within these arrangements (Cornwall 2002). In doing so, they attempt to address the growing criticism that governance is shaped by dominant and more powerful actors, which are often states and/or TNC's (Dodds 2002). Democratisation of decision making theoretically enables citizens to give shape to their opportunities and rules. (Cornwall 2002; Blair 2000). Noted benefits of civil participation in decision-making are the following: improvement of democratic legitimacy; strengthening of external accountability; enhancement of quality and effectiveness; increased creativity and adaptability; and more reflexive agenda setting (Blair 2000; Scholte 2011).

Execution of civil participation in governance is however, highly complex. There are risks of "bad practices" in implementation of participatory processes, including the "use of the label without the substance"; "putting methods before process of empowerment"; and failure to include the poorest (Pijnenburg, B. 2004, 15; Cornwall and Brock 2005). The use without deeper reflection on execution is partly attributable to participation having become a buzzword and being used for multiple purposes: "'[P]articipation' has historically been used both to enable ordinary people to gain political agency and as a means of maintaining relations of rule for neutralising political opposition" (Cornwall 2005, 1046). The 'vagueness' of the concept of participation has resulted in risks of "democratic deficits" (Bexell et al. 2010, 81). Safeguarding of democratic values within participatory processes is a necessity. Much of the literature that seeks to assess democratic values present or absent in such processes, is centred on two key values: quality of participation and accountability (Bexell 2010; Gaventa 2000; Scholte 2011). Both are underscored as being vital for securing benefits of participation in decision-making.

Through participatory governance processes, participants can exercise voice and influence and shape policy, thus bridging the gap between citizens and decision-making institutions (Gaventa 2000; Baud and Nainan 2008). These processes are performed differently depending on the governance levels. At the global scale, Civil Society[5] Organisations (CSOs) have secured

[5] In this thesis *civil society* is defined as "a political arena where associations of citizens seek, from outside political parties, to shape societal rules" (Scholte 2011, 34), as such this may include NGO's, social movements, people's organisations and so on (See e.g. for an overview Scholte 2011; Willetts 2011).

considerable influence on behalf of citizens (Scholte 2011; Willetts 2011; Duncan 2015c; Warshawsky 2016). It is assumed that CSOs are closer to the people they represent and are also increasingly involved post-policy making as service or assistance providers (Cornwall 2002). While decision-making at national (or state) level is primarily done in a more traditional way, local governance is increasingly employing participatory processes. While this is relatively new to Northern Europe, there are many examples from all over the world. For instance, Indonesian citizens' forums or Porto Alegre's neighbourhood meetings (Gaventa 2004). These so-called "active citizens" are seen as key to wellbeing (Koster 2014; Polk and Knutsson 2008). This builds on the idea that participation of citizens in governance "makes for better citizens, better ... decisions and better government" (Cornwall 2002, 1; Mansbridge 1998).

The increase in participatory processes can only partly be ascribed to wanting to make policy-making more democratic. This process has also been sped up by the dominance of neoliberal governing ideologies that encourage shifts in responsibilities towards non-state actors, by calling upon the civil and private sector (Koster 2014; Biebricher 2015). This shift has been exacerbated after the global economic crisis of 2008[6]. Many national governments introduced austerity measures, which many consider to have played a role in hollowing out a number of Europe's welfares states. These measures were "designed to discipline debt-ridden governments by cutting public budgets, reducing the number of public sector workers, curbing social benefits, and sharply narrowing the scope of the welfare state" (Karger 2014, 33). These austerity programs left quite sudden gaps in social welfare provisioning. During these times, conceptualisations such as 'Big Society' in the U.K. and 'Participation Society' in the Netherlands entered the political discourse with the aim of encouraging non-state- actors to take up responsibilities for their own wellbeing and that of society as a whole (Koster 2014; Wittmayer 2017).

Regardless of a potentially underlying neoliberal agenda, a shift to more participatory approaches offers a window of opportunity. This window of opportunity exists with the reality that there are some specific challenges to the prevention of the mis-execution of participation, or 'green washing' of dominant practices. These primarily relate to the safeguarding of accountability and participation, as they are key components of democratic values. A framework to assess the quality of participation is set out in **paper III**, as shown in table 1. Assessment of these key elements is necessary

[6] The collapse of banks in 2008 marks the beginning of the global economic crisis, which dropped Europe into economic instability and uncertainty. In an attempt to save the banking system in the EU, "an unprecedented bailout of banks and other financial institutions began". This resulted in the accumulation of enormous public debts.

considering the inadequacy of 'traditional' checks and balances with respect to these new governance arrangements.

*Table 1. Key elements to participatory policy processes (from **paper III**).*

Key elements	Operationalisation
Participation	Quality of participation during the process
	Types of participants and their relation to one another
Accountability	Transparency on actions and resources used
	Consultation with those that are about to be affected
	Evaluation of impacts and effects
	Correction if actions have resulted in harmful effects

Transformative change

There is now a sizable research community that engages with transformative change, exploring how it can be defined, what possible signals of transformative change are, or how to influence change (Feola 2018). Throughout the years, a number of different theoretical streams have been developed. Three particular streams have an extensive body of literature: transitions of socio-technical systems (STS), transformations in complex social-ecological systems (SES), and transformative social innovation (TSI). While in many ways overlapping, as their core aim is to theorise system-level change, they have different focal points (Olsson et al. 2014; Moore 2014; Patterson 2017; Stirling 2014b). The first, STS interrogates the role of technological innovation in processes of change. It does so by differentiating between different levels that can be associated with such processes. SES is more tentative to the role of social actors in human-nature intertwined systems and their ability to navigate change. Finally, TSI is more concerned with the social mechanisms of innovation and their impact on change.

The definition of transformative change used in this thesis is built upon these three streams*: Transformative change results in fundamental changes in structure, functions of systems, and relations among elements* (**paper II** and **IV**). Transformative change, in this sense, does not necessarily mean it is positive or sustainable, rather it just describes fundamental change (Blythe et al. 2018). Social actors can actively navigate processes of change (Olsson 2006) and thereby change structures, functions and relations (Giddens 1984). I distinguish between a number of different actor groups that are important to consider in change processes. I do this by building on the Multi-level Perspective (MLP) of the STS literature (Rip and Kemp 1998; Kemp, Rene et al. 1998; Geels 2002). The MLP theorises the different levels, that each assume different power relations, involved in such change processes.

Through this heuristic, one can make sense of the cross-scale interactions that take place (or fail to take place) during transformation processes. However, I am specifically interested in the actors that move within the in the MLP defined different levels (see figure 2).

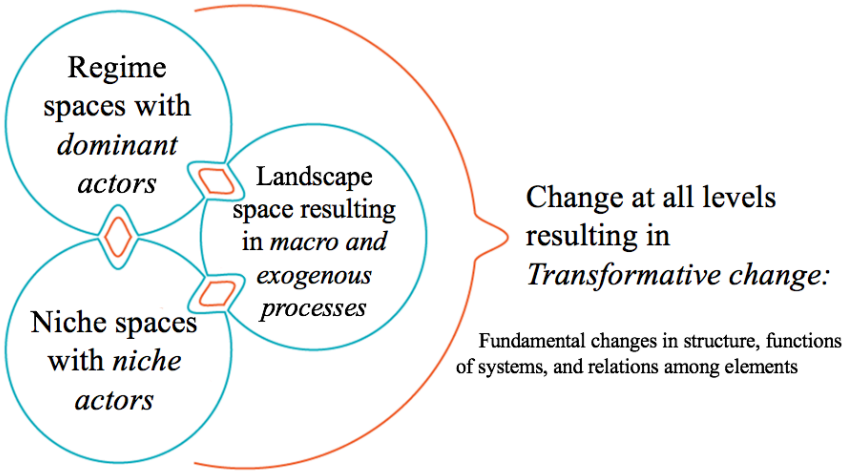

Figure 2. Visualisation of transformative change, made up by various spaces and the associated actors that move and act within them. Interaction between all three, due to change within them, results in transformative change. Processes of change between two spaces can also lead to change in the third level. Figure adapted from Transit (transitsocialinnovation.eu).

Firstly, in the MLP parlance there are '*regime-level*' actors which correspond to dominant actors. These actors are dominant[7] in that they possess power to shape rules, institutions and practices. Second, there are '*niche-level*' actors that shape and develop innovative, new practices. These innovation practices take place in more isolated and protected spaces. This allows them to develop and nurture their practices, without interference of the rules and system that is shaped by dominant actors and institutions who make up the regime (Pitt and Jones 2016). Niches can be formed in both a 'bottom-up' and in a more 'top-down' fashion (*more on this in 'Grassroots innovation'*). Lastly, is the '*landscape*-level', which describes macro and exogenous processes, such as climate impacts, political constellation, and societal trends and is thus critical. Distinction between the three different levels is helpful in the analysis of transformation processes, because change processes are often quite messy and nonlinear (Geels and Schot 2007). This distinction in levels provides the ground to distinguish between different actors. Change

[7] I use the word 'dominant' to emphasise that these practices are considered mainstream or 'normal' and as such are the foremost practices that are performed and implemented. Associated with dominant practices and actors is a certain level of power and influence. This does not mean they cannot develop innovative practices that set change processes in motion.

processes can be set in motion by actors from any of the levels (Geels 2011; Geels 2007). Similarly theorised in SES, transformation can start with respect to a particular element, continuing to inflict change at multiple levels and across various elements (Moore 2014; Patterson 2017)

I look towards social innovation theory to account for the complexity of social actors that are involved with change processes. Scholars in this field explore the effect of 'deliberate agency' of actors interacting with system structures, steering change in a certain direction that is influenced by their own and, society's norms, values, and beliefs (Westley et al. 2013; Bock 2012; Olsson et al. 2017; Moulaert et al. 2013). For this I turn to the rather recently developed Transformative Social Innovation (TSI) theory (**paper II**) which explicitly considers 'narratives of change' (or "discourses on change and innovation") as an intricate part of transformation processes and considered a separate element in their heuristic (Avelino et al. 2013). This is different from STS theory, where these elements are considered to be embedded in the different levels and as such not given so much importance (Geels 2011). These different change narratives will inform processes of change differently and shape different pathways (Galafassi, Daw, et al. 2018), leading to potentially different futures (*more on this in 'Futures thinking')*. The construction of new practices in response to dynamics and developments set in motion by more powerful, dominant actors, is an important part of change and transformation processes. A guiding assumption, is that some form of resistance to transformation will exist and be exercised through the dominant practices of these others actors (Moore 2014). This makes transformation and innovation inherently political, as they are shaped to challenge dominant practices and institutions (Smith et al. 2005; Patterson 2017).

Grassroots innovation

This bring me back to different niche developments. Fressoli and colleagues (2014) make an explicit distinction between grassroots initiated innovation and innovation originated from mainstream, or top-down 'science, technology and innovation institutions'. The latter are more often geared towards economic gain or focused on conventional market values (Smith 2014). Whereas grassroots innovation is particularly built on "locally sensitive knowledges" and values (as shown **paper III** and **IV**), which are considered more inclusive and democratic (Smith and Stirling 2018; Durrant 2014). Grassroots innovation is not defined by a specific group of actors, but describes "networks of activist and organisations generating novel bottom-up solutions" (Smith and Seyfang 2007, 585). Encounters between the two forms of innovation are "often important for the survival and expansion of grassroots innovation" (Fressoli 2014, 279).This is the case because they can aid those driving the innovation with resources or experience in scaling up

(highlighted in **paper II**). Nevertheless, this collaboration can be problematic as actors from the two different forms are likely to approach innovation differently. This is particularly visible in their politics, drives to innovate, and knowledges that are together construct the innovation.

In this thesis, my focus lies more on these grassroots actors and their role in contributing to transformative change at a system level. As emphasised before, they design practices as an alternative to the presently dominant practices while holding different futures of food in mind. The use of tools that help actors think of the future, such as foresight, become helpful in making more explicit what different kind of actors have in mind when they talk about change and transformations.

Futures thinking

Food, how it is produced and consumed, is shaped by narratives and visions of the future of food (Lang 2004). Such narratives define and are defined by assumptions actors have about the system and about their envisioned future of the system. This means that exploring food systems through one particular narrative will have certain implications for the focus one takes in the food system and what pathways will be taken (Foran et al. 2014). Considering the wide range of actors that are affected by food system transformation, transformation can "mean different things to different people" (O'Brien 2012, 670).

The enactment of different images of desired transformations in societal systems by different groups of actors is an important driving force in the realization of transformations (Wolfram 2016). This makes it important to identify what narratives and discourses of desired (and undesired) futures are embedded in change processes. Such an approach can more clearly highlight 'whose transformation' this really is (Leach 2010; Patterson 2017; Patterson et al. 2018) and how imagined futures impact action on the present (Vervoort 2018). This is where the use of a futures studies lens becomes helpful (Wilkinson 2017; Henrichs et al. 2010). The field of futures studies focuses on how different futures are envisioned and explored by different societal actors using different (formal or informal) methods, and more recent work in the field has started to focus explicitly on how these futures impact the present (Vervoort et al. 2014; Vervoort 2018). Furthermore, futures research is already intimately connected to research on complex systems and transformation, emerging largely out of the same disciplinary context (Vervoort 2011).

In the context of food system transformation, foresight methods (a broad term for methods that help structure thinking about the future) can be used to create a common framing among the many different actors associated with

the food system (Van der Heijden 2005). As highlighted in **paper II**, this potential impact of foresight methods can happen partly because status, power and available resources associated with particular actors in the present, are not a given for the future and can still change – creating opportunities for shared restructuring of that future, and how it impacts the present (Vervoort 2018). A foresight exercise can therefore create a degree of openness that offers potential for re-structuring the present (Pereira et al. 2015; Wilkinson and Eidinow 2008). The use of the futures encourages participants to think beyond the structures embedded in the now (Vervoort 2011) and think in a more creative and unbound manner (Galafassi, Kagan, et al. 2018). In some way, it functions similar to what in STS theory is described as 'niche-level', in that (at least when organized and facilitated very carefully) it can offer a protected and nurturing environment to think in innovative ways.

In my thesis, foresight approaches are used in multi-actor settings (**paper I**, **III** & **IV**). In the case of **paper III** and **IV** this concerns grassroots innovations in particular, which is a rarer topic of such exercises (Smith 2014). In paper IV, this thesis will build on existing research to take a next step in understanding concretely how foresight methods can impact transformation processes.

Research gap & aim

In this chapter, I have set out the need for transformative change towards more sustainable food systems and a number of theoretical perspectives that attempt to capture parts of the structures and dynamics of change in food systems. Overall, these different theoretical elements have been moving towards one another, their integration has been lacking. While the more general move towards food systems thinking is a step in the right direction, it is too separated from the in social sciences grounded work on governance, change and transformation. Moreover, the use of futures-work when discussing change has grown, but overall has stayed disconnected form work on food systems change. This thesis aims to address parts of this gap in the literature by spanning the boundaries of these different perspectives and fields and integrate them by building on empirical work. In doing so, it hopes to contribute to a further integration of the various works relevant to food systems change.

The main question that I address in this thesis is: *Does participation in food systems governance lead to transformative change towards sustainable food systems*? Participation is viewed rather broadly. It is meant to indicate participatory processes, but also participation in the form of sharing responsibilities that were formerly solely the domain of states. Secondly, the definition Sustainable Food and Nutrition Security (from **paper I**) is used to indicate what I understand to be a 'sustainable food system'. Here, the use of a futures lens is argued to provide utility through offering a 'safe space' and encouraging innovative and 'out of the box' thinking.

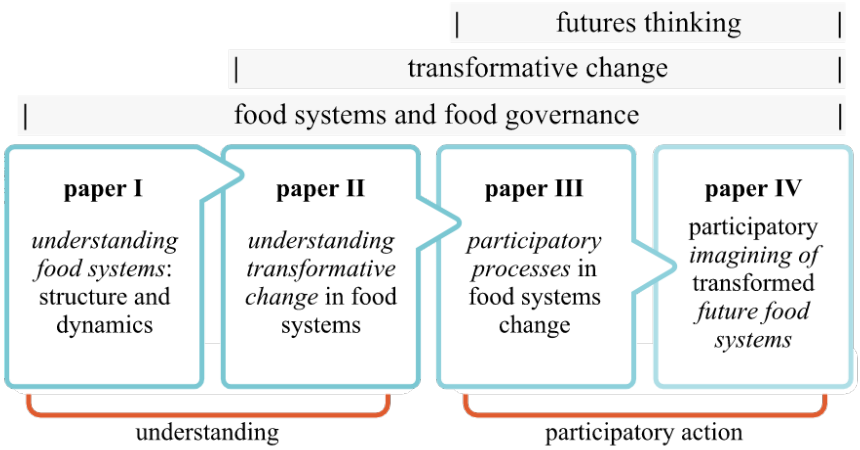

Figure 3. Overview of the four papers in this thesis and their analytical focus with respect to food systems change (understanding food systems or participatory action) and use of theoretical perspectives (food systems and food governance; transformation; and foresight theories).

This overarching question is built up by the four paper, each focusing on elements that are considered important to transformative change in food systems (see figure 2).

Paper **I**: How can a food systems approach integrate different disciplinary perspectives and stakeholder needs?
Paper **II**: What is the transformative potential of food systems practices that emerge out of out of civil participatory processes?
Paper **III**: How can participatory policy processes be conceptualised?
Paper **IV**: What is role of participatory foresight in transformative food systems change?

The tailored methodological approach, building on methods that span across these theoretical perspectives, is set out in the next chapter.

3 METHODS & MATERIAL

Besides building on various theoretical perspectives, this thesis also draws on various methods. This section sets out how the theoretical and conceptual framing aligns to the methods used. Aiming to explore the influence of new actor configurations in processes of change, necessitates an approach that can bridge macro and micro scales. The choice for qualitative methods of research helps to create an understanding of these actor configurations and how they relate to and make sense of the larger food system they are in. Second, aware of the diversity of actors, and their diverse ways to viewing and approaching food systems, participatory research is key to my research approach for two reasons. Firstly, through participatory work I aim to tease out the diverse ways actors perceive food systems, which in turn, shape their practices and the food system. As such this allows for the incorporation of 'experiential knowledge' of actors in the system (Reason 1998). This contributes to the further 'opening up' of science, rather than a closing down (Leach 2010; Stirling 2010). Secondly, the work in this thesis is guided by what Reason (1998) calls 'participatory action research', in that it aims to and produce knowledge that is useful for both researcher and the actor(s) researched in attempting to create a space where there is a genuine balance of knowledge and true knowledge production can take place between researchers and actors. More "*porous* research structures" (Green and Thorogood 2009), that do not exclusively centre on academia, will allow for the transdisciplinary knowledge production that is called for in sustainability science.

Methods applied

The methodological approach that this thesis hinges on is three-fold. The main methods used in this thesis can be categorized as qualitative methods of data collection, methods for knowledge co-production and methods for systems analysis (see table 2). This mixed-methods approach allows for an exploratory approach to building frameworks around elements that are found to be crucial to food systems change. Crucially, the methods used in this thesis are each appropriate to operationalize the perspectives used to address specific research questions in the different papers (see table 3).

Table 2. Methods applied across the papers

Methods for		Papers			
		I	II	III	IV
Systems analysis	Case-study	x	x	x	x
	Comparative case analysis		x	x	x
Qualitative data generation	Field visits		x	x	x
	Interviews		x	x	x
Knowledge co-production	Multi-stakeholder workshops	x*		x	x
	Foresight exercises			x	x

*For paper I, workshops were led by the project team without my involvement. Evaluation of the workshops and further incorporation into the analysis were part of my responsibilities.

Methods for systems analysis have been applied to create a situated understanding of certain food systems and the actors that move within these systems. This has been done by exploring a number of case studies to generate data, while comparative case analysis has been used to get insights into empirical generalizability. Within these case-studies, qualitative methods such as field visits and interviews have been used to get insights detailed insights and experiences from the cases and related actors themselves. Lastly, more participatory methods for knowledge co-production, such as multi-stakeholder workshops and foresight were used as a tool to bringing together diverse actors that potentially have contesting views to food systems.

Table 3. Methods and alignment to theories

Methods **Theories**	Systems analysis	Qualitative data generation	Knowledge co-production
Food systems	x		x
Food governance	x	x	
Transformation	x	x	x
Foresight	x	x	x

Case-study

Through case studies, situated phenomena can be explored. Being situated, they explicitly take in to account the context and surrounding circumstances (Yin 1994; Ziegler 2013). There is no specific logic implied by the word ‘case-study’, other than them being naturally emerging (Hammersley 1992). **All papers** build on case-studies, see table 4 for a brief overview of the different cases. In order to understand the context, the case-study included exploration of the for the case-study relevant policy documents. For **paper I** this entailed exploration of previously conducted food system assessment projects and EU-level data. While regarding **papers II-IV**, this included local

government documents, reports from organisations, websites, news and media items.

Table 4. Overview of the cases used across the papers, along with their most salient methodological characteristics. See corresponding papers for more detailed information.

Cases **Characteristics**	SFNS assessment	Dutch food banks	Urban food strategy
Paper	**I**	**II**	**III & IV**
Scale	European Union (region)	Netherlands (national)	Eindhoven (city)
Focus	Food system assessment	Governance and role food system	Participatory policy making
Project	SUSFANS	TRANSMANGO	TRANSMANGO

Comparative case analysis

Three papers were based on comparative case analysis. Contrary to more traditional comparative case-studies (Yin 1994), this was comparison took place after it was conducted. Meaning that the cases overlapped in scope, but sometimes did not have the exact same use of methods or level of contact with actors in the cases. For **paper II**, the cases were geared toward the same objective and based on almost similar methods. However, this was not the case for the other papers, which used cases that were similar in topic, and in key characteristics for the focus of the paper. **Paper III** resulted out of discussions with the co-author on the topic of participation. Based on those discussions, we explored whether there were grounds for comparison between our cases. While **paper IV** intentionally made a cross-comparison with cases that were not exactly identical. This fit the aim of finding commonalities across foresight exercises more generally. For example, what we thought was important in this case, was the inclusion of a 'less successful' case (see **paper IV** for more detailed information). While post-case study comparison has its limitations, as data was not initially gathered with the objective of comparing a certain phenomenon, it is more explorative and grounded in empirical material.

Site visits

In order to get better insight into the cases, field visits took place. These allowed for participant observations and a sensorial experience of the site (Green 2009). My role as researcher was always clear to people on site. All these visits were planned, and sometimes part of other activities, such as excursions. In the case of the Dutch food banks, four food banks were visited. While the Urban Food Strategy case had three more extensive visits. One of

these entailed a tour of different urban food initiatives in the city Eindhoven. While the other two visits were combined with participant observation during two larger meetings on the urban food strategy. The observations made during these visits resulted in a better understanding of the actor's view on the food system, and their initiatives' related goals, opportunities and challenges.

Interviews

Interviews are one of the most common sources of qualitative data. For the papers in this thesis, semi-structured interviews were used to tease out more specific information that could not otherwise be extracted. Considering the case-studies and their overall rather informal way of interaction I had with the actors, I chose a more informal interviewing method (Hammersley and Atkinson 2007). Taking interviewing out of the 'distinct setting' that is associated with more formal interviewing, this resulted in a difficulty to discern between spontaneous conversations during participant observations and semi-structured interviews. However, I describe them as interviews.

All interviews took place during scheduled site visits. In total, for the case of the Dutch food banks 5 interviews took place, of which four with food bank volunteers and one with an initiative supplying fresh food to the food bank. For the Urban Food Strategy case, two semi-structured interviews took place. Moreover, there were plenty of informal conversations, during site visits or during the many workshops that were part of this case-study. In case of semi-structured interviews, notes were taken during the interview. In the case of more spontaneous conversations, notes were drawn up after the visit was concluded.

Multi-stakeholder workshops

Multi-stakeholder processes can be described as "processes which aim to bring together all major stakeholders in a new form of communication, decision-finding (and possibly decision-making) on a particular issue" (Hemmati 2016, 63). It is an increasingly popular method for the co-creation of knowledge. The main objective of setting up such a workshop, is to create a space that is more equitable regarding the influence and power of the involved stakeholders. Workshops have been used in the 'SFNS assessment' and 'Urban Food Strategy' case, bringing in a participatory element. For the first, this comprised of two core stakeholder consultation workshops (**paper I**). The latter included many workshops, that also used a range of different foresight methods, tailored to the particular process (**paper III-IV**).

Foresight exercises

Foresight is the broad notion used to describe a rich collection of tools that exists for envisaging of futures in a research or strategic planning contexts and has a long history (Jemala 2010). The future is considered more open than the present and holds fewer definite claims. As such, it offers openings for collaborative work that goes beyond solely looking at the present (Wilkinson 2008). Initially, foresight exercises were meant for contexts with fairly strong institutions and mechanisms for non-state actor participation and collaboration (Jordan, A. and Turnpenny 2015). Subsequently, foresight approaches may not always find a good fit in a context that lacks these conditions (Chan and Daim 2012; Jemala 2010). This, however, does not necessarily mean that it is not possible to foster participatory conditions in contexts where such conditions are initially absent. A distinction can be made between two approaches within foresight. One which focuses more on 'explorative' future scenarios. This to explore contextual changes that potentially create challenges, or to test planning robustness. On the other hand, there are 'normative' visions and pathways within foresight, focussing on the imagining of desirable futures we can works towards and possibly describe the pathways to get there (Henrichs 2010; Kok et al. 2011). The process of 'visioning' often serves as a method to describe the outline of a desired future and end-state (Meadows 2013). There are multiple methods to consider how that vision can be reached. A popular one is back-casting, which involves step-wise backward planning from the envisioned future end-state back towards the present (Robinson et al. 2011). Explorative scenarios are often used to investigate plausible[8], yet challenging, futures and what this entails for such an end-state or a particular policy position or suggested 'innovative solution' in the present.

Key to two papers in this thesis has been the use of foresight methods: **Paper IV**, which should be regarded more as an overview and comparison of foresight; and **Paper III** which directly compares two cases that both used foresight exercises to construct urban food strategies. The implementation of foresight methods was done in collaboration with fellow researchers or sometimes stakeholders. This is not uncommon, as foresight is often an intensive multi-stakeholder process and needs careful facilitation made successful through the close collaboration with and flexibility of other facilitators.

[8] Plausible futures are futures that seem reasonable. They are rooted in existing patterns and combined with particular assumptions about key relations and drivers.

4 SUMMARY PAPERS

Paper I: Assessing sustainable food and nutrition security of the EU food system

An integrated approach to food systems assessment is presented in **paper I**, applied to the European Union and based on the EU project *SUSFANS*. Overall, it aims to contribute to a more integrated analysis of and effective decision making for food systems. Besides proposing an indicator-based model, this approach describes why this is best done in a participatory fashion and offers a step-by-step method to perform it. Through the development of the integrated approach, **paper I** contributes to a food systems perspective that is suitable for interdisciplinary research, explicitly based on stakeholders' knowledge gleaned through participatory processes.

This approach is based on the key notion that the food systems' desired main outcome is Sustainable Food and Nutrition Security (SFNS), which includes equally weighted nutritional, economic, social equity and environmental components. In many earlier approaches, the emphasis tended to be on one aspect only, i.e.; nutrition, economy or environment. Given the nascent status of social equity indicators for food system assessments, we acknowledge their limitations, but argue they function as a starting point for further research. The indicator base of the model was developed by academic experts through an iterative consultation and evaluation process with EU-level food system stakeholders (the 'core stakeholder group'). This is a vital component of the approach to the use of indicators as a communication tool in making complex systems understandable to decision-makers.

The use of indicators is not 'neutral'. Assumptions underlying the choice and build-up of various metrics to make up an indicator are subject to ones framing of issues and interpretation of the world. For transparency, the project has attempted to lay bare the layers and hierarchy that make up an indicator. This is shown through the design of the 'SFNS-visualiser', which is intended to be an interactive figure that visualises status of and changes in indicators and trade-offs in the EU food system.

We hope to have set the example for food systems assessment by unpacking the integrated approach taken in this work and to have contributed to improved food systems decision making through the visualisation tool developed during the research process.

The points of **paper I** that contribute to the thesis are:

1. The main desired outcome of food systems is Sustainable Food and Nutrition Security; this is a combination of nutrition, environment, economy and social equity components. The integration of these elements in one model, allows for the emphasising of trade-offs and governance priorities, further supporting the need for interdisciplinary approaches.
2. There are many difficulties in the incorporation of food systems components such as social equity, which are primarily described in qualitative measures. However, this step is essential to overcome disciplinary boundaries and formulate an integrated approach.
3. While having the potential of becoming a promising communication tool for the status and dynamics of food systems, indicators and metrics are often not transparent enough. This puts them at risk of being used as a political tool, rather than 'neutral' indicators.
4. Novel input to the approach came from the diverse group of stakeholders, who advised that the metrics should be directed towards stronger integration of 'natural' and 'social' elements, focussing more on social equity, and towards a more robust multi-scale assessment.

Paper II: Capturing change in European food assistance practices

A comparison of three civil responses to food poverty, food assistance initiatives, in different countries are compared in **paper II**. By taking a Transformative Social Innovation lens, we explore in particular the practices of these civil responses and the change they bring about. The paper highlights the potential of such civil responses to bring about more substantial transformation through the building of momentum through many 'small wins' (Patterson 2017).

Food assistance is highly contested in Europe; some argue its existence is a 'failure of the state', while others see it more as 'an extension of the welfare state'. Either way, it is a civil response to a growing need for food, of which its prevalence has seen a steep increase across Europe. Moreover, research suggests that some of the actors that shape food assistance are rethinking their role in food systems. In this paper, we study three food assistance initiatives, in the Netherlands, Italy and Ireland, that perform novel food assistance practices while embedded in specific institutional contexts, and analyse their potential to transform the food system. We draw on Transformative Social Innovation theory, which builds on both transition and social innovation theory. This allows us to systematically distinguish levels within a system, named the 'shades of change', that together are associated with making up societal transformation. These 'shades' are social innovation, system innovation, game-changers, and narratives of change. By analysing the

shades in each case, we can compare the cases with respect to their novel practices and their motivations and expectations related to the initiative itself and outward institutional relations. This has provided insights related to food assistance in particular, but also to the ability of such civil responses to have an effect on food system dynamics.

In the discussion we do acknowledge that, in order to analyse these aspects, we have taken a step back from the ongoing debates around food assistance. The contestation around food assistance's right to exist, stems from the argument that its simple existence denies the government's responsibility around 'the right to food'. We agree that this is a vital debate, however this especially ideological debate fails to argue for those in hunger now. As such we saw it fit to highlight the exceptional role of food assistance to bridge this problem in transition. In doing so, we have offered a novel perspective on food assistance initiatives.

The points of **paper II** that contribute to the thesis are:

1. Food assistance initiatives take up multiple functions in the food assistance system; all three cases show evidence of complementing welfare systems by improving local government's social welfare targeting.
2. Building on the first insight: The comparative analysis of the three food assistance initiatives shows that 'small wins' can create momentum for change on a larger scale. These are examples of practices that are alternative to the 'dominant' food provisioning practices and as such build up pressure for dominant food systems to transform.
3. The new food assistance practices aim, in different ways and contexts, to address the growing uncertainty and instability by reshaping food assistance. Despite numerous challenges, we see that food assistance initiatives can potentially contribute to and interact with other elements of systems that go beyond solely food poverty alleviation.

Paper III: Processes of participation in the development of urban food strategies

Building on **paper IV,** which describes the role of foresight in transformative change, **paper III** explores the extent of participation in two cases that both used foresight as a tool. Groups of stakeholders participated in extensive processes, both aiming to develop an urban food strategy. Urban food strategies are increasingly being used as means to address a multitude of challenges presented by food system failings. It has also become common practice to use participatory approaches in the field of urban food systems planning. This is because there is evidence that using such participatory

process can democratize, legitimize and increase the effectiveness of addressing challenges. Despite the promise of these approaches, they have also been viewed as problematic for being unbalanced and lacking accountability.

This paper sets out to compare the creation and use of new participatory spaces in two initiatives in two European cities, Eindhoven and Exeter, in their on-going attempts to formulate urban food strategies through multi-actor policy-making. Policy making is here conceptualised as the interplay of actors, knowledges and spaces, as set out by McGee (2004). Taking place within that, we have looked at the processes' levels of participation and accountability: this is operationalised by dividing participation into 'types of participants' and 'quality of participation', and by distinguishing between 'transparency', 'consultation', 'evaluation' and 'correction' when it comes to accountability (see table 1, page 14). Analysing these dynamics for both cases allowed for a comparison between the two multi-stakeholder policy-making processes. We conclude that accountability especially lacks attention in the two cases. This is likely explained by the scale of operation. Local governance moves quicker and is 'messier' than governance at the state or the EU level which moves at a much slower pace. Considering participation there are some clear weaknesses, which also echo through the literature: The first major weakness is the inability to include vulnerable groups. This might be for several reasons: the convenors lack the connects to reach the stakeholders; stakeholders from those groups do not want to participate; or stakeholders feel intimidated by some of the more powerful actors that are part of the process. Firstly, we argue that more fortified components of accountability (especially evaluation and correction) would improve inclusion of stakeholders. Secondly, a good representation of stakeholders is essential for sustainable policy development, it signals a need for further research to uncover reasons why such – seemingly – open processes fail to attract and include especially vulnerable groups.

The points of **paper III** that contribute to the thesis are:

1. Participatory policy processes are an attempt to break out of traditional forms of policy making. We have provided a heuristic to evaluate the accountability and quality of participation embedded in policy processes.
2. The involvement of 'seasoned' policy makers is important. In one of the two cases, involvement of policy makers was somewhat lacking. This led to a lack of 'policy language' being used in the final drafted document, making it more difficult for the output document to be taken up by the local government and put into action.
3. While participation is regarded an important element of sustainable development, it is easily mis-executed. When this occurs, there is risk

of reinforcing powerful actors and potential unsustainable practices, while keeping up the image of a participatory process and sustainability as an outcome when in reality neither has been achieved.

Paper IV: Imagining transformative futures

Building on the need for multi-stakeholder approaches to food systems change established in **paper I**, **paper IV** interrogates the role of foresight, as a multi-stakeholder tool, in furthering change. Foresight is increasingly used to foster transformative change, as it allows for interdisciplinary, multi-actor and multi-scalar interaction. The concept of foresight spans a wide range of methods that allow one to systematically investigate the future. Many use foresight exercises because they are said to offer collaborative spaces and have the potential to conceptualise and potentially initiate transformative change. **Paper IV** adds to the debate on such tools by exploring the possibilities and limitations of foresight with respect to its role in transformative change.

By building on foresight and sociology, this paper interrogates the role of foresight in transformative change, building on four cases. While each case is embedded in different contexts and characterised by various constellations of actors and organisational approaches, they each share the goal of transformative food systems change. All four cases applied participatory scenario development to explore and further change. We reflected on the processes that played a role in the foresight workshops, by differentiating between three structuring processes; governance context, social dynamics, and methodological factors. To operationalise these structuring processes, we distinguished layers within the structuring processes that influence the impact of the foresight process. Looking across the four cases and comparing these layers allowed for the distillation of the role of foresight in and conditions for transformative change.

The points of **paper IV** that contribute to the thesis are:

1. Foresight is far from a silver bullet; However, when foresight processes are co-designed with stakeholders and applied correctly they can become the starting point for, or contribute to, transformative change.
1. Building on the first insight, there are three roles that foresight can play in transformative change, ranging from modest to more ambitious: 1) contribution to a pre-conceptualisation of change; 2) offering an avenue for the creation of new actor networks; and 3) creation of concrete strategies with a high chance of implementation.
2. Moreover, we argue that one should consider several things before embarking on a foresight journey: the role of leading change makers (including the researchers themselves), the ability to attract

stakeholders, and the potential of co-option of the process by more powerful (regime-level) actors.

3. Lastly, we give some insight into the different roles researchers can adopt regarding the transformation process. At a minimum level, researchers must maintain a focus on facilitation and having a firm grasp on the conceptualisation of change. More actively, researchers can work on developing the facilitation of these insights into actual plans and strategies stakeholders commit to. Building on this more active role, researchers can decide to become academic stakeholders and become part of these plans for actions themselves. Finally, under exceptional circumstances; researchers can become the champions of transformative change, thus moving into the arena of action-research, personally taking on responsibility for coordination and execution of plans and strategies.

5 DISCUSSION

This thesis has investigated the participation of new stakeholder groups in food system transformations. To do this, it has conducted a series of studies, each based in distinct case research, but at the same time, building on each other in terms of insights and theory. The thesis started with the participatory development of a food systems framework and assessment approach as a basis for shared food systems understanding among diverse stakeholders (**paper I**). This was followed by an investigation of how change in food systems occurs through a practices lens (**paper II**). The next study investigated policy processes that aimed to use participation to democratize and 'open up' food systems governance (**paper III**). Finally, I investigated the role of processes that explicitly engage with imagined futures to impact transformation efforts in the present (**paper IV**).

In this section, I will highlight the key contribution of my thesis, by looking across the papers and distilling a number of key insights.

Insight I. Food systems lens as 'transformative space' making

The notion of food systems is increasingly used and considered useful for its ability to unravel complexity, highlight trade-offs and guide governance priorities. "The systemic nature of these interdependencies and interactions" requires integrated approaches (Poppy et al. 2014; Prosperi et al. 2016). Building on this, **insight 1** is that the use of a food systems lens also provides common ground for groups of actors that normally would not interact, or would have difficulty interacting. Following Marshall et al. (2018), who argue transdisciplinary development research is 'transformative space making': The use of a food systems lens, as presented in **paper I**, likewise contributes to the making of a transformative space. In that approach, the food systems lens provides an entry points for actors who look at food through different paradigms to debate problems together. This insight is drawn from observations made during the data collection and analysis phase for **paper I**, which included a consultation of food sovereignty experts for the metrics work, but also during multi-stakeholder workshops (**paper III** & **IV**).

This is significant, since Clapp (2014) highlights that there has been a growing divide between food paradigms, especially between supporters of food sovereignty and food security. Where the two have become the figureheads for almost opposing discourses, I concur with scholars who describe this as counterproductive and see the two as complementary; where food sovereignty can be seen as a set of preconditions for enabling food security (Lang 2004; Weiler et al. 2015; Lerner and Eakin 2011; Lambek et al. 2014). I argue that the use of a food systems lens allows research and practice to move beyond such a divide. Previously the focal point in debates was either on food production, nutrition, or rights. By integrating these perspectives, they all become part of a bigger and more importantly interacting whole, offering a more multidimensional perspective on what is, in reality, a complex system. Looking across some of the major food paradigms, contestation is mostly around themes such as agriculture and social rights, leading to an inability to reach a consensus and an increased sense of conflict between the paradigms. While the contestation will not suddenly disappear through the use of a food systems approach, it does allow for the discussion of a broader range of topics. Secondly, systematically dividing the system into activities, actors and drivers can be used as an approach to find common objectives for transformation and also explain the envisaged transformation pathway or theory of change. Actors from different paradigms were present during workshops for the *Vision on urban food* (**paper III** and **IV**). In these workshops, discussions on the different food system elements proved an excellent starting point for discussion and helped avoid creating a sense of irresolvable conflict at the beginning of a challenging process. This implies that a food systems approach can help overcome the seemingly insurmountable divides between food systems paradigms described by Clapp (2014).

It is also important to emphasize that different food paradigms are supported by different scientific disciplines, and that these need to interact to develop a systems perspective. Food sovereignty, with its focus on land rights, protection of the environment and dynamics of the global food economy, necessitates a political approach that allows scholars & practitioners to highlight the power imbalances and injustices (Trauger 2014; Davila and Dyball 2015; Bernstein 2014). By contrast, the food security concept has been easier to engage with from a quantified, modelling perspective (Gustafson 2016; Prosperi et al. 2014; Rutten et al. 2018). This is partly due to the concept being much more 'open-ended' and consists of elements that are 'measurable' and through that allows for integration in work around climate impacts, or agricultural systems. This was exactly the issue we encountered during the research for **paper I**. As an example, we reached out to food sovereignty experts after various stakeholders requested more information about the impacts of social equity concerns of the food system.

The discussion we had was fruitful, but it quickly became clear that the lack of cross-over between the metrics-led food security approach and the food sovereignty approach meant several bigger obstacles (see section on limitations). We were able to partly overcome this by taking a food systems perspective. Through equal weighting of the elements that make up sustainable food and nutrition security, the food systems lens provides space for collaboration between disciplines that would otherwise (not necessarily on purpose) steer clear of each other.

In summary: A food systems approach can be instrumental in bridging food paradigms, disciplines and sectors, but this requires a high level of reflexivity from all involved about how the system is framed and how its elements and interactions are defined, and an appreciation of the fundamental paradigmatic and disciplinary differences that exist.

Insight II. Combining regime and niche activities for transformation

The second insight relates to the role of both grassroots and regime actors in furthering transformative change. Both actor groups are sources of innovation: Despite this, grassroots innovation is often considered more 'radical' in its reconfiguration (i.e. going beyond existing infrastructure or institutions) and is likely to be more inclusive in its model of change. While based on different values and objectives, the regime also innovates their practices, incrementally redirecting the system (Smith 2018; Fressoli 2014). The empirical research done in this thesis (**paper II-IV**) suggests that some level of alignment between the two is necessary in order to create a higher likelihood for transformative change to occur (De Schutter 2017). Nevertheless, balance is critical in this respect, as the regime can overpower the grassroots initiatives if a careful modulation and balancing is not purposefully undertaken during a process (Fressoli 2014; Smith 2014).

Grassroots initiatives are a valuable source of innovation that is less bound by structures and constraints in the present. This was also clear in the case study in Eindhoven described in **papers III** & **IV**, where input from local urban food actors during foresight workshops was novel in the combining of different activities and actors. However, due to the detachment from existing structures and channels of power, the ability for these grassroots initiatives to take such practices further and become sources of transformative change was severely limited. In this case, it was the lack of knowledge about the policy process and language among grassroots actors that made it difficult for it to compete with the 'regime' practices. Specifically, the vision that was shaped around the future of urban agriculture for the city was too radical for the local government to integrate into their current plans. Here it would have been more effective to have a deeper collaboration with regime level actors

and thus allowing those actors new to the processes of policy making and local governance to make more sense of it, likely resulting in plans that reflect this understanding and novel collaboration.

Another example is visible in the case of food assistance in the Netherlands in **paper II**. While the food banks have constructed a highly professional national infrastructure that is governed by a multi-layered organisational structure; various forms of support from the government could affect the level of change that is implemented by food banks. This could be in acknowledgement of food poverty issues, giving food banks a more official and political mandate; or going a step further, deeper collaboration on fundamental questions around the evolution of the social welfare state and the targeting of the poor. Contrary to *most* innovations; the envisaged transformation related to food bank practices will only be successful if food banks – and the function they fulfil today – become redundant. As such, in this case, the aim would be for the regime to overtake the niches practices and embed them in the system.

However, there is tension between the need to collaborate for resources and system alignment, in order to grow niches, and the need for transformative change: fundamental changes in structure, system functions and relations between elements. Caution is advised, for there is the danger of co-option of the transformation process by the regime actors. This is a tricky balance, and requires a certain level of trust between actors and well executed participatory processes. The latter tension is highlighted in the next insight.

In summary: Niche and regime actors need to work together to achieve food system transformations, but there are fundamental divides between such actor groups. These divides are in terms of interests and familiarity with the mechanisms and avenues of power, that in some instances might only be overcome through close collaboration and trust. In other instances, they are characterized by conflict and are necessary to change undesirable systems.

Insight III. Only when the balance is right, is participation crucial

The need for participation of non-state actors in governance towards sustainable development and democratisation of policy processes has been emphasised on many occasions by researchers and activists (Mansbridge 1998; Blackburn et al. 2002; Few et al. 2007; Gaventa 2000). Beyond the knowledge and advocacy communities, there also is growing acknowledgement on behalf of policy-makers of the important of participation (Duncan 2015b; Gaudreau 2015; Scholte 2012). Even so, execution of participatory processes is not as straight forward as it may at

first seem and, if not done right, can actually reinforce dominant practices, while giving them the image of being more democratic and inclusive (Few 2007; Cornwall 2005; Pijnenburg, B. 2004; Hirsch et al. 2010). In complement to **insight II**, I argue that evaluation of participation is crucial to maintain the right balance between regime and niche actors.

In **paper III**, we set out a framework to explore participatory processes, that distinguished between two key elements: participation and accountability. Based on that it becomes clear that while there is ample attention given to participation in the studied policy process, accountability is missing. This increases the danger of co-option of the process by regime actors. If it were not for the watchful eye of the leading change maker described in **paper III**, there would have been a substantial risk for co-option. Based on my observations, I conclude that the lack of accountability was more a result of time and resource constraints on behalf of the local government, and not on purpose. Nevertheless, it highlights the *ease* of starting a participatory process under the guise of inclusion, but to overlook some the crucial elements that make up accountability.

Figuring out how accountability can work is an essential step for sustainable development: especially at the level of the local government which is far less scrutinized than organisations and processes operating in the arena of global governance. In acknowledging that the pace of governing is quicker at such local levels, also means acknowledging that these steps towards accountability are often overlooked or masked by the need to address problems related to local infrastructure and stability. As Barber writes about city governance: "come hell or high water, … they have to worry about ploughing the streets and providing parking …" (2013, 13). Regardless of such responsibilities, there is a need to explore mechanisms to keep accountability and participation in the spotlight at the local governance level.

In summary: Participation in food systems change processes has to be developed carefully using a framework that safeguards the process against co-option and ensures accountability.

Insight IV. Using participatory futures to imagine and enact new food systems

The use of the future as a space for multi-actor collaboration has been gaining traction in recent decades (Wilkinson 2017; Ramírez et al. 2017; Ramírez et al. 2008; Henrichs 2010; Wilkinson 2008). Foresight allows actors to think beyond already prescribed structures and roles, and the values attached to them(Ramírez 2017). This makes foresight extremely applicable for transformation processes, that are intended to result in 'fundamental change'

of systems and structures. Such processes need to capture and shape a future that is acceptable to a wide range of views and actors, for this to be sustainable change. However, the success of foresight in terms of its ability to guide food systems governance is dependent on a number of preconditions. This was particularly visible in the foresight exercises that are described in **paper IV**. For example, in Burkina Faso, where foresight was used to develop new policy for the rural sector, the exercise resulted in rather radical imagined futures that heavily built on cross-departmental collaboration and aimed at achieving increased social equity – and these recommendations were used for policy formulation. However, the exercise built almost exclusively on policy-makers and researchers. Other processes discussed in the paper, such as the process in Eindhoven and in Tuscany, had mixes of dominant and alternative actors – which contributed to the transformative potential of these processes in terms of new actor coalitions, but at the same time, made the translation of desired futures to present action much more challenging, politically and practically.

The ability of foresight to support participants to go beyond their set roles, and – to some extent – let go of the structures and 'lock-ins' that are related to current day, is useful for the fostering of 'transformative imagination' (Galafassi 2018).

This insight around foresight is particularly complementary to **insights I** & **III**, which both describe processes taking place in 'transformative spaces.' Nevertheless, as we emphasised in **paper IV**, foresight is no silver bullet. While it can aid in the conceptualisation of change, perhaps equally valuable is its contribution in creating a common understanding of future food systems and/or of each other's views of food systems. We show in **paper IV**, through comparison of a number of foresight cases, how the future can act as a productive space, bridge different actor groups, and allow all those involved in such processes to tap into new imaginaries.

In summary: Foresight processes have unique potential to allow dominant and alternative actors to step out of present systems and their present roles, imagine new futures, and begin to enact these futures in the present. However, good conditions in terms of institutions and participating actors are key. The aim of the process, and the roles of dominant and alternative actors in it, have to be considered carefully to avoid productive foresight processes that ultimately fail to impact present day food systems governance.

Methodological contributions

The construction and shaping of transformative spaces is a red thread throughout this thesis. Curiosity for what constitutes such a space and its inclusiveness to a diversity of actors has driven many of the papers. A number of heuristics that are geared towards transformative food system change were developed for the papers in this thesis. The developed heuristics can be used as theoretical framing, or, in the case of a more action-research approach, as input for the design of methods.

Firstly, there is the 'integrated approach' to assessing sustainable food and nutrition security from **paper I**, that builds on collaboration between a large group of interdisciplinary scholars. It provides both a theoretical scope, by spelling out what one can consider a sustainable food system and what elements are to be considered. Second, it offers an explicit methodological framework, by setting out a step-by-step approach, including stakeholder consultation. We hope that the approach will set a new standard, that 'raises the bar', when it comes to food systems assessment.

Next, we have formulated a number of elements that structure foresight processes, based on the lessons from four food system change related foresight processes (**paper IV**). These structuring processes of foresight can be considered a methodological and theoretical aid for future futures research. Its methodological value is in it being an evaluative framework to explore whether for example, the context is conducive for change; if there is someone who can take the lead after the foresight processes; or, to rethink the role of the researcher themselves. It has conceptual value by offering a way to think about foresight processes, breaking it up into the three structuring processes: governance context, social dynamics, and methodological factors.

Lastly, the heuristic developed in **paper III** describes the two components that are considered key to participation in policy processes: accountability and participation. In the paper we use this heuristic to explore the level of execution of participation in two similar urban food strategy development processes. By distinguishing between 'quantity' and 'quality' of participation (Polk 2008), we highlight that beside the presence of certain stakeholders, their ability to have a say is equally important. This is then combined with accountability, which is made up by the ability of governance processes to include 'transparency', 'consultation', 'evaluation' and 'correction' (Scholte 2011).

Contrary to the other papers, **paper II** applies an existing, yet novel, theory on Transformative Social Innovation (TSI) (Avelino 2013). Applying it for analysis of transformative capacity of a number of European food banks, the

paper contributes with practical application of the theory. Overall, we found that the TSI theory, it's the added emphasis on the paradigms and space for flexibility, was extremely useful for analysis of transformative capacity within and across initiatives. This compared to STS, which is quite rigid and less straight forward for analysis of food-related initiatives.

Reflection on research approach

Throughout my time as a PhD-candidate, I have been part of several extensive European research projects. All projects focused on food systems change, but were embedded in different configurations of research institutions and their respective communities. To my advantage, this has allowed me to be part and parcel of several notable research communities when it comes to food systems and transformation research. This has provided me with the unique opportunity to experience the commonalities and differences, allowing me to see where there are overlaps and existing synergies. However, this meant that the case studies used in this thesis have each been embedded in larger research projects, each coming with their own methodology. The main consequence being I needed to navigate during research for my PhD thesis was finding space within already defined methodological frameworks. Luckily, my research interests could be captured within the different frames of the project and institutes I was embedded in, allowing me to build up my PhD thesis at the intersection of these academic spaces.

This entailed working on the project *TRANSMANGO* (transmango.eu) that had a strong local food system transformation focus. I started out on this project while based at the Rural Sociology Group of Wageningen University, providing me with the tools to food systems from a sociological perspective. Later on, after a transfer to the Environmental Change Institute of the University of Oxford, I had the opportunity to delve more into food systems thinking and foresight methods. Shortly after, I joined the project *SUSFANS* (susfans.eu) that aimed to build an integrated assessment of the EU-food system. Meanwhile, being a PhD-candidate at the Stockholm Resilience Centre of Stockholm University, allowed me to delve deeper in the social-ecological perspective to transformations. Overall, these different spaces have been most valuable to get out of the comfort zone of a certain research community, offering continuous challenges.

Overcoming obstacles to an integrated, inclusive food systems perspective

Food systems research has proven to be an important driving force in the development of integrated perspectives on food (Gustafson 2016; Rutten 2018; Ericksen 2008). However, as signalled in **paper I**, there is still a lack of integration of social equity related work (Dixon et al. 2007) and metrics work (Landert et al. 2017). Assessment of the food system is essential to get an idea of its 'performance' and to design strategies for steering it into a desired direction. Without the incorporation of elements of social equity such an assessment is incomplete. After a consultation with food sovereignty experts, we attempted to integrate social equity dimensions into the approach. However, it quickly became clear that there is a lack of appropriate data on the matter and that the construction of indicators is far less straight forward. As most of the points raised to 'measure' social equity are highly influenced by a range of contextual factors, and can feature different drivers of change in different locations. When one combines these challenges together, it explains the lack of metric-development for such inherently qualitative dimensions that make up sustainable food and nutrition security.

This highlights the urgent need for data collection across the world, exploring the status of food sovereignty principles. However data, the dependability of it, and the ability to gather it, is highly political and relates to the strength of governance mechanisms (Lehtonen et al. 2016; Lehtonen 2015). In some cases, this is a more or less conscious decision – if 'the problem' is not counted, it does not exist. While in other cases, data collection is simply far less urgent than the addressing of immediate and basic needs of people. Having noted the still stubborn divide between 'social' and 'natural', or 'food sovereignty' and 'food security', this signals the necessity for scholars from both groups to explore common ground and design research in such a way that can be complementary. Or, to jointly explore ways to assess and evaluate social equity measures in ways more equal to that of environmental, economic or health indicators.

It is also in this capacity that we are aware of the limitations embedded in **paper I** and the integrated approach for assessing the food system which we put forward in the paper. Nevertheless, we have provided a starting point an engaged and critical debate, which we hope will lead to further improvement and a refinement of such indicators and metrics.

Making sense of 'doing' governance

Participation in policy processes is essential, and difficult to execute properly, as highlighted in **insight III**. Engagement of civil actors in policy making can result, in theory, in more inclusive and democratic policies (Koster 2014; Baud 2008). This allows for policy makers to make better sense of 'the daily lives' led by people who are affected by the policies they make. However, the difficulty for non-state actors to understand governance makes participatory policy processes more complex (Hirsch 2010). 'Doing' governance – or the practice of governing, is often intangible to non-state actors, especially when they have never been part of such processes.

This became especially clear during workshops in Eindhoven for **paper III** & **IV**, where citizens highlighted their light annoyance with the inability of the process to result in action. During the *city debate* a remark was made about having expected to 'roll up their sleeves', but instead it had only been discussions and a steady production of documents. The lack of understanding about the procedures and practices that together make up governance, is in this sense troublesome. Because it can lead to the impression that 'nothing' is being done, while actually there are many checks and balances, put in place to assure better quality governance (Hirsch 2010). Governments and governance are quickly scrutinized and blamed, which in itself can be considered positive for signalling *some* level of civic engagement with politics and decision-making. But, it can also be a result of misinterpretation of the many responsibilities and constraints that come with governance. With the larger neo-liberal trend of moving towards more participatory governance models, shifting responsibilities away from the state, the need to make sense of 'doing' governance becomes apparent (Koster 2014).

Failed inclusion or acts of resistance

Also problematic is the fatigue and disappointment that can be the outcome of such misunderstanding of governance on the side of civil actors. A lack of trust in governance influences the willingness of non-state actors to engage and participate (Scott 1985; McGee 2004; Arce and Long 2000). This is especially the case for vulnerable groups, whom often are discussed as target groups in such processes.

As highlighted in **papers III** & **IV**, a common difficulty for processes that strive to be inclusive, is the inability to attract vulnerable groups. Similar to the process described in **paper III**, invitations were open-ended and directed at people from the entire city. In the case of developing an urban food strategy, reference was made to urban agriculture being beneficial to vulnerable groups such as poor, elderly, single parents, and so on. In their absence, they are discussed as *passive actors* and stripped of their agency.

Another interpretation, rooted in the work critical of development, is the possibility that these groups of actors willingly disengage. Meaning that groups of actors simply just don't *want* to participate and *choose* to stay on the margins. As James Scott explains (1985), this is a form of resistance, showing ones disagreement about the state of things. While applied to peasantries in Malaysia, unpacking their everyday hidden acts of resistance against social inequalities, this work highlights how discontent can manifest in different ways. Similarly, in the context of current day politics and in western democracies is the increasing number of citizens casting a 'protest vote', or refusing to vote at all.

While acknowledging the need for participation and the need to properly execute it, out work highlights the need for further research on how to reach these groups. The inability to include these groups signals the inability or unwillingness of policy to relate to or address the issues of these groups. It is essential to better understand and interpret exclusion, so as to make policy-making more democratic and more likely to lead to sustainability across a number of dimensions.

Taking time for the future

Insight IV highlights how foresight is beneficial to policy-making and sustainable development. Nevertheless, the future also seems to be a more elusive concept, that often requires some level of 'training' or 'immersion' (Vervoort et al. 2010). While this comes relatively easy to, let's say, an urban planner who as part of their profession thinks about how to shape plans and structures in the future; this might be more difficult for a public servant engaged in the drafting of policies. Whereas in our daily lives we potentially think through the next month and have some ideas about the years to come; it is more difficult to think of transformative futures that take place 30 years onwards. This need not be a problem, provided that there is sufficient time to get immersed into this 'future thinking'.

However, as is also highlighted by Galafassi et al. (2018), participants in workshops have difficulties breaking away from current narratives and tend to imagine incremental rather than transformative change that assumes new system structures. The time constraints that are generally associated with workshops, become extra problematic for the expected objectives related to foresight methods. Especially in academic circles, where funding remains limited, it often results a necessity to make compromises in the duration of the workshop. Arguably, much can be achieved in a short amount of time, in the right setting. Nevertheless, taking the time to get immersed in this imaginative future world is crucial. Workshops of almost any duration can result in a set of scenarios, the question becomes under what circumstances

and pressures they were developed. Decisions to incorporate foresight methods should include reflection on issues of time and immersion (Fazey et al. 2014); Whether the participants involved in the process are already trained in futures thinking; or whether there is enough time and space for immersion.

These issues that require very pragmatic solutions are not often reflected upon. Combined with a general push in academics to explore and analyse problems from a multi-actor point of view, and a growing popularity of foresight methods, the number of foresight workshops has mushroomed. While positive with respect to an increase in multi-actor processes, a potential risk is loss of quality of foresight.

The trap of focusing on the good

Use of discourse around 'transformations' is growing both in academic and policy arenas. In the process, the concept of transformation is being stretched to fit political processes. With it, come considerable risks related to power imbalances and equity issues (Blythe 2018).

Perhaps a partial cause of transformation's 'dark side', is the that much of the work around transformation tends to be celebratory in some way. While there is still space for the acknowledgment of limitations and highlighting points of critique, it often still concludes rather 'positively' about the innovation in question. In particular, this can happen when one zooms in on the local scale, having done participant observations or having had more contact with the actors in question. Knowing the ins and outs of such an organisation can sometimes result in a more positive view of the change achieved than it strictly deserves when one has more distance from the initiative or process in question.

Moreover, it is embedded in the very idea of transformation theory to describe successes, as without it, there would not be a transformation. There is a real need to describe cases on non-transformative change and unpack the reasons why a certain initiative was *not* transformative. Exploration of the cases that 'failed' is just as valuable in lessons-learned, as that of the transformative ones. Finding the patterns of success and failure for transformative change, while allowing for a flexible consideration of contextual factors is critical. Doing so will allow one to go beyond the mere 'upscaling' of a successful initiative, and rather give way to tailoring and assembling a new construction for a different place (Masterson et al. 2016; Moran and Rau 2016).

6 CONCLUSION

The need to transform food systems toward more sustainable futures is urgent, but also poses an immense challenge that will require actors from across these systems to act. The complexities and interdependencies that are associated with food systems can make the related social and ecological issues may feel like distant or unsurmountable problems to individuals and communities that go about their daily practices. However, despite this, some civil actors choose to take on the challenge.

This thesis set out to understand under what conditions and through what approaches the participation of new actors in food governance can contribute to transformative change towards sustainable food systems. Based on empirical work that features various manifestations of participation in food governance, this thesis has explored the structures and dynamics of change in food systems, building on food systems, governance and transformation literature.

The thesis started by analyzing how a participatory space for the creation of a new integrated framework and assessment for food systems was developed through the integration of disciplines and societal perspectives (**paper I**). Next, the thesis moved from shared food systems understanding to the understanding of change dynamics and transformative capacities in food systems (**paper II**) before focusing on the specific role of stakeholder participation in food system governance (**paper III**). Finally, the use of foresight as an approach to imagine and enact future food systems was evaluated (**paper IV**). These studies each offer different elements of research that, at the level of the thesis, sought to address the gaps between food systems thinking and social sciences grounded work on governance, change and transformation.

These studies together offer an exploratory, mixed-method approach that hinges on qualitative data collection, methods for knowledge co-production and methods for systems analysis. Through this approach, the thesis has highlighted the need for change processes that build on concrete and politically literate notions of participation, including future-oriented processes. Such approaches can facilitate the incorporation of social equity dimensions in food systems thinking – a connection which thus far has been missing in much research and often in practice.

Through the combined insights emerging from the many elements described above, the thesis has sought a further integration of the broad and still fragmented academic *food* domain.

Together, this leads to the following conclusion on the role of participation in food governance. Given the interrelated and complex nature of the food systems, and the therein embedded issues and challenges, the starting point of any process that has the ambition for transformative change should be an integration of different food system perspectives. Integrative food systems research and action means building on food system knowledges from across different disciplines in terms of research, but also from public, private and civil spheres. Secondly, a connection of different narratives and visions of the future of food needs to be facilitated, in a matter that is keenly aware of the politics and disciplinary biases that drive these narratives. Finally, opening up food governance to more participatory and collaborative forms by building on new actor configurations is essential for transformative change, but the political challenges associated with such attempts should be made explicit to avoid reinforcing rather than overcoming present day problems.

7 REFERENCES

Arce, A., and Long, N. (2000). *Anthropology, Development, and Modernities: Exploring Discourses, Counter-Tendencies, and Violence*. London and New York: Routledge.

Avelino, F., Wittmayer, J.M., Haxeltine, A., Kemp, R., O'Riordan, T., Weaver, P., Loorbach, D., et al. (2013). *Game Changers and Transformative Social Innovation. The Case of the Economic Crisis and the New Economy*. TRANSIT, grant: 613169.

Bäckstrand, K. (2006). "Multi-Stakeholder Partnerships for Sustainable Development: Rethinking Legitimacy, Accountability and Effectiveness." *European Environment* 16 (5): 290–306.

Barber, B.R. (2013). *If Mayors Ruled the World: Why Cities Can And Should Govern Globally and How They Already Do By*. London: Yale University Press.

Barrett, C.B. (2014). "Assisting the Escape from Persistent Ultra-Poverty in Rural Africa Frontiers in Food Policy: Perspectives on Sub-Saharan Africa." In *Stanford University's Global Food Policy and Food Security Symposium Series*, edited by Falcon, W. P. and R. L. Naylor. Stanford: University of Stanford: Center on Food Security and the Environment.

Baud, I., and Nainan, N. (2008). "'Negotiated Spaces' for Representation in Mumbai: Ward Committees, Advanced Locality Management and the Politics of Middle-Class Activism." *Environment and Urbanization* 20 (2): 483–499.

Bellamy, R., and Palumbo, A. (2010). *From Government to Governance*. London and New York: Routledge.

Bennett, E.M., Solan, M., Biggs, R., McPhearson, T., Norström, A. V., Olsson, P., Pereira, L., et al. (2016). "Bright Spots: Seeds of a Good Anthropocene." *Frontiers in Ecology and the Environment* 14 (8): 441–448.

Bernstein, H. (2014). "Food Sovereignty via the 'Peasant Way': A Sceptical View." *The Journal of Peasant Studies* 41 (6): 1031–1063.

Bexell, M., Tallberg, J., and Uhlin, A. (2010). "Democracy in Global Governance: The Promises and Pitfalls of Transnational Actors." *Global Governance* 16 (1): 81–101.

Biebricher, T. (2015). "Neoliberalism and Democracy." *Constellations* 22 (2): 255–266.

Bittman, M., Pollan, M., Schutter, O. De, and Salvador, R. (2017). "Food and More: Expanding the Movement for the Trump Era." *Journal of Food Law and Policy* 13 (1): 26–32.

Blackburn, J., Chambers, R., and Gaventa, J. (2002). "Mainstreaming Participation in Development." In *Making Development Work*, edited by Hanna, N. and R. Picciotto. London: Transaction.

Blair, H. (2000). "Participation and Accountability at the Periphery: Democratic Local Governance in Six Countries." *World Development* 28 (1): 21–39.

Blythe, J., Silver, J., Evans, L., Armitage, D., Bennett, N.J., Moore, M.-L., Morrison, T.H., and Brown, K. (2018). "The Dark Side of Transformation: Latent Risks in Contemporary Sustainability Discourse." *Antipode* 0 (0): 1–18.

Bock, B. (2012). "Social Innovation and Sustainability; How to Disentangle the Buzzword and Its Application in the Field of Agriculture and Rural Development." *Studies in Agricultural Economics* 114 (2): 57–63.

Braimoh, A.K. (2013). "Global Agriculture Needs Smart Science and Policies." *Agriculture & Food Security* 2 (1): 1–2.

Breitenfellner, A. (2013). "Economic Growth and Resource Use." In *Factor X. Eco-Efficiency in Industry and Science*, edited by Angrick, M., A. Burger, and H. Lehmann, Vol. 30. Dordrecht: Springer.

Campbell, B.M., Vermeulen, S.J., Aggarwal, P.K., Corner-Dollof, C., Girvetz, E., Loboguerrero, A.M., Ramirez-Villegas, J., et al. (2016). "Reducing Risks to Food Security from Climate

Change." *Global Food Security* 11: 34–43.

Candel, J.J.L., and Pereira, L. (2017). "Towards Integrated Food Policy: Main Challenges and Steps Ahead." *Environmental Science & Policy* 73: 89–92.

CFS. (2015). *Connecting Smallholders to Markets: Policy Recommendations*.

Chan, L., and Daim, T. (2012). "Exploring the Impact of Technology Foresight Studies on Innovation : Case of BRIC Countries." *Futures* 44 (6): 104–116.

Clapp, J. (2014). "Food Security and Food Sovereignty: Getting Past the Binary." *Dialogues in Human Geography* 4 (2): 206–211.

Clapp, J. (2016). *Food*. 2nd ed. Cambridge: Polity Press.

Clapp, J., Newell, P., and Brent, Z.W. (2018). "The Global Political Economy of Climate Change , Agriculture and Food Systems." *Journal of Peasant Studies* 45 (1): 80–88.

Clark, W.C., Dickson, N.M., Cash, D.W., Alcock, F., Eckley, N., Guston, D.H., Jäger, J., and Mitchell, R.B. (2003). "Sustainability Science: The Emerging Research Program." *Proceedings of the National Academy of Sciences of the United States of America* 100 (14): 8086–8091.

Clark, W.C., Kerkhoft, L. van, Lebel, L., and Gallopin, G.C. (2016). "Crafting Usable Knowledge for Sustainable Development Crafting Usable Knowledge for Sustainable Development." *Proceedings of the National Academy of Sciences of the United States of America* 113 (17): 4570–4578.

Cornwall, A. (2002). "Locating Citizen Participation." *IDS Bulletin* 33 (2): 1–10.

Cornwall, A., and Brock, K. (2005). "What Do Buzzwords Do for Development Policy? A Critical Look at 'Participation', 'Empowerment' and 'Poverty Reduction.'" *Third World Quarterly* 26 (7): 1043–1060.

Davila, F., and Dyball, R. (2015). "Transforming Food Systems through Food Sovereignty: An Australian Urban Context." *Australian Journal of Environmental Education* 31 (1): 34–45.

De Schutter, O. (2017). "The Political Economy of Food Systems Reform." *European Review of Agricultural Economics* 44 (4): 705–731.

Dijk, M. Van, and Meijerink, G.W. (2014). "A Review of Global Food Security Scenario and Assessment Studies : Results , Gaps and Research Priorities." *Global Food Security* 3 (3–4): 227–238.

Dixon, J., Omwega, A.M., Friel, S., Burns, C., Donati, K., and Carlisle, R. (2007). "The Health Equity Dimensions of Urban Food Systems." *Journal of Urban Health* 84.

Dixon, J., and Richards, C. (2016). "On Food Security and Alternative Food Networks: Understanding and Performing Food Security in the Context of Urban Bias." *Agriculture and Human Values* 33 (1): 191–202.

Dodds, F. (2002). "The Context: Multi-Stakeholder Processes and Global Governance." In *Multi-Stakeholder Processes for Governance and Sustainability*, edited by Hemmati, Minu. London: Earthscan.

Duncan, J. (2015a). "'Greening' Global Food Governance." *Canadian Food Studies / La Revue Canadienne Des Études Sur l'alimentation* 2 (2): 335.

Duncan, J. (2015b). "Participation in Global Governance: Coordinating 'the Voices of Those Most Affected by Food Insecurity.'" In *Global Food Security Governance*, 123–152. London and New York: Routledge.

Duncan, J. (2015c). *Global Food Security Governance*. London and New York: Routledge.

Durrant, R.A. (2014). "Civil Society Roles in Transition: Towards Sustainable Food?" Doctor of philosophy thesis, Science and Technology Policy Research Unit, Brighton University.

Emerson, K., Nabatchi, T., and Balogh, S. (2012). "An Integrative Framework for Collaborative Governance." *Journal of Public Administration Research and Theory* 22 (1): 1–29.

Enqvist, J. (2017). "Stewardship in an Urban World: Civic Engagement and Human-Nature Relations in the Anthropocene." Doctor of philosophy thesis, Stockholm resilience centre, Stockholm University.

Ericksen, P.J. (2008). "What Is the Vulnerability of a Food System to Global Environmental Change?" *Ecology and Society* 13 (2).

FAO. (2008). *Climate Change and Food Security: A Framework Document*. Food and Agriculture Organization of the United Nations. Rome.

FAO. (2013). *Statistical Yearbook 2013: World Food and Agriculture*. Rome.

FAO, IFAD, UNICEF, WFP, and WHO. (2017). *The State of Food Security and Nutrition in the World 2017. Building Resilience for Peace and Food Security*. Rome.

Fazey, I., Bunse, L., Msika, J., Pinke, M., Preedy, K., Evely, A.C., Lambert, E., Hastings, E., Morris, S., and Reed, M.S. (2014). "Evaluating Knowledge Exchange in Interdisciplinary and Multi-Stakeholder Research." *Global Environmental Change* 25 (1): 204–220.

Feola, G., and Jaworska, S. (2018). "One Transition, Many Transitions? A Corpus-Based Study of Societal Sustainability Transition Discourses in Four Civil Society's Proposals." *Sustainability Science*, 1–14.

Few, R., Brown, K., and Tompkins, E.L. (2007). "Public Participation and Climate Change Adaptation: Avoiding the Illusion of Inclusion." *Climate Policy* 7 (1): 46–59.

Folke, C., Biggs, R., Norström, A. V., Reyers, B., and Rockström, J. (2016). "Social-Ecological Resilience and Biosphere-Based Sustainability Science." *Ecology and Society* 21 (3).

Folke, C., Hahn, T., Olsson, P., and Norberg, J. (2005). "Adaptive Governance of Social-Ecological Systems." *Annual Review of Environment and Resources* 30 (1): 441–473.

Foran, T., Butler, J.R.A., Williams, L.J., Wanjura, W.J., Hall, A., Carter, L., and Carberry, P.S. (2014). "Taking Complexity in Food Systems Seriously: An Interdisciplinary Analysis." *World Development* 61: 85–101.

Fressoli, M., Arond, E., Abrol, D., Smith, A., Ely, A., and Dias, R. (2014). "When Grassroots Innovation Movements Encounter Mainstream Institutions: Implications for Models of Inclusive Innovation." *Innovation and Development* 4 (2): 277–292.

Fuchs, D., Kalfagianni, A., and Havinga, T. (2011). "Actors in Private Food Governance: The Legitimacy of Retail Standards and Multistakeholder Initiatives with Civil Society Participation." *Agriculture and Human Values* 28 (3): 353–367.

Galafassi, D., Daw, T.M., Thyresson, M., Rosendo, S., Chaigneau, T., Bandeira, S., Munyi, L., Gabrielsson, I., and Brown, K. (2018). "Stories in Social-Ecological Knowledge Cocreation." *Ecology and Society* 23 (1).

Galafassi, D., Kagan, S., Milkoreit, M., Heras, M., Bilodeau, C., Bourke, S.J., Merrie, A., Guerrero, L., Pétursdóttir, G., and Tàbara, J.D. (2018). "'Raising the Temperature': The Arts in a Warming Planet." *Current Opinion in Environmental Sustainability* 31 (2): 71–79.

Garnett, T. (2013). "Food Sustainability: Problems, Perspectives and Solutions." *Proceedings of the Nutrition Society* 72 (1): 29–39.

Gaudreau, M. (2015). "Paradigm Change and Power in the World Food System — Synthesis Paper" 2 (2): 32–38.

Gaventa, J. (2000). "Exploring Citizenship, Participation and Accountability." *IDS Bulletin* 33 (2): 1–14.

Gaventa, J. (2004). "Strengthening Participatory Approaches to Local Governance: Learning the Lessons from Abroad." *National Civic Review*, 16–27.

Gaventa, J. (2006). "Finding the Spaces for Changes: A Power Analysis." *IDS Bulletin* 37 (6): 23–33.

Geels, F.W. (2002). "Technological Transitions as Evolutionary Reconfiguration Processes: A Multi-Level Perspective and a Case-Study." *Research Policy* 31 (8–9): 1257–1274.

Geels, F.W. (2011). "The Multi-Level Perspective on Sustainability Transitions: Responses to Seven Criticisms." *Environmental Innovation and Societal Transitions* 1: 24–40.

Geels, F.W., and Schot, J. (2007). "Typology of Sociotechnical Transition Pathways." *Research Policy* 36 (3): 399–417.

George, C., and Reed, M.G. (2017). "Operationalising Just Sustainability: Towards a Model for Place-Based Governance." *Local Environment* 22 (9): 1105–1123.

Giddens, A. (1984). *The Constitution of Society: Outline of the Theory of Structuration*. Berkeley and Los Angeles: University of California Press.

Gordon, L.J., Bignet, V., Crona, B., Henriksson, P.J.G., van Holt, T., Jonell, M., Lindahl, T., et al. (2017). "Rewiring Food Systems to Enhance Human Health and Biosphere Stewardship." *Environmental Research Letters* 12 (10).

Green, J., and Thorogood, N. (2009). *Qualitative Methods for Health Research*. 2nd Edn. London: SAGE publications.

Gustafson, D., Gutman, A., Leet, W., Drewnowski, A., Fanzo, J., and Ingram, J. (2016). "Seven Food System Metrics of Sustainable Nutrition Security." *Sustainability* 8 (3): 1–17.

Haider, L.J., Hentati-Sundberg, J., Giusti, M., Goodness, J., Hamann, M., Masterson, V.A., Meacham, M., et al. (2018). "The Undisciplinary Journey: Early-Career Perspectives in Sustainability Science." *Sustainability Science* 13 (1): 191–204.

Hammersley, M. (1992). "'So What Are Case Studies?'" In *What's Wrong with Ethnography?*, 183–200. London: Routledge.

Hammersley, M., and Atkinson, P. (2007). *Ethnography: Principles in Practice*. third edit. London: Routledge.

Hargreaves, T., Longhurst, N., and Seyfang, G. (2013). "Up, down, Round and Round: Connecting Regimes and Practices in Innovation for Sustainability." *Environment and Planning A* 45 (2): 402–420.

Hemmati, M. (2016). "The World Commission on Dams as a Multi-Stakeholder Process : Some Future Challenges." *Politics and the Life Sciences* 21 (1): 63–66.

Hendriks, C.M., and Grin, J. (2007). "Contextualizing Reflexive Governance: The Politics of Dutch Transitions to Sustainability." *Journal of Environmental Policy & Planning* 9 (3–4): 333–350.

Henrichs, T., Zurek, M., Eickhout, B., Kok, K., Raudsepp-Hearne, C., Ribeiro, T., Vuuren, D. van, and Volkery, A. (2010). "Scenario Development and Analysis for Forward-Looking Ecosystem Assessments." In *Ecosystems and Human Well-Being: A Manual for Assessment Practitioners*, edited by Ash, Neville, Hernán Blanco, Clair Brown, Keisha Garcia, Thomas Henrichs, Nicolas Lucas, Ciara Ruadsepp-Heane, et al. Washington, Covelo, London: Island Press.

Herring, R.J. (2015). *The Oxford Handbook of Food, Politics, and Society*. Oxford: Oxford University Press.

Hinrichs, C.C. (2014). "Transitions to Sustainability: A Change in Thinking about Food Systems Change?" *Agriculture and Human Values* 31 (1): 143–155.

Hirsch, D., Abrami, G., Giordano, R., Liersch, S., Matin, N., and Schlüter, M. (2010). "Participatory Research for Adaptive Water Management in a Transition Country - a Case Study from Uzbekistan." *Ecology and Society* 15 (3).

HLPE. (2012). *Food Security and Climate Change. A Report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security*. Rome.

Hospes, O., and Brons, A. (2016). "Food System Governance: A Systematic Literature Review." In *Food Systems Governance: Challenges for Justice, Equality and Human Rights*, edited by Kennedy, A and Jonathan Liljeblad, 13–42. London and New York: Routledge.

Ingram, J. (2011). "A Food Systems Approach to Researching Food Security and Its Interactions with Global Environmental Change." *Food Security* 3 (4): 417–431.

Ingram, J., Ericksen, P., and Liverman, D. (2010). *Food Security and Global Environmental Change*. London, Washington DC: Earthscan.

IPCC. (2015). *Climate Change 2014: Synthesis Report*. Geneva.

IPES Food. (2015). *The New Science of Sustainable Food Systems: Overcoming Barriers to Food Systems Reform*.

Jemala, M. (2010). "Evolution of Foresight in the Global Historical Context." *Foresight* 12 (4): 65–81.

Jessop, B. (1998). "The Rise of Governance and the Risks of Failure: The Case of Economic Development." *International Social Science Journal*.

Jordan, A., and Turnpenny, J. (2015). *The Tools of Policy Formulation: Actors, Capacities, Venues and Effects*. Cheltenham, UK: Edward Elgar Publishing Ltd.

Karger, H. (2014). "The Bitter Pill: Austerity, Debt, and the Attack on Europe's Welfare States." *The Journal of Sociology & Social Welfare* 41 (2): 33–53.

Kemp, R., Loorbach, D., and Rotmans, J. (2007). "Transition Management as a Model for Managing Processes of Co-Evolution towards Sustainable Development." *International Journal of Sustainable Development and World Ecology* 14 (1): 78–91.

Kemp, R., Schot, J., and Hoogma, R. (1998). "Regime Shifts to Sustainability through Processes of Niche Formation: The Approach of Strategic Niche Management." *Technology Analysis & Strategic Management* 10 (2): 175–195.

Kersbergen, K. Van, and Waarden, F. Van. (2004). "'Governance' as a Bridge between Disciplines: Cross-Disciplinary Inspiration Regarding Shifts in Governance and Problems of Governability, Accountability and Legitimacy." *European Journal of Political Research* 43 (2): 143–171.

Kneafsey, M., Owen, L., Bos, E., Broughton, K., and Lennartsson, M. (2017). "Capacity Building for Food Justice in England: The Contribution of Charity-Led Community Food Initiatives." *Local Environment* 22 (5): 621–634.

Kok, K., van Vliet Mathijs, M., Bärlund Ilona, I., Dubel, A., and Sendzimir, J. (2011). "Combining Participative Backcasting and Exploratory Scenario Development: Experiences from the SCENES Project." *Technological Forecasting and Social Change* 78 (5): 835–851.

Koster, M. (2014). "Bridging the Gap in the Dutch Participation Society." *Etnofoor Participation* 26 (2): 48–64.

Lambek, N.C.S.S., Claeys, P., Wong, A., and Brilmayer, L. (2014). *Rethinking Food Systems - Structural Challenges, New Strategies and the Law*. *Rethinking Food Systems: Structural Challenges, New Strategies and the Law*. New York: Springer.

Landert, J., Schader, C., Moschitz, H., and Stolze, M. (2017). "A Holistic Sustainability Assessment Method for Urban Food System Governance." *Sustainability* 9 (4): 490.

Lang, T., and Barling, D. (2012). "Food Security and Food Sustainability: Reformulating the Debate." *The Geographical Journal* 178 (4): 313–326.

Lang, T., and Heasman, M. (2004). *Food Wars: The Global Battle for Mouths, Minds and Markets*. London: Earthscan.

Leach, M., Raworth, K., and Rockström, J. (2013). "Between Social and Planetary Boundaries: Navigating Pathways in the Safe and Just Space for Humanity." *World Social Science Report 2013*, 84–89.

Leach, M., Scoones, I., and Stirling, A. (2010). *Dynamic Sustainabilities: Technology, Environment, Social Justice*. London: Earthscan.

Lehtonen, M. (2015). "Indicators: Tools for Informing, Monitoring or Controlling?" In *The Tools of Policy Formulation: Actors, Capacities, Venues and Effects*, edited by Jordan, Andrew J and John R Turnpenny, 76–99. Edward Elgar Publishing Ltd.

Lehtonen, M., Sébastien, L., and Bauler, T. (2016). "The Multiple Roles of Sustainability Indicators in Informational Governance: Between Intended Use and Unanticipated Influence." *Current Opinion in Environmental Sustainability* 18: 1–9.

Lerner, A.M., and Eakin, H. (2011). "An Obsolete Dichotomy? Rethinking the Rural-Urban Interface in Terms of Food Security and Production in the Global South." *Geographical Journal* 177 (4): 311–320.

Lindgren, E., Harris, F., Dangour, A.D., Gasparatos, A., Hiramatsu, M., Javadi, F., Loken, B., Murakami, T., Scheelbeek, P., and Haines, A. (2018). "Sustainable Food Systems—a Health Perspective." *Sustainability Science* 3456789: 1–13.

Long, N. (2001). *Development Sociology: Actor Perspectives*. London: Routledge.

Majone, G. (1997). "From the Positive to the Regulatory State: Causes and Consequences of Changes in the Mode of Governance." *Journal of Public Policy* 17 (2): 139–167.

Mansbridge, J. (1998). "On the Idea That Participation Makes Better Citizens." In *Citizen Competence and Democratic Institutions*, edited by Elkin, Stephen and Karol Edward Soltan. Pennsylvania: The Pennsylvania State University Press.

Marsden, T. (2013). "From Post-Productionism to Reflexive Governance: Contested Transitions in Securing More Sustainable Food Futures." *Journal of Rural Studies* 29: 123–134.

Marsden, T. (2016). "Exploring Reflexive and Sustainable Pathways for Agri-Food and Rural Development." In *Governmentality After Neoliberalism: The British Experience*, edited by Bevir, Mark. Routledge.

Marsden, T., and Morley, A. (2014). *Sustainable Food Systems - Building a New Paradigm*. London: Routledge.

Marshall, F., Dolley, J., and Priya, R. (2018). "Transdisciplinary Research as Transformative Space Making for Sustainability: Enhancing Propoor Transformative Agency in Periurban Contexts." *Ecology and Society* 23 (3): 1–13.

Masterson, V.A., Stedman, R.C., Enqvist, J., Tengö, M., Giusti, M., Wahl, D., and Svedin, U. (2016). "The Contribution of Sense of Place to Social–Ecological Systems Research: A Review and Research Agenda." *Ecology and Society* 22 (1): 1–14.

McGee, R. (2004). "Unpacking Policy: Actors, Knowledge and Spaces." In *Unpacking Policy: Knowledge, Actors, and Spaces in Poverty Reduction in Uganda and Nigeria*, edited by Brock, Karen, Rosemary McGee, and John Gaventa, 1–26. London: Fountain Pub Ltd.

Mckeon, N. (2014). *The New Alliance for Food Security and Nutrition: A Coup for Corporate Capital ?* Agrarian Justice Programme.

Mckeon, N. (2015). *Food Security Governance: Empowering Communities, Regulating Corporations*. London and New York: Routledge.

McMichael, P. (1994). *The Global Restructuring of Agro-Food Systems*. New York: Cornell University Press.

Meadows, D. (2013). "Envisioning a Sustainable World." In *Creating a Sustainable and Desirable Future*, edited by Costanza, Robert and Ida Kubiszewski, 9–14. Singapore: World Scientific.

Meyfroidt, P. (2017). "Mapping Farm Size Globally : Benchmarking the Smallholders Debate Mapping Farm Size Globally : Benchmarking the Smallholders Debate." *Environmental Research Letters* 12 (031002): 1–3.

Milan Expo. (2015). *Milan Urban Food Policy Pact*. Milan.

Moore, M.L., Tjornbo, O., Enfors, E., Knapp, C., Hodbod, J., Baggio, J.A., Norström, A., Olsson, P., and Biggs, D. (2014). "Studying the Complexity of Change: Toward an Analytical Framework for Understanding Deliberate Social-Ecological Transformations." *Ecology and Society* 19 (4).

Moragues-Faus, A., and Marsden, T. (2017). "The Political Ecology of Food: Carving 'Spaces of Possibility' in a New Research Agenda." *Journal of Rural Studies* 55: 275–288.

Moran, L., and Rau, H. (2016). "Mapping Divergent Concepts of Sustainability: Lay Knowledge, Local Practices and Environmental Governance." *Local Environment: The International Journal of Justice and Sustainability* 21 (3): 344–360.

Moulaert, F., MacCallum, D., Mehmood, A., and Hamdouch, A. (2013). *The International Handbook on Social Innovation: Collective Action, Social Learning and Transdisciplinary Research*. Cheltenham: Edward Elgar Publishing Ltd.

Newell, P., and Taylor, O. (2018). "Contested Landscapes: The Global Political Economy of Climate-Smart Agriculture." *Journal of Peasant Studies* 45 (1): 108–129.

Ng, M., Fleming, T., Robinson, M., Thomson, B., Graetz, N., Margono, C., Mullany, E.C., et al. (2014). "Global, Regional, and National Prevalence of Overweight and Obesity in Children and Adults during 1980-2013: A Systematic Analysis for the Global Burden of Disease Study 2013." *The Lancet* 384 (9945): 766–781.

O'Brien, K. (2012). "Global Environmental Change II: From Adaptation to Deliberate Transformation." *Progress in Human Geography* 36 (5): 667–676.

Oliver, T.H., Boyd, E., Balcombe, K., Benton, T.G., Bullock, J.M., Donovan, D., Feola, G., et al. (2018). "Overcoming Undesirable Resilience in the Global Food System." *Global Sustainability* 1: 1–9.

Olsson, P. (2006). "Shooting the Rapids: Navigating Transitions to Adaptive Governance of Social-Ecological Systems." *Ecology and Society* 11 (1): 18.

Olsson, P., Galaz, V., and Boonstra, W.J. (2014). "Sustainability Transformations: A Resilience Perspective." *Ecology and Society* 19 (4): 1.

Olsson, P., Moore, M.L., Westley, F.R., and McCarthy, D.D.P. (2017). "The Concept of the Anthropocene as a Game-Changer: A New Context for Social Innovation and Transformations to Sustainability." *Ecology and Society* 22 (2).

Pattberg, P. (2006). "Private Governance and the South: Lessons from Global Forest Politics." *Third World Quarterly* 27 (4): 579–593.

Patterson, J.J., Schulz, K., Vervoort, J.M., Hel, S. Van Der, Sethi, M., and Barau, A. (2017). "Exploring the Governance and Politics of Transformations towards Sustainability." *Environmental Innovation and Societal Transitions* 24: 1–16.

Patterson, J.J., Thaler, T., Hoffmann, M., Hughes, S., Oels, A., Chu, E., Mert, A., Huitema, D., Burch, S., and Jordan, A. (2018). "Political Feasibility of 1.5°C Societal Transformations: The Role of Social Justice." *Current Opinion in Environmental Sustainability* 31: 1–9.

Pelletier, B., Hickey, G.M., Bothi, K.L., and Mude, A. (2016). "Linking Rural Livelihood Resilience and Food Security: An International Challenge." *Food Security* 8 (3): 469–476.

Pereira, L., Bennett, E., Biggs, R., Peterson, G., McPhearson, T., Norström, A., Olsson, P., Preiser, R., Raudsepp-Hearne, C., and Vervoort, J. (2018). "Seeds of the Future in the Present: Exploring Pathways for Navigating Towards 'Good' Anthropocenes." In *Urban Planet: Knowledge towards Sustainable Cities*, edited by Elmqvist, T., X. Bai, N. Frantzeskaki, C. Griffith, D. Maddox, T. McPhearson, S. Parnell, P. Romero-Lankao, D. Simone, and M. Watkins, 327–350. Cambridge: Cambridge University Press.

Pereira, L., Karpouzoglou, T., Doshi, S., and Frantzeskaki, N. (2015). "Organising a Safe Space for Navigating Social-Ecological Transformations to Sustainability." *International Journal of Environmental Research and Public Health* 12 (6): 6027–6044.

Pijnenburg, B. (2004). "Keeping It Vague: Discourses and Practices of Participation in Rural Mozambique." PhD thesis, Wageningen University and Research Centre.

Pijnenburg, L. (2018). "The Single Story about the Food Bank." In *Professionals in Food Chains*, 35–229. Wageningen Academic Publishers.

Pitt, H., and Jones, M. (2016). "Scaling up and out as a Pathway for Food System Transitions." *Sustainability* 8 (1025): 1–16.

Polk, M., and Knutsson, P. (2008). "Participation, Value Rationality and Mutual Learning in Transdisciplinary Knowledge Production for Sustainable Development." *Environmental Education Research* 14 (6): 643–653.

Poppy, G.M., Chiotha, S., Eigenbrod, F., Harvey, C. a, Honzák, M., Hudson, M.D., Jarvis, A., et al. (2014). "Food Security in a Perfect Storm: Using the Ecosystem Services Framework to Increase Understanding." *Philosophical Transactions of the Royal Society B: Biological Sciences* 369 (20120288).

Prosperi, P., Allen, T., Cogill, B., Padilla, M., and Peri, I. (2016). "Towards Metrics of Sustainable Food Systems: A Review of the Resilience and Vulnerability Literature." *Environment Systems and Decisions* 36 (1): 3–19.

Prosperi, P., Allen, T., Padilla, M., Peri, I., and Cogill, B. (2014). "Sustainability and Food & Nutrition Security: A Vulnerability Assessment Framework for the Mediterranean Region." *SAGE Open* 4 (2).

Ramírez, R., Churchhouse, S., Palermo, A., and Hoffmann, J. (2017). "Using Scenario Planning to Reshape Strategy." *MIT Sloan Management Review*, no. Summer: 31–37.

Ramírez, R., Selsky, J., and Van der Heijden, K. (2008). *Business Planning for Turbulent Times: New Methods for Applying Scenarios*. London: Earthscan.

Raworth, K. (2012). *A Safe and Just Space For Humanity: Can We Live within the Doughnut?* Februari 2012. Oxfam Discussion Paper.

Reason, P. (1998). "Three Approachs to Participative Inquiry." In *Strategies of Qualitative Inquiry*, edited by Denzin, N.K. and Y.S. Lincoln, 261–291. London: SAGE publications.

Regmi, A., and Meade, B. (2013). "Demand Side Drivers of Global Food Security." *Global Food Security* 2 (166–171).

Renting, H., and Markus, S. (2012). "Building Food Democracy: Exploring Civic Food Networks and Newly Emerging Forms of Food Citizenship." *International Journal of Sociology of Agriculture and Food* 19 (3): 289–307.

Rijke, J., Brown, R., Zevenbergen, C., Ashley, R., Farrelly, M., Morison, P., and van Herk, S. (2012). "Fit-for-Purpose Governance: A Framework to Make Adaptive Governance Operational." *Environmental Science & Policy* 22: 73–84.

Rip, A., and Kemp, R. (1998). "Technological Change." In *Human Choice and Climate Change*, edited by Rayner, S and E L Malone, II:327–399. Columbus, OH: Battelle Press.

Robinson, J., Burch, S., Talwar, S., O'Shea, M., and Walsh, M. (2011). "Envisioning Sustainability: Recent Progress in the Use of Participatory Backcasting Approaches for Sustainability Research." *Technological Forecasting and Social Change* 78 (5): 756–768.

Rotmans, J. (2009). "Transformative Change towards Sustainability."

Rutten, M., Achterbosch, T.J., de Boer, I.J.M., Cuaresma, J.C., Geleijnse, J.M., Havlík, P., Heckelei, T., et al. (2018). "Metrics, Models and Foresight for European Sustainable Food and Nutrition Security: The Vision of the SUSFANS Project." *Agricultural Systems* 163: 45–57.

Sage, C. (2014). "The Transition Movement and Food Sovereignty: From Local Resilience to Global Engagement in Food System Transformation." *Journal of Consumer Culture* 14 (2): 254–275.

Samberg, L.H., Gerber, J.S., Ramankutty, N., Herrero, M., and West, P.C. (2016). "Subnational Distribution of Average Farm Size and Smallholder Contributions to Global Food Production." *Environmental Research Letters* 11 (12): 1–11.

Schipanski, M.E., MacDonald, G.K., Rosenzweig, S., Chappell, M.J., Bennett, E.M., Kerr, R.B., Blesh, J., et al. (2016). "Realizing Resilient Food Systems." *BioScience* 66 (7): 600–610.

Scholte, J.A. (2011). *Building Global Democracy? Civil Society and Accountable Global Governance*. Cambridge: Cambridge University Press.

Scholte, J.A. (2012). "A More Inclusive Global Governance? The IMF and Civil Society in Africa." *Global Governance* 18: 185–206.

Scoones, I. (2009). "Livelihoods Perspectives and Rural Development." *Journal of Peasant Studies* 36 (1): 171–196.

Scott, J.C. (1985). *Weapons of the Weak: Everyday Forms of Peasant Resistance*. New Haven: Yale University Press.

Scrase, I., and Smith, A. (2009). "The (Non-)Politics of Managing Low Carbon Socio-Technical Transitions." *Environmental Politics* 18 (5): 707–726.

Singer, P. (1972). "Famine, Affluence and Morality." *Philosophy & Public Affairs* 1 (3): 229–243.

Smith, A., Fressoli, M., Abrol, D., Arond, E., and Ely, A. (2017). "Grassroots Innovation Movements." In . London and New York: Earthscan.

Smith, A., Fressoli, M., and Thomas, H. (2014). "Grassroots Innovation Movements: Challenges and Contributions." *Journal of Cleaner Production* 63: 114–124.

Smith, A., and Seyfang, G. (2007). "Grassroots Innovations for Sustainable Consumption." *Environmental Politics* 16 (4): 584–603.

Smith, A., and Stirling, A. (2018). "Innovation, Sustainability and Democracy: An Analysis of Grassroots Contributions." *Journal of Self-Governance and Management Economics* 6 (1): 64.

Smith, A., Stirling, A., and Berkhout, F. (2005). "The Governance of Sustainable Socio-Technical Transitions." *Research Policy* 34 (10): 1491–1510.

Sonnino, R., Lozano Torres, C., and Schneider, S. (2014). "Reflexive Governance for Food Security: The Example of School Feeding in Brazil." *Journal of Rural Studies* 36: 1–12.

Sonnino, R., and Spayde, J.J. (2014). "The New Frontier? Urban Strategies for Food Security and Sustainability." In *Sustainable Food Systems: Building a New Paradigm*, edited by Marsden, Terry and Adrian Morley, 186–205. Routledge.

Springmann, M., Clark, M., Mason-D'Croz, D., Wiebe, K., Bodirsky, B.L., Lassaletta, L., De Vries, W., et al. (2018). "Options for Keeping the Food System within Environmental Limits." *Nature*.

Steffen, W., Richardson, K., Rockström, J., Cornell, S.E., Fetzer, I., Bennett, E.M., Biggs, R., et al. (2015). "Planetary Boundaries: Guiding Human Development on a Changing Planet." *Science* 347 (6223).

Stirling, A. (2010). "Keep It Complex." *Nature* 468 (7327): 1029–1031.

Stirling, A. (2014a). "From Sustainability, through Diversity to Transformation: Towards More Reflexive Governance of Vulnerability." In *Vulnerability in Technological Cultures: New Directions in Research and Governance*, edited by Hommels, A., J. Mesman, and W. Bijker. Cambridge: MIT Press.

Stirling, A. (2014b). *Emancipating Transformations: From Controlling "the Transition" to Culturing Plural Radical Progress*. Working paper 3: Designs. Brighton.

Stirling, A., Leach, M., Mehta, L., Scoones, I., Smith, A., Stagl, S., and Thompson, J. (2007). *Empowering Designs: Towards More Progressive Appraisal of Sustainability*. STEPS working Paper 3, Brighton.

Tendall, D.M., Joerin, J., Kopainsky, B., Edwards, P., Shreck, A., Le, Q.B., Kruetli, P., Grant, M., and Six, J. (2015). "Food System Resilience: Defining the Concept." *Global Food Security* 6: 17–23.

Termeer, C.J.A.M., Dewulf, A., Breeman, G., and Stiller, S.J. (2015). *Governance Capabilities for Dealing Wisely With Wicked Problems*. *Administration & Society*. Vol. 47.

Termeer, C.J.A.M., Drimie, S., Ingram, J., Pereira, L., and Whittingham, M.J. (2018). "A Diagnostic Framework for Food System Governance Arrangements: The Case of South Africa." *NJAS - Wageningen Journal of Life Sciences* 84: 85–93.

Tomlinson, I. (2013). "Doubling Food Production to Feed the 9 Billion: A Critical Perspective on a Key Discourse of Food Security in the UK." *Journal of Rural Studies* 29 (0): 81–90.

Tovey, H. (1997). "Food, Environmentalism and Rural Sociology: On the Organic Farming Movement in Ireland." *Sociologia Ruralis* 37 (1): 21–37.

Trauger, A. (2014). "Toward a Political Geography of Food Sovereignty: Transforming Territory, Exchange and Power in the Liberal Sovereign State." *The Journal of Peasant Studies* 41 (6): 1131–1152.

UN. (2014). *World Urbanization Prospects: The 2014 Revision*. Washington DC.

UN. (2015a). "Transforming Our World: The 2030 Agenda for Sustainable Development." United Nations.

UN. (2015b). *Paris Agreement*. Paris: United Nations Framework Convention on Climate Change.

UNEP. (2016). *Food Systems and Natural Resources. A Report of the Working Group on Food Systems of the International Resource Panel*.

Van der Heijden, K. (2005). *Scenarios: The Art of Strategic Conversation*. Chichester, UK: John Wiley & Sons.

Van der Ploeg, J.D. (2010). "The Food Crisis, Industrialized Farming and the Imperial Regime." *Journal of Agrarian Change* 10 (1): 98–106.

Van Der Ploeg, J.D. (2016). "Theorizing Agri-Food Economies." *Agriculture* 6 (3): 30.

Vermeulen, S.J., Campbell, B.M., and Ingram, J.S.I. (2012). "Climate Change and Food Systems." *Annual Review of Environment and Resources* 37 (1): 195–222.

Vervoort, J.M. (2011). "Framing Futures: Visualizing Perspectives on Social-Ecological Systems Change." Doctor of philosophy thesis, Wageningen University.

Vervoort, J.M., and Gupta, A. (2018). "Anticipating Climate Futures in a 1.5 °C Era: The Link between Foresight and Governance." *Current Opinion in Environmental Sustainability* 31: 104–111.

Vervoort, J.M., Kok, K., van Lammeren, R., and Veldkamp, T. (2010). "Stepping into Futures: Exploring the Potential of Interactive Media for Participatory Scenarios on Social-Ecological Systems." *Futures* 42 (6): 604–616.

Vervoort, J.M., Rutting, L., Kok, K., Hermans, F.L.P., Veldkamp, T., Bregt, A.K., and van Lammeren, R. (2012). "Exploring Dimensions, Scales, and Cross-Scale Dynamics from the Perspectives of Change Agents in Social-Ecological Systems." *Ecology and Society* 17 (4).

Vervoort, J.M., Thornton, P.K., Kristjanson, P., Förch, W., Ericksen, P.J., Kok, K., Ingram, J.S.I.I., et al. (2014). "Challenges to Scenario-Guided Adaptive Action on Food Security under Climate Change." *Global Environmental Change* 28: 383–394.

Voß, J.P., and Bornemann, B. (2011). "The Politics of Reflexive Governance: Challenges for Designing Adaptive Management and Transition Management." *Ecology and Society* 16 (2): 9.

Voß, J.P., and Kemp, R. (2006). "Sustainability and Reflexive Governance: Introduction." In *Reflexive Governance for Sustainable Development*, edited by Voss, Jan-Peter, Dierk Bauknecht, and René Kemp, 3–28. Cheltenham: Edward Elgar.

Voß, J.P., Smith, A., and Grin, J. (2009). "Designing Long-Term Policy: Rethinking Transition Management." *Policy Sciences* 42 (4): 275–302.

Warshawsky, D.N. (2016). "Civil Society and Public–Private Partnerships: Case Study of the Agri-FoodBank in South Africa." *Social & Cultural Geography* 35 (3): 423–443.

WBCSD. (2018). “FReSH: Transforming Global Food Systems.”

Weiler, A.M., Hergesheimer, C., Brisbois, B., Wittman, H., Yassi, A., and Spiegel, J.M. (2015). “Food Sovereignty, Food Security and Health Equity: A Meta-Narrative Mapping Exercise.” *Health Policy and Planning* 30 (8): 1078–1092.

Westley, F.R., Tjornbo, O., Schultz, L., Olsson, P., Folke, C., Crona, B., and Bodin, Ö. (2013). “A Theory of Transformative Agency in Linked Social-Ecological Systems.” *Ecology and Society* 18 (3): 27.

WHO. (2017). *Obesity and Overweight*. http://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight.

Wilkinson, A. (2017). *Strategic Foresight Primer*. European Political Strategy Centre.

Wilkinson, A., and Eidinow, E. (2008). “Evolving Practices in Environmental Scenarios: A New Scenario Typology.” *Environmental Research Letters* 3 (4): 045017.

Willetts, P. (2011). *Non-Governmental Organizations in World Politics: The Construction of Global Governance*. London: Routledge.

Wittmayer, J.M., Avelino, F., Steenbergen, F. Van, and Loorbach, D. (2017). “Actor Roles in Transition: Insights from Sociological Perspectives.” *Environmental Innovation and Societal Transitions* 24: 45–56.

Wittmayer, J.M., van Steenbergen, F., Rok, A., and Roorda, C. (2016). “Governing Sustainability: A Dialogue between Local Agenda 21 and Transition Management.” *Local Environment* 21 (8): 939–955.

Wolfram, M. (2016). “Conceptualizing Urban Transformative Capacity : A Framework for Research and Policy.” *JCIT* 51: 121–130.

Yin, R.K. (1994). *Case Study Research: Design and Methods*. 2nd edn. London: SAGE publications.

Young, O.R. (2018). “Research Strategies to Assess the Effectiveness of International Environmental Regimes.” *Nature Sustainability* 1 (9): 461–465.

Ziegler, R. (2013). “Case Studies in Sustainability Science.” *Greifswald Environmental Ethics Paper*, no. 6.

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