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Playing with food: exploring innovative urban food security practices through visioning, back-casting and serious gaming

MSc Thesis

Astrid Mangnus

Student number: 5631653
E-mail: a.c.mangnus@students.uu.nl

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Supervisor: Dr. Joost Vervoort
Second reader: Dr. Frank van Laerhoven

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Summary

Urban food systems are under pressure due to a worldwide urbanization trend. By 2050, three-quarters of the world's population is expected to live in urban areas. As it is highly likely that in the near future the majority of food will be consumed in cities, there is an urgent need to make the urban food systems of the future more sustainable. One way to articulate and explore more prosperous, just and environmentally sustainable food futures that go beyond overly simplistic utopias or dystopias is by using existing innovative urban food practices or "Seeds of Good Anthropocenes". This thesis aims to test how such innovative urban food practices can benefit from collecting, exploring and combining such practices through the use of complementary methods for normative foresight with relevant actors from the field.

The three foresight methods used in this thesis are visioning, back-casting and serious gaming. The methods were selected based on their shared characteristics of vision-driven planning, experientiality, non-consequentiality and the possibility of interaction between participants, all to varying degrees. The methods were tested in Japan in a case

study of Kyoto city and the surrounding prefecture. A heterogeneous group of innovative food practitioners participated in a mixed-methods research design of semi-structured visioning interviews, back-casting focus groups and workshops consisting of a digital game and a card-based live role-playing game. The results were assessed with regard to foresight output on the one hand and the process effects of motivation to act, network size, understanding of the topic and empathy for other perspectives on the other. The outcomes were mostly positive, although somewhat ambiguous for empathy.

Together, the outcomes were expected to lead to new or extended imaginaries, which are the deep-seated modes of understanding that constitute the social and political space through which people perceive, judge and act towards the future. The multi-method approach combined different aspects of engagement with imaginaries: vivid visions were generated in the visioning interviews, that were made concrete in the back-casting focus groups and to which an extra layer of new governance forms was added in the gaming workshops. These outcomes suggests that complementary foresight methods are able to impact a deeper layer of drivers for change, towards a good Anthropocene for urban food systems and the actors involved in them.

Key words: *good Anthropocenes; foresight methods; urban food systems; innovation; Kyoto*

Astrid Mangnus
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1. INTRODUCTION

All over the world, cities are growing. Currently, over 50% of the global population lives in urban areas, and by 2050 this is projected to be 75% (Viljoen & Wiskerke 2012). While hunger is decreasing globally (FAO, IFAD & WFP 2015), a new set of challenges arises from the need to feed an increasing number of city dwellers. Examples are a loss of peri-urban agricultural land, disappearing small-scale producers that are replaced by a few large corporations and unsustainable production methods out of sight for consumers (Sonnino 2009; Morgan & Sonnino 2010). However, the problems and threats that emerge with growing cities are just one side of the story. Cities also have the possibility of being catalysts for creativity and innovative ideas that can contribute to sustainable development (Dagevos 2016). A larger concentration of people is conductive for, among other things, easier sharing of resources and faster innovation and learning, since there is a more diverse and larger set of technological and social processes that van be observed and recombined (Bettencourt et al. 2010). Indeed, many cities are making attempts at transforming their food systems, albeit mainly in developed countries. Examples of such developments are the ascent of urban agriculture, especially on rooftops, and a recent upswing in the number of food cooperatives and farmers markets (Dagevos 2016; Parker 2014).

The opportunities and threats that arise with the need to feed cities are embedded in the larger context of the Anthropocene: the current geological era, succeeding the Holocene, in which the impacts of human life have become so extreme that humanity can be considered a major environmental force (Crutzen 2002). The Anthropocene world is complex, consisting of many intertwined drivers and phenomena across biophysical and social constrains (Bai et al. 2016: 532). Food plays an important role in this world, impacting both its structure and the daily life of its inhabitants. The effects of food systems on the planetary boundary indicators (Rockström et al. 2009) show that there is significant room and need for improvement in this area. However, shaping sustainable food systems is not only a matter of balancing demand and supply of natural resources. It also stretches out into the social, cultural and health domains. A sustainable food system ensures food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition of future generations are not compromised (HLPE, 2014). It is highly likely that in the near future the majority of food will be consumed in cities, so there is a need to make that future more sustainable.

1.1 Sustainable urban food futures in a good Anthropocene

Exploring transformative changes towards sustainable futures is a key contemporary research question (Future Earth 2014; Bai et al. 2016). Lövbrand et al. (2015) argue that social scientists must move beyond one steady conceptualization of nature and rename, reclaim and redefine environmental research. Food is more than a primary necessity of daily life: it is a political issue, a matter of leisure and recreation, a health concern and a focus of media attention (Warde 2016). Because of this pluriformity, Carolan (2016: 150) argues that to best contribute to better food systems, social scientists should explore *"adventurous food futures"* not by dictating what a better world should look like, but by making space for a multitude of better worlds through the creation of conditions *"that invite collaboration, co-experimentation, and a coming-together that radically alters how we think and do".* The field of futures studies offers a range of ways to think systematically and explicitly about alternative futures (Bell 1996). Since its emergence in the 1960s, futures studies have become intertwined with sustainability studies through influential reports such as the Club of Rome's Limits to Growth (Meadows et al. 1972) and the Brundtland report (WCED 1987). By using scenarios to explore sustainable and unsustainable futures, these sustainability reports created a demand for policy change (Morgan & Bailey 2013). These examples show that there is an overlap between both fields and that a combination of the two can offer useful tools to distinguish pathways towards a more sustainable Anthropocene (Morgan & Bailey 2013). In the futures studies literature, the term *foresight* is commonly used to describe the process of developing a range of possible ways in which the future could develop, and understanding these sufficiently well to be able to decide what decisions can be taken today to create the best possible tomorrow (Horton 1999). Foresight processes are ideally not only used to collect information for further analysis and prediction, but also to engage with complexity and create knowledge, for example through clustering them by their underlying assumptions and using them together in a mixed-methods way (Schatzmann, Schäfer & Eichelbaum 2013).

In addition to their connection with sustainability research, foresight methods can be closely integrated with planning processes. Examples are the use of scenarios for detailed policy review (Moss et al. 2010), to inform policy (Mason D'Croz et al. 2016) or the use of participative foresight methods throughout the process (Gidley et al. 2009; Davies 2014; Gomi, Ochi & Matsuoka 2011). Vervoort et al. (2014) use a combination of participative scenario building and back-casting to shape pathways towards food security in climate futures, in a multi-actor, multi-level context. For such complex contexts, this use of complementary methods seems to be effective. Kok et al. (2011)

explicitly studied the combination of these two methods in a series of workshops on the EU's Water Framework Directive. They concluded that this approach was successful in connecting exploratory scenarios directly with planning outcomes as it translated long-term futures to a number of short-term actions. Van Vliet et al. (2012) try to find a balance between structure and creativity when combining methods. These papers show that combining the different specific qualities of certain methods with others with complementary qualities make for a richer set of outcomes. This multi-method approach is therefore especially appropriate when investigating complex, pluralistic futures. This deserves more attention, especially since many studies still use or recommend only a single method (Popper 2008).

One context in which a complementary use of foresight methods can be studied further is the Seeds of Good Anthropocenes project (Bennett et al. 2016). The approach suggested by the authors is to identify "seeds": initiatives that strive for a more just, prosperous and ecologically diverse future. Subsequently, these seeds can be reconfigured and combined with new participants, ideas, infrastructure, and technologies. Rather than concentrating on an oversimplified utopia-dystopia divide, a focus on these existing initiatives can help sustain and amplify efforts that are already being made or desires that people have for the future. Doing so could generate outlines of what sustainable urban food systems might be like in a good Anthropocene. The authors mainly discuss the possibilities of seeds in the context of participatory scenarios, as an alternative to single-future planning processes, but they also propose including for example role-playing games. Reconfiguring and exploring the urban food system seeds using a multi-method approach on urban food system seeds could result in a rich plurality of futures, making a start with outlining a good food Anthropocene (Ibid.).

1.2 Research objective and framework

The research background shows that there is a need to feed a growing number of mouths in cities, which can be an opportunity to appeal to the power of cities as catalysts for change in urban food systems and potential hubs for starting a good Anthropocene (Bennett et al. 2016). A promising way to do this is by using a selection of complementary foresight methods that generate desirable futures beyond either dramatic dystopias or useless utopias. The main aim of this thesis is therefore to test how innovative urban food practices can benefit from collecting, exploring and combining such practices through the use of different methods for normative foresight with relevant actors from the field. For this thesis, the urban food system of Kyoto city in Japan was selected as a case study. The outcomes would ideally generate relevant new future visions for urban areas in Japan and possibly other OECD countries as well, as common OECD issues such as an ageing population and urbanization are very prevalent in Japan. From the research aim, the following central question was derived to guide this research:

To what extent can complementary methods for normative foresight create valuable insights about innovative urban food security practices for the actors involved?

This thesis is organized in 7 chapters. The second chapter contains a literature review resulting in a conceptual framework detailing theory on foresight methods, specifically visioning, back-casting and serious role-playing games. The third and fourth chapter detail the case study of Kyoto, Japan and the methodology of the visioning, back-casting and serious role-playing game interventions conducted there. The fifth chapter presents an analysis of the results of this fieldwork. The sixth chapter contains a discussion of the results compared with each other and in the larger context of the theoretical framework. The thesis ends with a conclusion that formulates an answer to the central question. Figure 1.1 gives a visual overview of the research framework for this thesis per chapter.
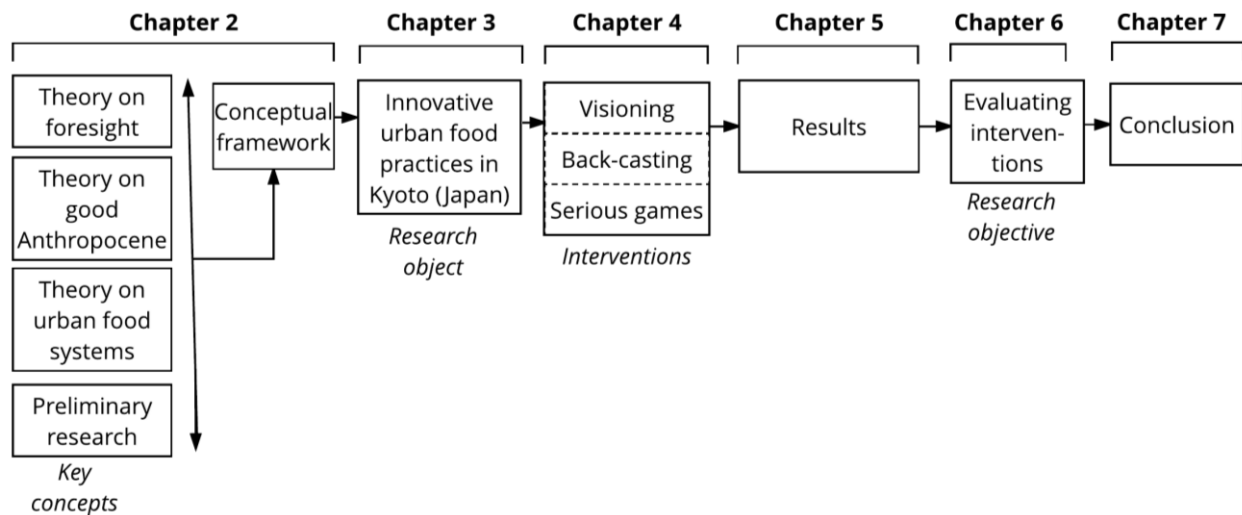
Figure 1.1 Research framework

2. THEORETICAL FRAMEWORK

This chapter aims to give an in-depth overview of the main theoretical concepts that make up the foundation of this thesis. The first three sections outline several key parts of the conceptual framework starting with the concept of imaginaries and their impact on how people perceive and act towards the future. Subsequently, the middle part of the chapter considers foresight in a number of different forms. The review of the literature results in a formulation and operationalization of the variables for the empirical work in the following chapters of this thesis. The chapter ends with a visual overview of the conceptual framework.

2.1 Imaginaries
When searching for drivers of change in any system, it is important to consider the deeper layer of imaginaries. A social imaginary is a deep-seated mode of understanding that constitutes the social and political space through which we perceive, judge and act. It forms the most general parameters in which people envision their communal

existence. Imaginaries influence the institutional and rational structuration of society through legal and institutional interventions, such as the shape of markets and bureaucracies. The social imaginary thus drives societies in a certain direction by strongly enabling common practices, communal attachments and institutional arrangements. From the French and American revolutions until WW2 the world held a dominant national imaginary, in which a clearly defined group of people belonged while others fell on the other sides of its boundaries, into their own nation and corresponding national imaginary. This underlying understanding about the world led to a series of nationalistic political doctrines, agendas and spatial arrangements. After WW2, the breakdown of the status quo and an influx of new ideas, theories and practices led to a shift towards a new, global imaginary (Steger 2008). Today, this global imaginary continues to dominate, at least in most OECD countries. This does not mean that the nation state is dead: contemporary socio-political developments demonstrate their significance in people's lifeworlds. However, an overarching *"compression of the world into a single place [...] makes the global the frame of action"* (Ibid.: 11).

This view of imaginaries as the frame of action applies to a wide range of topics. In various bodies of academic literature, the concept of the imaginary is used quite freely and in many contexts. Examples range from the corporate imaginary, an abstract vision towards which to direct corporate strategy as well as a persuasive narrative to attract people to the business, to the fantastic imaginary, the communal understanding among people who play a fantasy game or read a book (Martin 2004). For this thesis however, it is especially relevant to highlight sociotechnical imaginaries. Jasanoff (2015: 4) defines them as *"collectively held, institutionally stabilized, and publicly performed vision of a desirable future, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology".* In addition to incorporating technology into the definition of the social imaginary, desirability and the view towards the future are explicitly included here as well. When drawing up a conceptual framework for studying sustainable urban food futures in the Anthropocene, the intersection of the social and the technical is of key importance, since rapid technological developments in (urban) agriculture, the digital world, renewable energy and many other domains constantly expand old or offer new sociotechnical imaginaries.

All actors in an urban food system, whether they come from civil society, business or government, act on certain dominant imaginaries - global, sociotechnical, corporate or even fantastic. Different imaginaries can clash, so different narratives of the future have to battle for acceptance or popularity among the public in order to inspire actions to realize a certain future (Jasanoff 2015). This corresponds with how Steger (2008: 11) describes the shift in imaginary from national to global and how it was never simply a matter of increasing the flows of capital and goods across borders. Rather, it was *"a multidimensional set of processes in which images, sound bites, metaphors, myths, symbols and spatial arrangements of globality were just as important as economic and technological dynamics"*. There are many examples of modern shifts in imaginaries. Chen (2015) describes how a framing focusing on urgency and necessity brought genetically modified rice at the centre of the Chinese national food system. Araujo, Mason & Spring (2010) explore the development of the imaginary behind self-driving cars, and conclude that it is so powerful nowadays because of the framing of these narratives based on safety and decreased congestion. Bai et al. (2016) identify a task for contemporary social scientists in uncovering how the Anthropocene can be used to explore and guide attitudes, choices, decisions and actions that will reverberate far into the future. This task description could be interpreted as studying how positive imaginaries for the Anthropocene can be shaped. A relevant follow-up question is then what the relevant drivers are that shape them.

2.2 Towards a good (food) Anthropocene

To understand the complex set of drivers behind food practices in cities and their effect on the environment, it is important to start by acknowledging that food is not simply a fuel for humans, nor is it just a commodity for farmers or chefs. In other words, food is not only one of life's material conditions, but is a vital element of people's lifeworld: the subjective perspective of every individual on their life conditions (Kraus 2015). The horizons of the lifeworld also demarcate the limits of that what people can comprehend in their subjective perception, and are the borders of what they perceive as important. Certain grave problems might be too large, too abstract or too far away in space or time to be given priority in one's lifeworld (Guignon 1983). However, these horizons are not fixed: they can be rearranged, broadened and shifted (Madsen 2002). The Anthropocene and its scope of humanity as a major environmental force fall into the category of abstract issues that may fall outside of the horizons of many people's lifeworlds. However, its impacts are approaching at high speed and can already be seen in the intensification of agriculture and food produced in economies of scale brought on by globalization (O'Brien 2013; Sonnino 2009). As part of the urban fabric, the urban food system is at any point in time the outcome of a continuous process of coalitions initiating and realizing particular agendas, approaches and technologies (Hajer 2015). The current developments can be argued to be the products of certain global and sociotechnical imaginaries.

Awareness of environmental issues has increased among organizations, governments and civil society, resulting in more support for sustainable development. In the domain of research on food governance, the main topics in urban food security are the use and value of peri-urban agriculture, urban farming and urban food equity (Sonnino 2009). Urban governments and civil society actors around the world have also been taking initiatives to re-design food systems in their cities. Sonnino (2009) identifies four aims of their initiatives: in addition to providing sufficient food, they seek to create new economic opportunities for local agriculture and retailers, who would not survive the expansion of the global food system; they improve public health by responding to the differing food and nutritious needs of socially and culturally diverse populations; and they are beginning to improve quality of life by re-designing the urban and peri-urban environments. These developments are promising, but Sonnino (2009) argues that the way that they are studied and contextualized is often not comprehensive enough. Davies (2014) also notes that many roadmaps and plans target only part of a larger issue, which for example shows in the overemphasis on reaching food security through technological advancements. Instead, when adopting a more practice based approach and working closely together with stakeholders, a diverse set of possible futures and pathways can emerge (Ibid.).

2.3 Making futures tangible

Still, it remains difficult to imagine truly novel future states of the world while retaining a connection with the practice that they apply to. In the words of Lövbrand et al. (2015: 1): *"Who speaks for the future of the earth?".* To answer their own question, the authors propose to act on three new ontologies that have emerged in the context of the Anthropocene debate, by radicalizing the post-natural, highlight social diversity and reintroduce the political. A number of authors have taken up the task of expanding the types of knowledge used in their empirical work. Examples of this are recommendations for inclusion of indigenous knowledge in studies for IPCC assessment reports (Ford et al. 2016), the salience of various Anthropocene narratives (Ingram, Ingram & Lejano 2015) and the exploration of human agency, reflexivity and responsibility in the Anthropocene debate (Chernilo 2017).

In terms of real-world impact however, there is still a knowledge-action gap between what people know about the future and how they act upon it (O'Brien 2013). In other words, evidence is mounting against the "information deficit model of behavioural change", which assumes that if people get the necessary information to know better, they will do better (Maggs & Robinson 2016). However, scientists struggle to find another solution to than throwing ever more knowledge at the public. Even the body of literature on solution is quite extensive, but has not led to a large-scale implementation. Instead, O'Brien (2013) argues that it is change itself that should be studied: the absence of change implies that the levers for systems change are currently misunderstood. To move from knowledge to action, researchers should first identify the goal, then identify what is happening instead, identify hidden competing commitments, and finally identify the big assumptions that underlie these competing commitments. Questioning these big assumptions could be the key to social change (Ibid.). Several recent studies address this gap explicitly by experimenting with interventions. Cockburn et al. (2016) report on experiences from the Durban Action Research Partnership, an 11-year program that serves as a boundary organization between science and practice, acknowledging and addressing the divide between the two. The process, although very resource intensive, reported strong working relationships growing over time; an increase in trust and social capital, as well as human capacity; and more implementation-driven knowledge (Ibid.)

A theory that goes further in questioning the big assumptions is the embodied inclusion of future generations in present-day negotiations. Kamijo et al. (2017) argue that the structure of the present-day lifeworld is biased towards the short term and disadvantages future generations. Searching for ways to balance this system, the authors conducted a series of experiments in which participants had to divide a finite amount of resources. In one group a set of participants acted as people from future generations, while in the control group the imaginary future generations were not present. The results of their study indicate that when faced with future generations, 60% of the participants chose the sustainable option, against 28% if future generations were not embodied in the same space. In addition to demonstrating possible better ways to divide resources, this experiment has another interesting outcome. It indicates that the experiential setting of a situation significantly influences the choices made, and thus participants' ability to truly imagine a future situation.

A third example, that also challenges key assumptions as well as offering new possibilities for action, is the Seeds of Good Anthropocenes project by Bennett et al. (2016). Seeds are defined by the authors as *"initiatives (social, technological, economic, or social–ecological ways of thinking or doing) that exist, at least in prototype form, and that represent a diversity of worldviews, values, and regions, but are not currently dominant or prominent in the world"* (Ibid.: 442). To highlight these initiatives, they started the Seeds of Good Anthropocenes database and website (Seeds of Good Anthropocenes 2017), with a further plan of reconfiguring them and combining them with new techniques, practitioners and other ideas. Rather than concentrating on potential negative changes that have not yet occurred, a focus on these existing seeds can help sustain and amplify efforts that are already being made or existing aspirations that people have for the future. As a way of bottom-up shaping of pluralistic futures it generates creative, detailed, novel and well-articulated futures: things that top-down global trend-style are less successful at (Bennett et al. 2016). By offering a concrete way to formulate and explore grounded aspirational futures, the approach adds to the aforementioned observations formulated by Sonnino (2009) who urged science to conduct comprehensive research of existing citizen initiatives. Also, it offers the possibility of going beyond ineffective utopian-dystopian divides and provides nuanced aspirational imaginaries of what a good Anthropocene could and should be like.

2.4 Foresight approaches to generate normative futures

To imagine and take action towards possible futures, researchers can choose from a range of different foresight methods. Some are cognitive and based on quantitative indicators, while others rely on free imagination and storytelling. Popper (2008) lists a wide range of methods, structured along the levels of expertise, creativity, interaction and evidence. The methods are also structured according to research method - quantitative, qualitative, semi-quantitative or "other". The overview is comprehensive, but lists for example "interviews" and "voting" separate from "back-casting" and "stakeholder analysis", while the former two could be used as a methods for the latter two and all methods could also be quite easily combined.

Similarly, a somewhat rigid use of methods that look to the future from the past is still common in environmental governance, resulting in scenarios and models that are biased towards positive science and technocratic science. These methods are the backbone of many influential reports issued by organizations such as the Intergovernmental Panel on Climate Change (IPCC) (Ford et al. 2016). Because these reports are so influential in shaping the policy measures that address the issues of the Anthropocene, it is problematic that the methodology is skewed in this way. It creates a false sense of risk elimination, while systematically underestimating the power that communities have in realizing the future as projected (Vervoort et al. 2014). Starting from a desired future vision in a back-casting approach is one option that leans less on past experiences, and can even be combined with more explorative scenario building (Kok et al. 2011; Vervoort et al. 2014). Using the approach of collecting, combining and exploring the Seeds of Good Anthropocenes as detailed by Bennett et al. (2016) offers another option towards futures that are grounded in the present that can be combined with existing foresight methods. If conducted in a participative way, it could stay even closer to practice and create an extra benefit for participants by shaping knowledge-sharing networks and collaborative communities (Ibid.; Kok et al. 2011; Van der Hel 2016).

With these options in mind, it is possible and necessary to narrow the scope of this research to a selection of methods that are appropriate for generating normative futures. There is a need for methods that look to the future rather than the past or the present (Hajer 2017), that paint these futures in a realistic but aspirational way (Bennett et al. 2016), that make an effort towards bridging the knowledge-action gap (O'Brien 2013), and give stakeholders the possibility to exercise their ontological agency in shaping their own world (Vervoort et al. 2015; Lövbrand et al. 2015). Furthermore, a number of studies indicate that combining complementary methods creates a better fit with complex systems, and can connect novel outcomes with real-world practices. As such, they could yield a richer variety of futures, a potential that is worth exploring further (Kok et al. 2011; Van Vliet et al. 2012; Vervoort et al. 2014; Avin 2012). The three normative forecasting methods selected for this thesis are visioning, back-casting and serious games: two widely used methods and one relatively newer approach. They depart either from the future or, by using the Seeds of Good Anthropocenes approach (Bennett et al. 2016) look to futures grounded in the past. Furthermore, placing innovative urban food practices at the centre of the methods could open up new ways to combine the methods in a complementary way. The following sections introduce the three foresight methods and their applicability, after which the choice for these specific methods will be explained.

2.4.1 Visioning

Over 25 years ago, Slaughter (1991) already argued that modern societies are stuck in an "imaging dilemma": contemporary views of the future tend to be about what people want to avoid rather than about what they want to achieve. A vision is the overall image

of what the community wants to be and how it wants to look at some point in the future (D'Hondt 2012). The method of visioning originated as an exercise in which participants were invited to imagine entirely new visions of the future, focusing less or not at all on the things that would be needed to reach such a future (Voros 2006). Over time, different types of futures were distinguished in the literature. Depending on the workshop, the visioning process cycle can include the making of an action plan, such as formulated in the community visioning guideline by Green, Haines & Halebsky (2000) and the plans for improvement of Kosovo's municipalities by UN Habitat (D'Hondt 2012). However, the latter also acknowledges that creating a shared vision is the central element: the essence of the visioning processes is providing the condition for networking and allowing the diverse groups to come together and interact. This often leads to the discovery of new, formerly hidden, leaders or project champions.

For the urban environment, Daffara (2011: 685) argues that visioning the future city enables communities to discuss their preferred future place to live and debate this with others. This *"creates a pull towards the preferred future".* This suggests that by engaging in a visioning process, new imaginaries are shaped that are shared among the group of participants, influencing their conceptualization of and actions towards their future (Steger 2008). In addition to this, the visioning process is a space where a dialogue on cultural transformation and learning can take place, in which the obstacles to change are eliminated and the drivers of change can be further investigated. In contemporary visioning workshops, participants are often asked to imagine a future with a certain characteristic such as a circular economy (Jackson, Lederwasch & Giurco 2014) or an unlimited supply of energy (Späth & Rohracher 2010). Daffara (2011: 285) argues that the creation and discussion of a shared future vision can steer processes easier towards this vision, while keeping the process agile so it can accommodate *"waves of urban change".* These waves come from big changes for humanity in both the present and foreseeable future, both because of technological innovations and cultural changes in which local identities struggle with increased globalization. However, there is a level of inflexibility in the mass of a city's fabric: the built environment, infrastructural systems and the urban-rural divide cannot be changed in a single workshop. Visioning exercises should aid in building agility by leading to self-empowered citizen leadership; utilitarian policies; intercultural leadership or politics of difference; and reflective, transformational leadership (Ibid.).

2.4.2 Back-casting
A visioning exercise can be a separate undertaking, as well as be one of the first steps in a back-casting process. In back-casting, a vision of the future is created first, after which a series of steps to arrive there is worked out starting from the vision and working back to the present (Voros 2006). This can be done in a number of different ways. In normative back-casting, the vision of the future is explicitly desirable. A back-casting process can be conducted behind closed doors by managers, planners or policymakers, but can also be a participative activity that involves relevant stakeholders (Vergragt & Quist 2011). A number of authors have conducted successful participative back-casting processes for sustainable urban development. Examples are studies by Carlsson-Kanyama et al. (2008) on local sustainability planning, Doyle and Davies (2013) on sustainable household consumption and Robinson et al. (2011) on community climate change adaptation. Participative normative back-casting processes have the double benefit of both engaging participants in the process as well as yielding results that are connected to society. Vergragt & Quist (2011: 749) describe how it is a process of higher order learning, not only about their preferred future, *"but also about the present, about each other, about barriers and incentives, about the change agents, and about how to improve the future vision to make it more appealing and resilient".* While it is often difficult to include the implementation phase in a back-casting study, its outcomes can

serve as powerful guiding images, imaginaries perhaps, for actors and networks (Ibid.). However, Vervoort et al. (2014) have been successful in shaping major new national policies through a participative process of back-casting combined with explorative scenarios in East Africa, which shows that it is possible for back-casting efforts to directly shape informed policy change.

In more recent years, back-casting has known a development into being combined with other methods and new technology. The former is illustrated for example in the work of Kok et al. (2011), who combine exploratory scenarios and back-casting to consider the future of Europe's fresh water resources. The authors hypothesize that combining the methods increases feasibility of the methods as well as usefulness of results, which is supported by their results. Another example is the work by Robinson et al. (2011) who aim to combine qualitative and quantitative data in a series of case studies in Canada. To do so, they use a range of digital tools and datasets, which gave real-time feedback and visualization of the back-casting plans based on quantitative datasets that ground the plans in reality. They combine this approach with qualitative techniques like developing narrative storylines in a participative process with stakeholders from the different communities. The results are promising, although Robinson et al. (2011) note that threats of this process may be that the breadth of options that they can choose from overwhelms participants. Another point of attention is that as in any participative process, a careful design of the participative process and appropriate answering of the who-, why-, how- and when-questions is crucial to its success (Jonsson 2005).

In addition to generating richer outcomes and a higher level of stakeholder engagement, use of new tools and techniques in back-casting can also make the process more experiential. Increasingly, experiential elements are implemented in back-casting work, such as by Robinson et al. (2011) in their use of 3D imagery of key climate change impacts, and the use of back-casting software into which participants could put their own values, generating a tailor-made vision. Experiential learning takes place when the learning process has built-in testing of abstract concepts in a realistic present-day environment. Secondly, there are feedback processes involved. Vergragt & Quist (2011) notice how earlier back-casting literature is quite goal oriented, but recent publications indicate a shift towards seeing back-casting as a participative process and research approach in which the process carries as much weight as the resulting pathways to desirable futures. This has also shifted the process form being linear to being iterative and even possible to move back and forth between the iterative steps (Ibid.). Experiential learning, too, happens through a process of continuous forming and re-forming of thought through experience (Kolb 1984). The main experiential quality of back-casting is the testing of abstract concepts in a realistic present day environment, made more immersive by the presence of others which both enhances the experience for the player as well as creating a shared experience among the players (Vergragt & Quist 2011). This also brings participative back-casting as a research approach also into the realm of action research, involving all relevant parties in a shared experience, actively examining current action with the aim to change and improve it (Wadsworth 1998).

2.4.3 Serious games
The main advantage of gaming as a foresight method is that it has even more of an experiential quality, as games place players in an environment that they can explore within the boundaries of a set of rules, resulting in experiential learning and a shared experience in the case of a multiplayer game (Dieleman & Huisingh 2006). The format is usually that of a simulation game, which can be defined as experiential, experimental, rule-based and interactive environments, where players learn by taking actions and by experiencing their effects through feedback mechanisms that are deliberately built into

and around the game (Mayer 2009: 825). More broadly, games used for a purpose such as forecasting or other types of learning are often referred to as *"serious games"* and are intentionally designed to have a purposeful impact on the players' lives beyond the self-contained aim of the game itself (Mitgutsch & Alvarado 2012: 2). They rely on playful engagement with potential futures but use this engagement to develop new thinking on the possibilities for the challenge at hand (Davies et al. 2012). Complex issues that span a variety of fields and lack a clear solution are especially fit for a game setting. For more simple problems developing a game might be too time-consuming and overcomplicate things. Game (co-creation) is used for many end goals, such as acquiring skills or understanding a system (Van Bilsen, Bekebrede & Mayer 2010; Hummel et al. 2011), educating or raising awareness about issues such as traffic situations (All, Van Looy & Nunez Castellar 2012), to persuade people (Bogost 2008) or raise interest in certain topics (Van Geit et al. 2015). It is also appropriate as a way of stakeholder participation (Mayer et al. 2010; Stauskis 2014) and engagement of people, such as employees, in a certain process (Van Bilsen, Bekebrede & Mayer 2010). The forms this can take include but are not limited to game jams (Eberhardt 2016), in which the end goal can also be to produce a game, role plays (Bennett et al. 2016), World Climate negotiations game (Sterman et al. 2015), or other negotiations (Barreteau et al. 2003), playing a pre-developed game, for example for stakeholder participation (Stauskis 2014; Mayer et al. 2010) or co-developing game together (All, Van Looy & Nunez Castellar 2012; Van den Abeele & Van Rompaey 2006).

Issues that are such as climate change, public health and food security are all characterized by both technical-physical complexity and social-political complexity. Technical-physical complexity is the emergent complexity resulting from the interactions among the physical-technical-economic entities within the system. Social-political complexity on the other hand is the emergent complexity that is a result of the strategic interactions among the various stakeholders in the policy arena (Mayer 2009). In and of themselves, most simulation and modelling tools do not accommodate the political dimensions of multi-actor decision-making processes. Actors in a policy network usually try to influence the outcomes of this process by lobbying, going to court, financially supporting candidates and other measures (Ibid.). In that sense, policymaking already resembles a multi-actor strategic game, albeit one in which the rules are dynamic and at times unclear, actors come and go and motivations are far from transparent. Furthermore, gaming makes it possible to address the technical-physical-economic complexity aspect—that is, the substantive complexity of the problem that can be modelled either through formal or more conceptual methods—as well as the multifactor aspect of policy problems (Ibid.). It is therefore not surprising that gaming is increasingly used in a policy context and studied by researchers such as Mayer (2009) and in designated institutions such as the MIT Game Lab (Massachusetts Institute of Technology 2016).

Lastly, the interaction with others, moving freely but with the constraints of certain ground rules, is also a key unique point of a serious game. Hummel et al. (2010) note that scripted collaboration indeed significantly improves the quality of learning output. In their experiment, the participants also indicated that it helped them to gain more insights into the perspectives of other relevant stakeholders. In other literature, role-playing games have been found to improve collaboration as well as increase feelings of community and empathy (Gordon & Schirra 2011; Bowman 2010; Iannotti 1978). In additional to this potential for social learning, the shared experience of a specific environment is also a potent contribution to serious games as a foresight method. According to Kolb (1984: 21) *"when human beings share an experience, they can share it fully concretely and abstractly"*. A group process of the experiential game environment can contribute to a strong, newly shared imaginary. Modern-day techniques, which are

evolving rapidly, such as elaborate digital environments and augmented as well as virtual reality, expand the experiential possibilities of games almost daily. For example, Shen et al. (2017) test whether virtual reality can satisfy Kolb's (1984) requirements for experiential learning, Dulic, Angel & Sheppard (2016) report positive results with learning about climate change, and Marsh (2016) shows how "slow serious game" can enable deep experiences and reflexive thinking. Together, this opens up another promising possibility for creating and exploring imaginaries.

2.5 Variables

From the literature in the previous sections of this chapter, a set of independent variables can be derived that form the basis of the empirical part of this thesis. The first part of this section describes the independent variables, and the second part lists the dependent variables. These variables are present to different extents in each of the foresight methods, and largely depend on the setting in which the data collection takes place. By measuring the differences between the different methods, an indication can be made of which methods is most suited to what situation. For example, visioning in interviews has no interaction with other participants, while in a visioning focus group participants have to discuss and reach an agreement before they can start the back-cast. Another example is the difference between a visioning and back-casting process in which people are asked to envision a future, and a game in which they are placed in a situation that simulated the actual future. The different general settings per method are listed in Table 2.1.

Table 2.1 Foresight methods and setting

	Method	Setting
1	Visioning	a. Semi-structured interview
		b. Focus group
2	Back-casting	Focus group
3	Serious gaming	Workshop

The dependent variables measure both the quality of the output generated by each method as well as the effect it has on the participants in terms of learning about the issue at hand, empathy with other roles, motivation to act and extension of the personal network. All of these outcomes can be argued to contribute to a reconfiguration of participants' world, change fictional expectations or imaginaries. The different outcomes show what the different foresight methods contribute to most and what is influenced less. Both sections end with a tabulated overview of the independent and dependent variables and their operationalization for this thesis, as well as the corresponding foresight method from Table 2.1.

2.5.1 Independent variables

The following four independent variables are present to various extents in all three of the foresight methods for normative futures:

1. Vision-driven planning

Participative foresight processes involve a range of stakeholders in the development, modification and discussion of diverse futures (Davies 2014). In this thesis, the level of participation can differ per method, whether inherently (in an interview) or due to time and resource constraints. However, a combination of methods can allow for each vision that participants express to shape the parameters of the next intervention, to various degrees (Robinson et al. 2011; Tan 2014).

2. Experiential environment

As the work by Mayer (2009), Kamijo et al. (2017) and the MIT Game Lab (Massachusetts Institute of Technology 2016) indicates, immersing participants in a future situation or in another person's perspective can bring about significant changes in attitudes and behaviour. Based on their work, the second variable, the experiential environment, is operationalized as the level of experiential immersion in possible futures and the level of immersion in other roles and perspectives.

3. Non-consequentiality

The non-consequentiality of the foresight activity refers to how participants are asked to envision a certain future or even to place themselves in that future, but their actions and outputs have no real-world consequences. Studies by Mayer (2009), Gabriel & Connell (2010) and All, Van Looy & Nunez Castellar (2012) indicate that this can lead to a higher level of experimentation and generation of more innovative possible futures.

4. Interaction with other participants.

Having points of view challenged and reconfigured through discussion with others could lead to a better imagination of realistic future possibilities and a higher motivation to act. Furthermore, it increases the chances of participants forming knowledge networks and collaborative communities (Bennett et al. 2016; O'Brien 2013).

Table 2.2 Independent variables

	Variable	Operationalization	Foresight method (Table 2.1)	Source
1	Vision-driven planning	• Degree to which desirable futures of participants shape parameters of method	1a; 1b; 2; 3	Davies (2014); Robinson et al. (2011); Tan (2014)
2	Experiential environment	• Level of experiential immersion in possible futures • Level of immersion in other roles and perspectives	1a; 1b; 2; 3	Mayer (2009); Kamijo (2017); Massachusetts Institute of Technology (2016)
3	Non-consequentiality	• Absence of direct real-world consequences of the foresight activities	1a; 1b; 2; 3	Mayer (2009); Gabriel & Connell (2010); All, Van Looy & Nunez Castellar (2012)
4	Interaction with others	• Level of interaction with other stakeholders from the same field	1b; 2; 3	Bennett et al. (2016); O'Brien (2013)

2.5.2 Dependent variables

The following five dependent variables are expected to show the results of the independent variables as present in the visioning, back-casting and serious games interventions. The first variable, quality of output, is operationalized as a set of criteria through which to assess process output. The other four variables apply to the process effects on the participants.

1. Quality of futures and pathways

The first variable that results form any foresight method are the outputs that paint a picture of the future. Wiek & Iwaniec (2014) list a number of criteria that are relevant in

determining the quality of a vision of the future. Since all three methods yield a range of ideas and pathways towards this future, the six most relevant criteria were selected to be able to compare among the three methods used in this thesis. Quality of futures and pathways is therefore operationalized as: specificity of plans; feasibility of plans; width of support if the plans; how "visionary" the plans are; and internal coherence.

2. Motivation to act

The process could motivate the participants in two ways. The first one is motivation to apply the foresight method, which may be new to them, in other activities in their life. The second type of motivation can refer to changing their behaviour with regards to the topic at hand (Daffara 2012; Polak 1973).

3. Network

The fourth variable refers to the increase of the network of the participants. In a wider context of creating new collective imaginaries, it is relevant to measure what the collective consists of, which people knew each other before and how varied their backgrounds are. Based on group composition techniques employees by UN habitat (D'Hondt 2012), and a need for a varied participant group as noted by Carlsson-Kanyama (2008) this variable is operationalized as the variety of the group and the number of people that met for the first time while engaging in the foresight activity.

4. Understanding of topic

Apart from resulting in a clearer image of possible futures, normative foresight processes can also contribute to ways of experiential learning about the topic at hand or expanding participants' knowledge with new ideas (Polak 1973; Van Geit et al. 2015; Robinson et al. 2011; Dulic, Angel & Shepard 2016).

5. Empathy

Levels of empathy for other perspectives on a topic are a result of complex learning processes. Hummel et al. (2011) describe how experiential settings such as games can contribute to increased levels of understanding for other people's point of view and increased reflectivity about participant's own role.

Table 2.3 Dependent variables

	Variable	Operationalization	Foresight method (Table 2.1)	Source
1	Quality of futures and pathways	• Specificity of plans • Feasibility of plans • Sustainability of plans • Plans are shared among multiple stakeholders • Plans are visionary - surprising, holistic and future-oriented • Coherent and free of internal contradictions	1a; 1b; 2; 3	Wiek & Iwaniec (2014)
2	Motivation to	• Participants' indication of	1b; 2; 3	Polak (1973);

		motivation to apply methods learned • Participants' indication of motivation to address topics discussed in use of method		Jasanoff & Kim (2009); Daffara (2012)
3	Network	• Variety in background of participants • Participants' indication of encountering new people	1b; 2; 3	UN Habitat (2012); Carlsson-Kanyama et al. (2008)
4	Understanding of topic	• Participants' indication of change in understanding of the topic • Participants' indication of encountering new ideas	1b; 2; 3	Van Geit et al. (2015); Robinson et al. (2011); Dulic, Angel & Shepard (2016)
5	Empathy	• Participants' stated experience of imagining viewpoints of other roles • Participants' stated experience of the method	1b; 2; 3	Hummel et al. (2011)

2.5.3 Conceptual framework

Figure 2.1 gives a visual overview of how the concepts in this chapter are connected, and what the position of the three foresight methods of visioning, back-casting and serious games is within the framework. A set of independent and dependent variables were selected that are hypothesized to ultimately have an effect on the lifeworld. The dependent variables can be divided into two groups: foresight outputs and foresight process results. This selection of dependent variables is a set of components that together impact the formation of extended and new imaginaries.
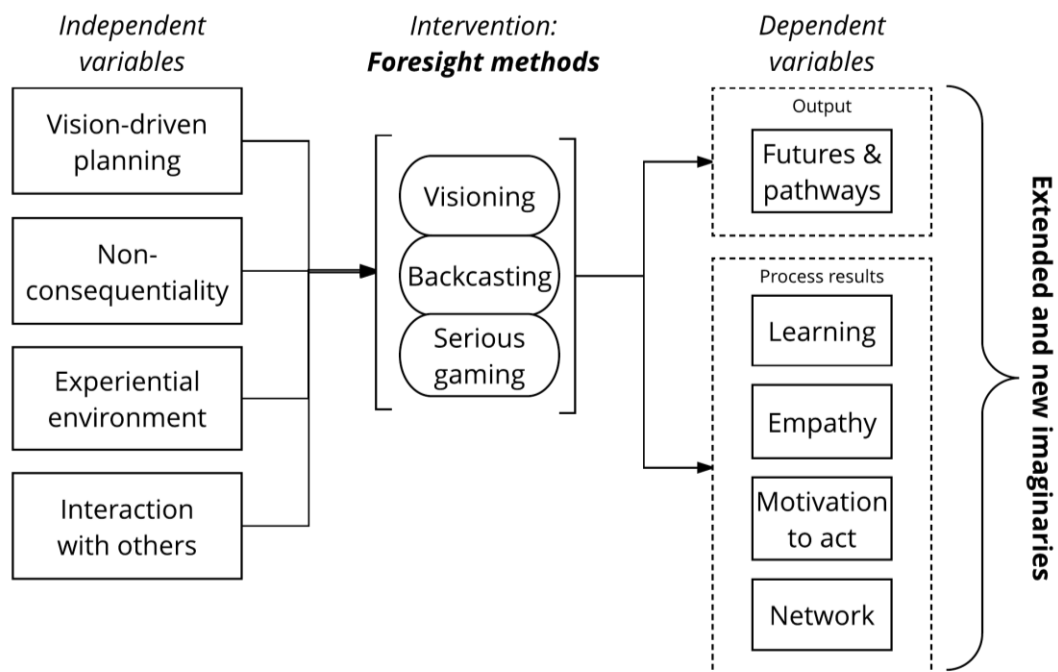
Figure 2.1 Conceptual framework.

3. CASE DESCRIPTION

The Japanese research context is complicated, even when zooming in on a smaller area like Kyoto prefecture. Much of the academic literature is either written in Japanese or skewed towards the Western European or North American point of view, further complicating an objective and comprehensive case description. To consider the food system in Kyoto prefecture fully but not venture too far into deep cultural, ecological or earth system territory is somewhat of a paradox. All these elements are important to the food system and therefore for this thesis. This case description aims to provide the necessary background data in to build a foundation for the analysis of the foresight methods. At the same time, it aims to streamline the data and keep it as close as possible to the game context, in order to not make unsteady claims outside of the scope of this thesis. To unite both aims, this chapter follows a case description method outlined by Tan (2014) in her Generative City Gaming concept. Both in this thesis and in the work of Tan (2014), the city is regarded as a complex system, in which actors of different power levels together have to find a solution to a specific question. The first section of this chapter gives a brief outline of the socio-economic, political and cultural context of Japan's food system, with a focus on Kyoto. Subsequently, the second section focuses on the societal value and urgency for the three foresight methods in this specific region. The final section contains a profile of the FEAST research project. The fieldwork was conducted in the larger context of this project.

3.1 Context

Japan consists of 3600 mountainous islands that cover a length of 3500 kilometres. Only 15% of the land is arable. The main island of Honshu is home to the largest cities, such

as Tokyo, Osaka and also Kyoto (Ashkenazi & Jacob 2003). Kyoto prefecture, situated in the Kansai region, is one of Japan's 47 prefectures. Kyoto city is its capital and its most populous district. There are five other districts, and 26 municipalities. The climate of the Kyoto Basin is typical of an interior basin, with large differences in temperature between summer and winter as well as day and night. Closer to the shoreline on the north side of the Tanba mountains, the climate is more moderate (City of Kyoto 2008). Figure 3.1 depicts the location of Kyoto prefecture and city in Japan, as well as area and population numbers.

日　本
Japan
Population: 127,094,745
Area: 378.000 km²

京都府
Kyoto prefecture
Population: 2,610,353
Area: 4613.26 km²

京都市
Kyoto city
Population: 1.407.087
Area: 827.90 km²
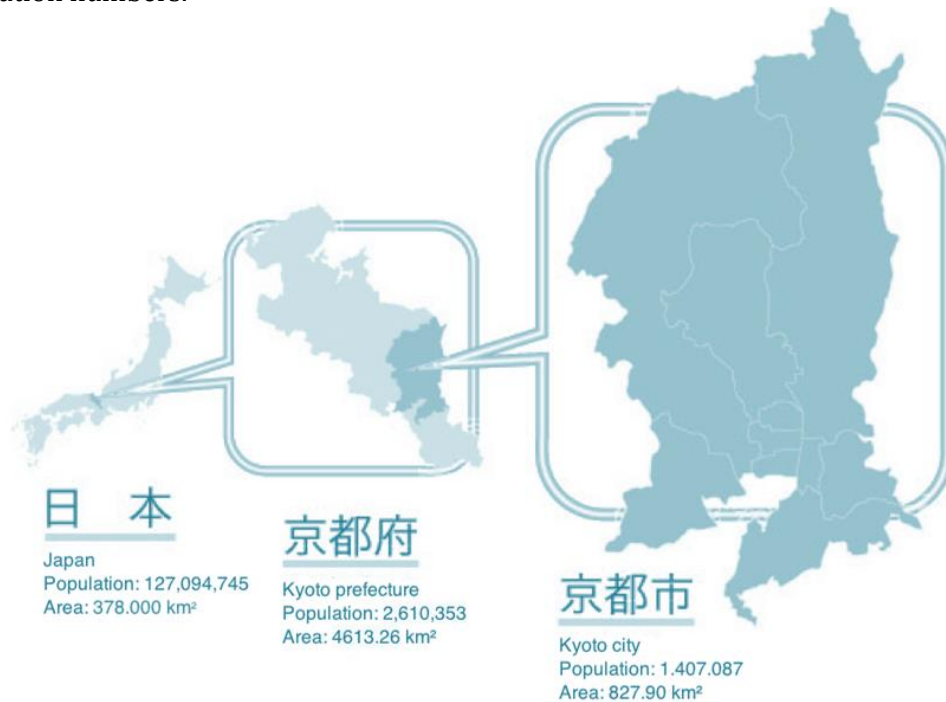
Figure 3.1 Japan, Kyoto prefecture and Kyoto city.
Source: Kyoto City Web (2008); Ministry of Internal Affairs
and Communications (2015)

Due to its limited arable land, Japanese agriculture is characterized by efficiency, which has stimulated monocropping which has in turn led to biodiversity loss. Combined with among other things a relatively high use of pesticides, Japan's agriculture has a significant ecological footprint (Kimura & Nishiyama 2008). The country is also one of the largest food importers in the world, importing about 60% of its consumed calories. Due to this high import rate, Japan currently holds the top position in the list of countries with the highest food mileage (McGreevy & Akitsu 2015). Since Japan's economic acceleration in the 1960s, the agriculture, forestry and fisheries industries have shrunk each year, both in terms of how many people they employ and their share of the country's GDP. Nowadays, only 33% of Japanese farmers report farming as their full-time occupation. Of the people engaged in commercial farming, 63.5% were over 65 years of age in 2016 (Statistics Bureau 2016). Japan's population is aging rapidly. The amount of people in the age group 15-65 has remained quite stable between 1950 and 2015 at about 60%. However, over that time period, the percentage of the population in the age group 0-14 has shrunk from 35.4% to 9.7%, while the percentage of people above 65 has increased from 4.9% to 38.8% (Ibid.). Japan still holds quite conservative gender roles that dictate in many cases that men should work fulltime while women are homemakers, a reason why many women are not included in the labour force. These gender-based expectation patterns cause a significant number of women nowadays to forego becoming a mother or even marriage altogether, instead focusing on their education and career (Lindsey 2015). This further aggravates the current demographic changes.

With regards to its government, Japan is a constitutional monarchy that officially has the emperor as the head of state. However, as stated in the post war constitution, his duties are largely symbolic and he has little power over the country's government. At the national level, the Liberal Democratic Party (LDP) has been in power since the end of WW2, with the exception of two periods in 1956-59 and 2009-12 (Government of Japan 2017). At the local level, citizens can elect the governor of their prefecture and the mayor for their city or village. Kyoto prefecture and city both have a relatively strong presence of the Japan Communist Party. In elections, this usually leads to a battle between two candidates, one of whom is backed by all established parties, and the other by the communist party. At the moment, non-communist candidates hold both offices (Johnston 2014; City of Kyoto 2016). The aforementioned demographic and economic changes are the subject of considerable government attention. Kyoto prefecture has a number of strategies in place to stimulate re-ruralisation, such as subsidizing the use of abandoned farmland (Kyoto Prefecture 2017). At the level of Kyoto city, there are similar initiatives such as a job café for women who want to start agricultural activities (Kyoto Shimbun Co. Ltd. 2017). Also, the 1997 COP 3 that was held in the city and led to the Kyoto protocol is still cited by the city's government as a motivator for the city to take the lead in mitigating climate change (City of Kyoto 2014).

Governance is a concept that goes beyond government: in addition to state interventions, it includes the strategic activities of the private sector and civil society. Together, these three elements form the classic governance triangle. They can work together through co-management (civil society and government), public-private partnerships (government and private sector) or private-social partnerships (public sector and civil society) (Lemos & Agrawal 2006). Historically, Japan has always known a dominant state with first the emperor as a strong leader and later, after WW2 until the present, the same power in party for virtually uninterrupted periods of time. Furthermore, since WW2 business has been a top priority in the country, creating a "state-business nexus" rather than a balanced three-pillar model of governance (Knight 1996). In this situation, civil society is the weakest link, argue authors such as Knight (1996: 224), who diagnoses Japan with *"a chronic inability [...] to imagine a public realm separate from, or independent of, the state".* This is to a certain extent unfair, because there have been several points in time, such as in the 1960's, in which there were many vocal citizen groups. In the present day, Japan still has many neighbourhood associations and small groups but its civil society landscape is less professional and institutionalised than that of other OECD countries (Pekkanen 2004). The literature offers many explanations for this difference, but analysing these complex underlying reasons goes beyond the scope of this thesis. For this case description, it is still important to mention the NPO law that passed in 1998 and institutionalized civil society initiatives, giving them legal status and the possibility for people to turn their volunteer activities into a more professional undertaking. Since then, such groups are on the rise. However, the civil society part of the governance triangle is still markedly different from those of the US, Canada and Europe (Pekkanen 2004).

Kyoto prefecture's relative lack of shoreline resonates in its food culture, especially in landlocked Kyoto city. Over the course of its history, the area has aimed to optimize the quality of its vegetables and freshwater fish (Ashkenazi & Jacob 2003). An example of this is the protected range of heirloom vegetables from Kyoto, known as *kyo-yasai* (Imaizumi & Akitsu 2015). In general, Kyoto cuisine is traditionally strong on vegetables. As the capital of Japan for over a millennium, Kyoto was the birthplace of many Japanese culinary traditions, which it still guards. Examples are the traditional fine-dining cuisine of *kaiseki* and the related tea ceremony (Rath 2013), as well as more recent developments such as *teikei* networks (producer-consumer organic food

collectives developed in the early 1970s) (Parker 2014). Everywhere in the world, food plays a determining role in the lives of people, not only as an essential element of existence but of broad societal processes such as political-economic value-creation, symbolic value-creation, and the social construction of memory (Mintz et al. 2002). In Japan, these societal processes appear to be particularly strong. Cwiertka (2006) describes that for many Japanese, food habits are fundamentally related to national character and reflect people's social and cultural values.

3.2 Societal value and urgency

Kyoto city and prefecture are facing a set of urban challenges that are similar to other OECD countries in the Anthropocene: an ageing and shrinking population, scarce natural resources and a struggle to produce food sustainably (Yazaki & Kadowaki 2006). The area also has a strong local food culture that experiences competition from international culinary influences, especially among younger generations (Yamada et al 1996; Popkin 1993). Furthermore, the nature of its civil society differs from other OECD countries. This section outlines the societal value and urgency for experimentation with imaginative foresight methods in this particular case.

The increasing life expectancy of its population combined with a number of births that is under the replacement rate (Kitao 2015) puts pressure on the Japanese economy, which has been stagnating since its "lost decade" of the 1990's (Hayashi & Prescott 2002). Meanwhile, the urban population has risen from 63% in 1960 to 93% in 2015 (UN 2015). Most people that still live in rural communities or tend to farms are elderly, further reducing the resilience of these communities and their potential to contribute to sustainable agriculture and food self-sufficiency (Obikwelu, Ikegami & Tsuruta 2017). In line with other OECD countries like the Netherlands or the UK, Japan consumes more biocapacity than its territory can produce. This makes it one of the top importing countries in the world with a significant ecological footprint (Galli et al. 2013). Thus, Kyoto has a lot to gain from imagining innovative sustainable futures, while this case could yield relevant results for other countries that are projected to follow a similar trajectory in the upcoming decades.

Secondly, in comparison to western OECD countries, the Japanese society has a relatively hierarchical governance structure, as described in the previous section. The literature on transition movements, renewable energy and participatory processes reports on many cases in Europe, the UK and North America, but is comparatively sparse when it comes to Japan. However, It is therefore interesting to see what kind of results the methods generate as well as how well they work in the Japanese context. The presence of many small, informal social initiatives suggest a potential for horizontal or vertical scaling up (Moore, Riddell & Vocisano 2015) or to otherwise mobilize of a civil society effort towards more sustainable food practices.

Thirdly, Japan is a unique place for food research. Especially Kyoto, with its decades-long history of being Japan's cultural and administrative capital is home to many traditions as well as innovations. Both in and around cities the production and demand for food are changing: there is a trend of a homogenization of nutrients, both among the regions within Japan itself (Yamada et al. 1996) as among Japan, its neighbouring countries and other OECD members (Popkin 1993). Daily per capita consumption of animal products has increased by 257 grams since 1946, while daily per capita total fat consumption increased 341 percent, and the proportion of energy obtained from fat increased from 8.7 percent to 24.8 percent. There is a significant difference in diet between younger and older Japanese, with the older population adhering to more traditional food choices and the younger generation opting for a more nutrient-dense western diet (Popkin 1999). In terms of production, the agricultural land supporting the

cities is nearing its yield potential (Tilman et al. 2002). In addition to this, the peri-urban agricultural land often has to make way for city expansion, after which global supply takes its place (Sonnino 2009). Sustainability is questionable in many cases of food production, especially in the case of seafood (Parker 2014).

3.3 Project context

The FEAST research project is one of the projects of the Research Institute for Humanities and Nature (RIHN) in Kyoto city. It takes an action research approach to explore the realities and potential for sustainable agrifood transition at sites in Japan, Thailand, Bhutan, and China, while also exploring their general significance in Asia. The aim of the project is to analyse patterns of food consumption, food-related social practices and their socio-cultural meanings, and the potential of consumer-based agency to change deeply held cultural notions and institutions. In their own words: *"the ways in which food is provided, consumed, and governed need urgent change"* (FEAST Project 2016). The fieldwork for this thesis was carried out in the context of Working Group 2, one of the project's five working groups that studies collaborative approaches for food ethics, citizenship and behavioural change. Imagining and exploring more sustainable food futures for Kyoto prefecture and city fits their previous fieldwork activities, especially their efforts to establish a novel mode of governance for the area in the form of a Food Policy Council (FPC) (FEAST Project 2017). In turn, embedding this thesis in the context of a larger project opens up possibilities for the imagined food futures to be a base for follow-up activities in the upcoming years. Moreover, this thesis is also falls within the Seeds of Good Anthropocenes project context, since the research uses their database, concepts and methodology (Seeds of Good Anthropocenes 2017; Bennett et al. 2016).

4. METHODOLOGY

This thesis uses a mixed methods approach that consists of a combination of interviews, focus groups and workshops. The complementary use of methods is central to this thesis, as it is expected to result in a significantly richer set of outcomes. Therefore, the mixed methods approach is of key importance. The sections in this chapter give a detailed overview of the methodology per foresight method, starting with the visioning interviews, followed by the back-casting focus groups and ending with the serious gaming workshops.

4.1 Visioning

The participants that contributed to visioning a sustainable food future for Kyoto prefecture were selected based on two main criteria: their qualification as being part of a seed of good Anthropocenes-initiative, and their role in the local food system. Bennett et al. (2016) identify six different types of seeds: agroecology, green urbanism, future knowledge, fair futures and sustainable futures. These categories are quite broad and many actors in the food system can be argued to fall into multiple categories. Therefore, for this thesis, the "seeds" requirement was tailored as follows: participants were eligible if they were based in Kyoto prefecture and engaged in social activity that pursues idealist future goals with regards to the food system. Furthermore, the aim was for the participants to be a balanced representation of every actor group in the food system. While limited in numbers due to the qualitative nature of the research, including a voice from every shackle of the food chain was important in order to be able to draw conclusions on the entire system. The typology table as presented in Table 4.1 is mainly adapted to the case context using Tansey & Worsley's (2014) classification of key actors

in a food system. Because this thesis focuses on innovative urban food practices that strive towards better futures, a sixth type was included: the non-profit sector. This group consists of a variety of actors such as academics, NPO's and activists whose primary stake in the food system is not profit maximization. This typology distinguishes and defines the key actor groups that were important to include in the visioning process. The actors were recruited via direct email as well as through existing contacts of the FEAST project.

Table 4.1 Food actor typology

	Actor group	Definition
1	Production	Those who produce goods
2	Distribution	Those who offer the service of distributing the goods, either processed or unprocessed, to the consumer.
3	Consumption	Those who spend money on goods and services
4	Waste and recycling	Those who collect and process waste, either for landfill or further use.
5	Government	The elected group of people in charge of laws, policy and their implementation.
6	Non-profit sector	Those who are involved in the food system in an idealistic, academic or activist capacity

The first part of the visioning exercise took part in semi-structured interviews. In such interviews, a number of different types of prepared questions (e.g. introducing, specifying or direct) guide the conversation, but the interviewee has the freedom to elaborate on topics where she or he thinks this is necessary (Qu & Dumay 2011). The emphasis that the interviewee brings to the table is followed in order to obtain as much relevant information as possible. The literature on visioning processes provided a number of guidelines on which the interview questions were based. Firstly, visioning processes try to uncover the participants' desired future for the long-term, which in a human life can be argued to be about 30 years in the future. Choosing this time-horizon offers participants the possibility to re-orient deeply embedded elements of the legal and social system (Soria-Lara & Banister 2017). The next step in the process is to identify barriers to and opportunities for reaching the desired future (O'Brien & Meadows 2001). Finally, it is important to take into account that participants are never isolated entities. Their network and environment play a big role in realizing personal visions (Ibid.). Based on these requirements, the set of questions that guided the interviews for this thesis were designed around three themes: the interviewee's ideal food future for Kyoto prefecture in 2050, the people that she or he thought should be involved in this, and the main issues that have to be resolved in the present in order to realize their future vision.

The interview time was one hour on average, with both shorter and longer interviews recorded. The interview time varied quite significantly depending on whether there was an interpreter present, which was the case with about seven out of ten interviews. The number of interviewees present at once also extended the duration of the interviews. While mostly individual, there was an exception of two interviews: one in which four people were interviewed at once and one instance with two interviewees. In both cases the interviewees belonged to the same company or initiative, and formulated a joint vision arguing from that activity. This resulted in one vision that could be compared with those of the other individual interviewees. Each of the interviews resulted in a recording that was subsequently transcribed into a text document. This document was then coded following three steps outlined by Schmidt (2004): a first close-reading of the transcript, distilling topics and forming broader analytical categories, then describing

those and finally coding of the material using the defined analytical categories. For the coding, NVivo software was used.

O'Brien & Meadows (2001: 497) describe that visioning methodologies often differ from case to case, depending on the *"stories to tell or the process to sell"*. However, they identify five key dimensions underlying every visioning process: (1) Analysis of the current situation, (2) Assessment of the external environment (3) Identification of desired future state(s), (4) Connection of the future to the present state and (5) Testing the vision (Ibid.). To build a solid foundation for the coding of the interview results, the coding was based on the first four dimensions. Because this is an exploratory visioning process, the last point was judged to be less relevant in the interviews. The back-casting process created some opportunities for testing the vision among a larger group of stakeholders in a later moment. Based on O'Brien & Meadow's (2001) methodology overview, the four dimensions were specified in the context of the aim and resources of this thesis. Table 4.2 gives an overview of these definitions. The characteristics were subsequently used as the main labels for coding the interview data.

Table 4.2 Key vision characteristics

	Key characteristic	Definition in context of this thesis
1	Current situation	Centres on 2 questions: • What is the current situation in terms of core competencies, available resources, strengths, and weaknesses? • How did interviewee get to this position?
2	External environment	Unconstrained design: participants are permitted to change any of the containing systems in their vision. Secondly, possible fellow stakeholders are identified.
3	Desired future state	One vision centred around a sustainable food system in 2050
4	Connection of the future to the present state	Any possibilities the participant gives for relating, contrasting or connecting the vision to the present.

The visioning part of the results section is based on the coded interviews. Part of the interviews also served as the base for three visioning narratives that formed the starting point of the back-casting focus groups. The following section, on back-casting, will elaborate on the visioning methodology as part of the back-casting focus groups.

4.2 Back-casting

The first prospective participants for the back-casting focus groups were the interview participants. However, not all interviewees were able to attend the specified days. The reduced time and perceived low barrier to participation (Flick 2014) proved to make attending easier for participants. Furthermore, to set up three focus groups with the

highest added value the aim was to have 15 participants. Therefore, it was necessary to attract extra participants. The target number of participants was reached through a combined effort of inviting the interviewees, setting up a Facebook event and attracting existing connections of the FEAST project. Again, selecting participants based on the actor typology displayed in Table 4.1 calibrated the balance within the groups. The three groups were also made as balanced as possible in terms of gender, age and actor role in the food system. Like in the semi-structured interviews, a balanced group of respondents is necessary to get results that represent the entire system to a certain extent. Furthermore, such a balance is a first requirement of successful interaction, which is one of the main reasons for organizing a focus group (Ibid).

A focus group can be defined as *"a research technique that collects data through group interaction on a topic determined by the researcher"* (Morgan 1996:130). It is especially useful for gathering in-depth information, exploring the perception of participants and studying group dynamics (Wutich et al. 2010), which are the three things that are relevant to explore in any back-casting process (Quist & Vergragt 2006). Furthermore, focus groups were deemed an appropriate method because of their explorative and open nature, in which the participants are free to discuss and bring their own experiences and desired futures to the table (Flick 2014). In addition to this, the focus groups add the possibility of interaction and a small-scale simulation of what a real-world food system group process would look like. Especially in a back-casting process, it is interesting to see how the participants interact both for the researcher as for the participants themselves as a form of social learning (Robinson et al. 2011). The topics that they can easily reach a consensus on or disagree on are interesting points for further study. It should be noted that this may also be a limitation, since group dynamics and peer pressure can lead to participants to engage in behaviour that they think is more socially acceptable (Wutich et al. 2010). In a mixed method study such as this thesis the risks of this are somewhat decreased due to the different sources of data that can complement each other (Flick 2014).

Quist & Vergragt (2006) give the following five main stages for a back-casting process: (1) Strategic problem orientation (2) Construction of sustainable future visions or scenarios, (3) Back-casting (4) Elaboration, analysis and defining follow-up and (action) agenda, (5) Embedding of results and generating follow-up and implementation. Due to time constraints, not all five stages were executed with the same level of detail. This thesis focuses mostly on the core activities of visioning and back-casting. The problem orientation was not conducted in a participatory manner, but by literature study that resulted in the case description in chapter 4. Due to time constraints, the participative nature of the back-cast was reduced slightly by presenting the participants with three pre-written narratives based on the three main themes that emerged from the visioning interviews conducted up until that point in time. The back-casting was done in the series of three focus groups, followed by two evaluative surveys. The analysis was done in this thesis. The last step, implementation, was deemed to be outside the scope of this thesis. Embedded in Working Group 2 of the FEAST project, the results are planned to serve as the base for a further series of activities on Kyoto prefecture's food system.

In line with the recommendations for focus groups by Flick (2014), the focus groups were held in an external, neutral space that had all necessary amenities such as whiteboards, tables and chairs. A professional external facilitator led all three sessions. At the start of each focus group, the participants received a handout with the three visioning narratives. It was communicated that these visions were based on participants' own stories or those of their peers. Subsequently, the participants were invited to discuss all three narratives and select the one that spoke to them most. The chosen vision was then debated further at a second table. A large sheet of paper was

placed on this table, and participants were invited to take a marker and start writing the element that they thought were most relevant about the vision or wanted to add on the back end of the roll. From there, they worked back by pasting yellow post-its with activities on the paper, and blue ones for the people to execute these plans. They were asked to be as specific as possible, and to work as far into the present as "tomorrow". In addition to the output of the back-cast, participants were asked to fill out two surveys. It was distributed immediately after the workshop, and asked about the experience of the back-cast, the number of new ideas encountered and new people that the participant had met. The survey is included in Appendix A of this thesis.

4.3 Serious games

The participants for the game workshops were gathered in the same manner as the focus group participants: through a Facebook event as well as inviting existing contacts and interviewees. Again, a balance between the different actor roles was sought, but the invitation was more open due to the larger number of participants required. The aim was to have around 10 participants in each workshop. The workshop format was first of all required to have an appropriate number of players in the games. The term *workshop* can refer to many types of gatherings, from an open group discussion to a gathering of artists resulting in works of art (Brian Stanfield 2002). For this research, the workshop method was chosen as a form of group research, partly following the outlines of a consensus workshop. Consensus workshops can be used for planning, problem solving, research purposes and decision making, all of which are appropriate to the topic of a sustainable food system. They gather ideas, distinguish larger patterns through dialogue, summarize the insights and then come to a consensus on a resolution (Ibid.). While all these elements of a classic consensus workshop served as the base for the two game workshops, the setup was slightly changed due to the role-playing game program and the combination with the visioning and back-casting activities.

Mayer et al. (2014) describe a number of ways in which games can be framed. In the case of this thesis, games are framed in three ways: as research method, group data collection method and research object. Two role-playing games were designed to be played in the workshop: a digital game and a card-based live role-playing game. They are explained in the next two sections by their the key game elements, following the framework by Gray, Brown & Macanufo (2010). The first element is the game space: another kind of space where the rules of ordinary life are suspended and replaced with the rules of the game. The second one is the boundaries in time and space. Thirdly, there are the rules for interaction, which define the way the game world operates and that all players have to abide by. The fifth element are the artifacts, physical objects that though their position or intrinsically hold information about the game. Examples are a ball or a game die. Finally, every game has a goal that all players strive to attain. Reaching the goal means the end of the game. Goals can be attained through competition or cooperation, which means that reaching the goal does not always mean that one of the players wins (Ibid.). The goal can also be fuzzy, meaning that it *"motivates the general direction of the work, without blinding the team to opportunities along the journey"* (Blackwell et al. 2009: 13). To maximize learning about both the topic at hand as well as about other people's perspective, both games used in the workshops are role-playing games, that can be defined as *"any game which allows the players to assume the roles of imaginary characters and operate with some degree of freedom in an imaginary environment"* (Lortz 1979: 36).

4.3.1 Digital game

The digital game was developed by undergraduate Games and Interaction students at the HKU academy of the arts in Utrecht, the Netherlands. It was the product of a weeklong game jam and subsequent two-month course, in which the initial concept was

developed further. Game jams can be defined as *"social events involving the integration of various game making disciplines [...] to make games under constraints, such as a short fixed time"* (Eberhardt 2016: 34). In this case, the social aspect was somewhat limited as it was a school-related game jam set up by the food research project TRANSMANGO (HKU 2017). The Kyoto prefecture food system case was one of the cases that were randomly distributed among the students. Each team had students from different game development disciplines, ranging from designers to developers and sound engineers. The question that the students received was: *"How can people taking innovative action on food work together with governments and use a game to create great futures for food in Kyoto?".* While the people who gave the assignments were present throughout the game jam as experts available for consultation, information on the piece of paper was purposely kept limited. Based on this assignment, the students spent a day conducting independent research, which was then pitched to the experts and followed by a round of feedback. After this, the rest of the time was spent distilling a set of rules and building a game based on these essential mechanisms. The experts provided feedback throughout.

The five students of the team that produced the Let'sKyoto game decided to address the complete Kyoto prefecture food system. Initially, there were plans for a board game to keep it as accessible as possible for a wide audience. However, due to the complexity of the topic it was made into a digital game. It did retain some characteristics of a board game, with a turn-based system that required a controller to be passed around among players, and a 2D-style game design. In this role-playing game, there are six roles: farmer, supermarket, local restaurant, fast food restaurant, high-income consumer and low-income consumer. The players take turns in that order moving through the food production and consumption process in a simplified outline of Kyoto city. The famer starts by planting crops and setting a price for them. Subsequently, the supermarket, local restaurant and fast food chain have to get their supplies. The local restaurant can only buy from the farmers, while the other two also have the option of importing good from overseas. At the end of the chain, the consumers have to feed themselves by getting 4 units of food each. If this is not available or they cannot afford it, a small puppet tumbles out of one of the houses in the city. At the end of the round, the players all get one vote to give to one of three policy interventions. The first on is to invest in more efficient crops. The second intervention is to tax fast food. The final intervention is to tax overseas imports. Because the game was a prototype and not a finished product, some of the feedbacks were not optimized yet. The end goal was to get an even distribution and a healthy food system, but an end was not yet built into the game. Table 4.3 gives an overview of the game, based on the key elements as formulated by Gray, Brown & Macanufo (2010).

Table 4.3 Key elements of digital game "Let'sKyoto"

	Key element	Description
1	Game space	A digital, non-moving view of a stylized city of Kyoto and its surroundings. In this space, the rules for interaction as specified under 3 apply.
2	Boundaries	- Time: Unlimited - Space: A digital, non-moving image of a city. In reality, all participants are seated together in front of a screen.
3	Rules for interaction	The turns follow a set order, as does the voting process. Participants can discuss with each other at any point in time.
4	Artifacts	In-game visual score representation.
5	Goal	Use policy interventions to keep the local food system "healthy" and ensure a fair share of the chain for all

		involved.

To record the discussion among the players during the session, a FEAST member took notes in English. In addition to this, an audio recording was made of the session to use in case of any confusion in the data analysis phase. Furthermore, participants' personal experience was measured in a post-questionnaire conducted immediately after playing the game. Since the game was still a prototype, the first question asked for suggestions on how to improve the game. Other questions addressed how the participant judged his or her own learning experience about the food system and whether playing the game had increased the perspective of the participant in other roles. The full survey is included in Appendix B of this thesis.

Figure 4.1 Screenshot of digital game Let'sKyoto (English

4.3.2 Card-based live role-playing game
The second game was the main activity of the game workshop. It was designed specifically based on the Kyoto context and fieldwork conducted up until that point. The main design aim was to put the seeds of good Anthropocenes at the centre, enabling players to encounter, reconfigure and combine them with new participants, ideas, infrastructure, and technologies as proposed by Bennett et al. (2016). The game took the form of a tabletop card-based live role-playing game, to contrast with the digital game and lower the barrier to playing for participants of all backgrounds and ages. Therefore, a card deck of three times ten seeds was created: for Kyoto prefecture, Japan and the world. The first initiatives to be included in the game were the food-related seeds from the Seeds of Good Anthropocenes (2017) online database. Because the database did not contain enough of food-related seeds appropriate for the context of a developed nation to fill the entire deck of cards, other initiatives were sourced through an online search as well. Sources for these additional innovative urban food practices were found in the Japan for Sustainability (2016) database, Climate KIC's (2017) Daily Planet newsletter database and among the interviewees. The three types of cards each had a different colour FEAST logo on the back of the card, and a short informative text on the front. The information followed a what - why - how format, with the "what"-bullet point giving a one-sentence description of the initiative, the "why" their underlying motivation and the "how" the main activities of the initiative.

The game was an adaptation of previous seeds project games (Bennett et al. 2016), but to provide a context in which the participants could experiment with the seeds cards,

the game was built around the concept of a Food Policy Council (FPC). An FPC is a way to organize various food system stakeholders across all sectors (Clayton et al. 2015). In a collaborative effort, FPC's examine current policies, regulations, and ordinances related to food, and support or create programs that address food system issues (Scherb et al. 2012). The exact framing and mission differs per FPC (Schiff 2008). The FEAST project's Working Group 2 on ethics and sustainable consumption had been exploring the topic for a longer time. Therefore, it was also a good fit to build on past FPC experiences and generate information on this topic for future use. However, a further elaboration on FPC theory falls outside of the scope of this thesis. For this game, the outline of the FPC concept was deemed a good fit because it offered a possibility of a setting in which different roles were required combined with the option of experimenting with ways to support and expand existing innovative food practices.

Figure 4.2 Seed and role cards for the card-based live role-playing game The FPC Simulator. Photo: Astrid Mangnus.

The FPC Simulator game starts with all players filling out a role card for themselves based on their own real-life position. Every player can select 3 main issues on their role card that they think the FPC should address. These issues were based on outcomes of the visioning and back-casting processes. During the introduction round, the facilitator writes down each player's priority issues on the FPC agenda sheet. After determining the agenda, a chairperson is appointed who oversees the budget, does the writing and leads the discussion. Then, the FPC's first year begins. The members draw one card from each of the three seeds decks. They should make a plan that includes the initiatives, either by inspiration or by actively adopting the Kyoto initiative. The plan is written down on an intervention sheet, with a budget specification. The facilitator gives the FPC a feasibility percentage, which the FPC can shortly plea to raise. Once it's set, the FPC has to roll a 20-sided dice. A score within the feasibility rating means success, above it means failure. In case of failure, the members should take some time and spend some budget to make the failure right. They can subsequently roll the dice again and try to get to success. A final step at the end of each round is rolling for disaster. If it's a 1, the FPC should roll again to find out which disaster off the disaster list has occurred. This has to be included in the plan and budget of the next round. When the time is up, the different FPCs in the game shortly present their agenda and set of interventions to one another. The team with the highest number of successful initiatives wins. The full rulebook can be found in Appendix B of this thesis. Table 4.4 gives an overview of the key characteristics of the

card-based live role-playing game.

Table 4.4 Key elements of card–based live role–playing game The
FPC Simulator

	Key element	Description
1	Game space	A round table with 3-5 participants. In this space, the rules for interaction as specified under 3 apply.
2	Boundaries	• Time: 55 minutes per round • Space: The players and facilitator are seated around a table. All different teams are situated together in the same room.
3	Rules for interaction	The facilitator has the final say over the game proceedings. The players are free to discuss with the facilitator, as well as with one another, throughout the game. The chairperson is the leader and main spokesperson for the groups.
4	Artifacts	• 20-sided dice that has to be rolled to determine, success, failure and the occurrence of natural disasters. • An FPC agenda sheet that contains the main points of interest. • A plan sheet that contains the plan and budget. • Role cards that contain the player's real-life or imaginary role and her/his priorities. • FEAST yen in quantities of 50.000 and 100.000. • Seeds cards with innovative food practices from Kyoto, Japan and the world.
5	Goal	To generate as many successful plans as possible within the time boundary as specified under 2, and by doing so win against the other FPC team(s).

To measure the foresight output, the game had a built-in self-registration method by way of the role cards, agenda sheet and FPC plan sheets. To measure the participants' own preferences with regard to the resulting plans, the game session ended with a round of voting, in which participants could place a sticker on their preferred plan. Furthermore, the session was interpreted, recorded and observed throughout. To measure the participants' personal experience, perceived empathy, exposure to new ideas and network increase, they were asked to fill out a survey after the game was over. The full survey is included in Appendix B of this thesis.

5. RESULTS

5.1 Participants

In total, 39 individual participants took part in the whole process of interviews, back-casting focus groups and gaming workshop combined. While not crucial for the research, three participants participated in all three methods: they were interviewed and subsequently participated in a focus group and a workshop. An additional two participants took part in both workshops and one participant was interviewed and then took part in the second gaming workshop. In recruiting participants, an attempt was made at representing all actor groups as specified in chapter 3. However, some participants, such as cooperative supermarkets and a vegetable distributor that has their own label of sesame products made in Africa, blur the line between the separate actor groups. The interviews provide a more nuanced perspective on the roles, which is further explained in the next section of this chapter. Furthermore, among the focus groups participants there were some participants that had dual roles and were for example involved in an NPO but also in local government. While actors from most groups were at least represented by one or more participant in each method, the "waste management" category of the food system is underrepresented, as there was only one participant of that group involved in the visioning interviews. It became apparent that innovative waste management practitioners were relatively hard to find in comparison with other participants. To correct for this balance, the waste perspective was explicitly included in the visioning narratives that formed the starting point of the back-casting

focus groups. Also, the facilitator actively tried to have solutions and ideas with regards to waste be included in the discussions n the focus groups and gaming workshops.

Table 5.1 shows the total number of participants and the division of gender for each of the data collection methods. For the interviews it should be noted that one interview was with four male employees of a food cooperation, skewing the division considerably towards the male. However, they spoke on behalf of one organization, and together produced one vision. In many of the other focus groups and workshops the men are slightly in the majority. As the emphasis was on assembling a set of participants that adequately represented the local food system, no special effort was made to make a precisely equal gender division. Aiming for a completely equal balance can be argued to give a more equitable voice to women On the other hand, the division is probably more representative of Japanese society in which men are more active in public life (Lindsey 2015).

Table 5.1 Gender divisions per foresight method

Gender	Visioning interviews	Back-casting			Game	
		FG1	FG2	FG3	WS1	WS2
Male	9	3	4	3	5	7
Female	5	3	1	2	3	5
Total	14	6	5	5	8	12

In addition to the participants, there were a number of observers present at each workshop and focus group, as well as FEAST staff to take care of the reception, recording, photography and interpretation.

5.2 Visioning

The 10 visioning interviews with innovative food system actors were coded according to a vision's key characteristics as described in Table 4.2: current situation, external environment, desired future state and connection of the future to the present state. This section gives an overview of the visioning results per key characteristic, resulting in a comprehensive overview of the desirable future state of Kyoto's food system in 2050. For each of the characteristics, the variables

5.2.1 Current situation

Each visioning interview started out with the participants describing their current situation and the path that had led them there. This situation differed significantly among all participants in the ten interviews. To give a brief introduction before synthesizing all visions, Table 5.2 lists the participants and how they described their current position in their interview.

Table 5.2 Current positions of participants

Interview	Current position
1	Graduate student at Kyoto University's Faculty of agriculture and citizen member of the FEAST project.
2	Employee in the overseas division of a Kyoto-based organic vegetable distributor. In and around Kyoto prefecture the company coordinates the distribution of vegetable set boxes through home delivery.
3	Two housewives who set up a pacifist collective and more recently a farmer's market in Kyoto city.
4	Coordinator of connections at the Kyoto Prefectural NPO Partnership Centre.
5	Member of the strategic management group of a Kyoto-based corporation

	that is mainly active in recycling food waste for biofuel in small communities, and food certification schemes such as FSC.
6	An organic farmer and guesthouse owner in Nantan, north of Kyoto city.
7	International development manager for an indoor vertical farm in Kameoka just north of Kyoto city.
8	Fair trade coffee importer and local produce trader.
9	Founder and owner of a vegan café in downtown Kyoto.
10	Four employees of a large food cooperative in Kyoto prefecture.

The participants were all selected based on their engagement in innovative food system practices, however some did this in a for-profit or professional capacity while others were volunteers. The size of their initiatives also differed considerably, ranging from an independent one-man coffee trading business to the largest food cooperative of Kyoto prefecture, which counts half of the population as its members. This also determined their circle of influence, which for some of the practitioners stretched into other countries, such as the vegetable distributor with projects in Uganda and Lao, while others such as the farmers market catered primarily to a core group of friends. Both types of influence were intentional and related to the mission of the initiative. The farmer's market for example emphasized how they wanted to let people explore good local food in a fun way without any pressure, while the vegetable distributor actively aimed to provide it's associated farmers with a living wage, and also expand the percentage of organic food produced in Japan. These various aims also led to various priorities in the day-to-day operations of the participants. The recycling company for example was in heavy financial weather recently, causing it to focus on a few of its operations for the sake of efficiency. On the other hand, the student of the first interview mentioned that the size of his effort was determined by his limited budget.

The pathways to starting their initiatives and present situation also differed. The oldest initiative, the food cooperative, had been in existence since 1963. On the other hand, the farmers market had only recently started. However, about half of the participants explained how the Great East Japan earthquake had played a role in the formation of their initiatives, either in starting their interest in food such as the government representative that was caused to protest out of concern for the safety of her children's school lunch, or the recycling and biofuel corporation that found a receptive community for their eco-friendly interventions in Miyagi prefecture that was hit particularly badly by the tsunami. This also related to feelings of concern about food safety and security, which cause for example the indoor farm to start their business and enabled them to thrive. Another widely shared motivation to start was the desire to acquaint people with better food. The organic farmer and WWOOF host describes how he moved to his farm at 56 and experienced home-grown, organic vegetables for the first time, claiming that now every child that stayed at his farm would eat everything, even the food they would never eat at home. This mentality was also present with the coffee trader and the vegan restaurant owner who expressed their underlying mission as acquainting people with premium specialty products.

While the current situation of the participants differed quite significantly, as described in the first section of this chapter, there were also some similarities. Almost all participants emphasized their focus on face-to-face contact with farmers or other people in their supply chain. The student of the first interview described how he consciously shopped at a neighbourhood supermarket that sourced all its produce in the Kansai area around Kyoto prefecture. The vegetable distributor had just set up a platform to directly connect farmers, with photos included, to restaurants or other large consumers. The food cooperation had just done something similar, but with short movie clips shown on

iPads in supermarkets. The government representative of the third interview describes how she used to have a safe food shop for which she knew all the producers and visited them independently to source their produce. The recycling company describes their contact with key stakeholders in the communities that are crucial to their process of establishing a closed resource loop. The farmer's market described how the best thing about their event is people seeing their farmers and getting food preparation advice form them, keeping traditions alive. The vegan café owner sold fresh leafy greens daily from peri-urban farms ran by her acquaintances. This transparent and local view of the food system was the strongest shared element among the participants.

5.2.2 Desired future situation
In their preferred future state of the food system of Kyoto prefecture in 2050, the participants mentioned a range of topics. After coding and synthesizing all interviews, five key themes emerged: transparency, local production for local consumption, quality and quantity, safety and engagement. This section elaborates on the shared and differing elements of these visions by considering these five elements.

5.2.3a Transparency
The first element that came up in many of the visions of the future expressed in interviews was transparency. Quite strongly connected to the current practices as mentioned in the previous section, almost all participants indicated that they would much prefer a future in which consumers could trace their food, know its source and possibly even its maker or grower. This transparency could foster a deeper connection between rural and urban areas, argued the organic vegetable distributor employee, who described the function of "vegetables as iPhones": mediums to connect farmers and consumers. Other participants also argued that seeing who receives the money would direct these money flows in the right direction. Transparency of the food system or even helping to grow the vegetables would also increase appreciation for food, in for example the visions of the organic farmer, the food cooperative and the local trader. The farmers market organizers also argued that a bigger transparency and even bilateral contact would increase curiosity for new food and the transmission of food preparation techniques. Bringing the idea of transparency to the extreme, the local trader even wished for the tools such as pots and pans to be coming form a traceable, familiar source. Multiple participants brought up that real transparency would eliminate the need for labels and certification, which were deemed too expensive now and hopefully redundant in their futures.

5.2.3b Local production for local consumption
A second element that most participants felt strongly about was locality and self-sufficiency. Many participants, from the agriculture graduate student to the food cooperation, emphasized their wish for local production for local consumption, indicating that they found this more important for their future than organic production. This was due to a wish to sustain Japan's countryside and agricultural traditions, and to preserve local food traditions. The graduate student argued that tourists disturb the food system by requesting takoyaki, a seafood dish from Osaka, in Kyoto. In his future, a combination of local production and local consumption would sustain the distinct capacity and culture of a local food system for firmly. The waste and recycling corporation gave a few examples of small communities where they had already implemented their vision of a food system as a human body, starting with growing the food, eating it, collecting the waste and then using the waste as fertilizer to grow more food. The participant envisioned that this closed-loop small-scale system would also work in neighbourhood communities of Kyoto, perhaps in connection with come peri-urban agricultural lands. In this future, communities would be self-sufficient from the government as well, phasing out the need for government support and interventions

though a system driven by a sense of ownership and pride. The vertical farm also brought up self-sufficiency through local production for local consumption, but form a different angle. They emphasized that with the right technique, a country like Japan with a limited amount of arable land would still be able to produce food locally and independently form other countries. In their hi-tech future, Japan and any other country could also remain self-sufficient in the case of extreme weather events or climate change effects.

5.2.3c Quality and quantity

An abundance of high-quality food played a big role in the visions of the participants as well. When asked about their ideal future meal, most participants answered that it should be local and people should have a certain degree of freedom to obtain any food they desired. The graduate student argued that people would not stop asking for both miso soup and hamburgers in the future, something that more participants noted. Therefore, one single ideal future meal does not exist. However, high quality local fruit and vegetables were generally perceived to have to be available to everyone. The quality criterion was entangled with other elements of the future, such as transparency. The farmer's market organizers and the prefectural NGO centre coordinator expressed a wish for real quality to be more easily recognizable. Marketing terms like "natural" or "green" should be replaced by more simple, local and inherently high-quality produce. The participant from the vertical farm showed an instructional video where the vision of quality and abundance was defined by a higher level of control over the production process. In the high-tech future as envisioned by the farm, an elimination of outside forges would produce more consistently beautiful and high quality produce.

5.2.3d Safety

Feeling safe towards the food was an important element for many participants. About half of them expressed fear stemming from the 2011 nuclear disaster and the threat of new similar disasters. They noted that there is a plant very close to Kyoto city that could do the same damage as Fukushima suffered in 2011. In their futures, they therefore expressed a strong desire for safe food. Especially the participants with children mentioned that they wanted to feel safe about both the food in their home as well as the food outside their own control, such as their children's school lunch. The organic farmer looked to Germany for inspiration for his vision, hoping for an "Energiewende" in Japan that would eliminate atomic threats. In others' future visions, the aforementioned transparency and local production would eliminate people's fears. Others, such as the government representative, saw a solution in more stringent laws. The vertical indoor farm did not explicitly include the desire for safer food in their own mission but acknowledged that this was a desire from people that had enabled their business to grow. It must also be noted that there were some differences in opinion on this topic. The interviewee from the organic vegetable distributor for example argued that Japanese people were much too scared about the safety of their food, which is already very safe. He hoped for a sustainable and organic mode of production instead, but noted how in his experience abstract sustainability issues such as climate change appeal less directly to people.

5.2.3e Engagement

In general, most of the participants imagined a quite labour-intensive future in which people from all sections of the local food system would engage much more with food. There was a general wish for less strict divides between categories such as production, distribution and consumption. Rather, in line with the wish for more transparency and local self-sufficiency, Kyoto's citizens would engage much more with their food system, growing vegetables, increasing food literacy, going to farmers' markets et cetera. This

could even decrease the need for money and the power of large corporations, enabling people to exchange their home-grown vegetables, as expressed in the vision of the farmer's market participants. The representatives from the food cooperative argued that engagement of citizens in food production was key to realize many elements of their ideal 2050 food system: connecting the urban to the rural, connecting the old in the countryside to the young in the cities, making farming more appealing. In their future, these things would balance out due to increased engagement. The same idea was the main driver for the future vision of the waste and recycling corporation, whose future was based entirely on "pride" of local people to support their local circular system, engage in recycling and growing vegetables with the resulting fertilizer. The coffee importer and local trader also described how he hoped that people would have a change of mind and engage more with local produce, even willing to pay a premium price for it.

5.2.3 Connection of the future to present situation

The ability of participants to formulate a desirable vision for 2050 seemed to be easier for the actors that had been "in business" for a longer time, whose initiative was larger or for-profit. One explanation for this could be that the older, larger or money-dependent initiatives are, the more people depend on it and the more need there is to formulate a clear strategy. With a clearer picture of the future also came more concrete steps that were already being taken towards the near or far future. The interviews were mainly meant to obtain a set of future visions as described in the previous section, it was interesting to see how the participants already identified or even acted upon some pathways towards this future. Many pathways were already inherent in the five elements of the vision and increasing actions towards that from the nature of the initiative. A number of participants also saw pathways in a larger sense. For example, the prefectural government worker noticed how currently, all institutions she was in contact with were disconnected. In her opinion, a sustainable future should start by connecting these different elements. Furthermore, the organic farmer thought the media should be much more involved, telling real stories about the state of Japan's food system. He also described how the current political system that changed representatives every two years made progress hard for him: this cycle does not align with the long-term reality of farming.

The pathways that the participants saw displayed elements of both scaling up and a more horizontal spread of sustainable practices. For example, the vertical farm showed their plans for making a much larger indoor farm to increase their yield and showcase their abilities. The same was true for the organic vegetable distributor, who received significant government funding to scale up operations in the context of the 2020 Tokyo Olympics. Then there were also the participants who worked towards their vision, but did not have as concrete ideas for change, such as the coffee trader, the vegan café and the farmers' market. They unfolded their own activities within their own network, and hoped they could inspire others to do the same. This way, change would come from to a kind of horizontal contingency of sustainable, local practices.

5.2.4 External environment

With respect to the external environment in their visions, a distinction could be made among participants who looked to Kyoto city and the surrounding prefecture, to Japan or to the world. Generally, this depended on the type of food that their initiatives were dealing with: the participants involved with coffee all had ties to other countries, such as Ecuador, Lao and Uganda. They considered this a necessity, but for the things that could be sourced locally, virtually everybody was in favour of doing so. Interestingly, the desire for personal connections extended mostly to the own network or supply chain of the participants. It proved to be difficult for participants to identify partners on the way to their future vision. The most striking absentee in this case was the government.

Believing in the government to help or even imagining them involved in any future was very difficult for most interviewees. One participant said: *"...we can't wait for government to realize, it's not going to happen or it will take forever, it's gonna be too late, it's already too late, so..."*, a sentiment that was echoed by others. Also, some participants indicated that they found the conditions attached to subsidies too restrictive, and in the case of the vertical farm they even believed that they were able to become profitable because they were the only ones that had not received government support in the wake of the Great East Japan Earthquake of 2011. However, there were others that already received some kind of support from the government, such as the organic vegetable distributor, who received subsidies as part of the government's effort to raise organic production above 1% before the 2020 Tokyo Olympics. Also, the food cooperative indicated that they worked together with the prefectural government and had a real seat at the table due to their size and amount of cooperation members.

5.2.5 Intermediate summary

The current situation and history of the participants varied quite significantly. Their aims were also quite different, although one connecting factor in starting their operations was the Great East Japan Earthquake of 2011, and many had a focus on local, personal practices. Among the visions, five key themes could be distinguished: transparency, local production for local consumption, quality and quantity, safety and engagement. The pathways towards this future ranged from ideas for large institutional change to scaling up to a kind of contingency approach. With regards to the environment, there was a noticeable difference in scope among the participants. Some were focused on Kyoto city or prefecture, some on Japan and some on an international context. There was no consensus on what would be the scope or size of an ideal future food system to feed the Kyoto area. Finally, it turned out to be not easy for the participants to identify partner with whom they could achieve their vision. Most people mentioned stakeholders that they were already engaging with in their current activities. The government was an element that led to ambiguous responses: some initiatives received government support, but many had quite little faith in the government to aid in the realization of their ideal 2050.

Because there was no interaction or group work used in this part of the visioning process, it is only possible to judge the quality of the output generated by the participants. The variable of quality of output was operationalized as specificity, feasibility, sustainability, being shared among multiple participants, visionary and be free of contradictions. The specificity differed among participants, with some people identifying very specific futures and pathways to get there, while others had less big or clear ambitions. However, within their scope the participants were very knowledgeable and able to point out main issues, obstacles, solutions and ideal future states. The feasibility was not very high, something that corresponded with some internal contradictions with regard to for example a focus on local food but abundance of different types of food at the same time. However, the feasibility was not the main focus since the main focus of the interview was an individual, ideal sustainable food future. Conversely, the ideas were quite visionary and original, with participants even thinking about the structural boundaries of their future such as the political system and energy sources. Finally, the five main visioning elements that emerged form the interviews were quite broadly shared among the participants, although there were separate things that they disagreed on. In terms of sustainability, the visions that emerged focused a lot on social sustainability and innovation, and less on environmental and economic sustainability.

5.3 Back-casting

This section gives an overview of the outcomes of the back-casting focus groups. The first part centres on the ideal food futures for 2050 that constituted the starting point for the back-casting focus groups. Subsequently, the resulting back-casted pathways towards these visions are reported. Two translated examples are given of the visioning and back-casting output. The final part of this section reports on the experiences and learning of the participants as expressed in the post-questionnaires conducted after each focus group.

5.3.1 Visioning

To create a starting point for the back-casting process, the seven interviews that had been conducted prior to the back-casting workshops served as the source for the creation three visioning narratives. Each of the narratives departs from a relevant juxtaposition that came up in more than one interview: urban and rural areas, small and large actors, social and technological innovations. The narratives stayed as close as possible to participants' responses in the interviews, using direct quotes where possible. This was also communicated to the participants during the back-casting process. The participants were then invited to discuss and alter the visions to reflect their own desired future state. These measures were taken to approach a participative process as closely as possible despite time and resource constraints that prevented a full participative process from taking place. Each focus group selected a different narrative based on their own interest, resulting in all three themes being covered. This section presents the original visioning narratives, followed by the adjustments made by participants in each focus group.

5.3.1a Focus group 1 – Social and technological innovation

"Technological innovation by larger companies is being put to use to support social innovation. From a social perspective, people take pride in their produce, their recycling activities, cooking and other activities related to the food system. Traditional cooking methods are preserved and passed on to the next generation, but in addition to this people have the "food literacy" to make their own decisions and cook the food they feel like. In schools, the school lunches are safe and high quality. All food is safe to eat, especially food that is served to children. Food education is part of the school curriculum, and even university students and adults have opportunities for continued learning about food. Online tools enable people to organize easier into consumer collectives, sales platforms or educational communities. Furthermore, the food system has become less wasteful as a result of a combination of better social systems and technological innovation that succeeds in closing material and energy loops."

In the discussion on this visioning narrative, the participants indicated that their main motivation for choosing the topic was the mention of the safer food that a combination of social and technological innovation would realize. When asked to elaborate on the vision, the group placed the emphasis more on social than technological innovation. In their vision of 2050, they wanted to see a "decentralized" food system, in which every neighbourhood has at least one shopping street. This would enable every citizen to walk towards a restaurant or market in 15 minutes or less, and create a neighbourhood space for communities to "share values" around food. Urban areas would also have a sizable number of community gardens, where citizens could gather and grow part of their own food in a communal setting. The participants expressed a wish for a local closed loop of production and consumption. Finally, the available food would be natural and free of additives. The heirloom *Kyo-yasai* vegetables were cited as an example of the local, nutritious and organic produce that the participants wished would be more freely accessible in 2050. A final addition was a wish for abundance: in this vision of the future, everyone would be able to get the food that they want in the quantities that they want,

without having to worry about money. Another thing that would be available in bigger quantities is time. This time would be used to eat together, learn recipes without referring to a website and prepare foods in a communal setting.
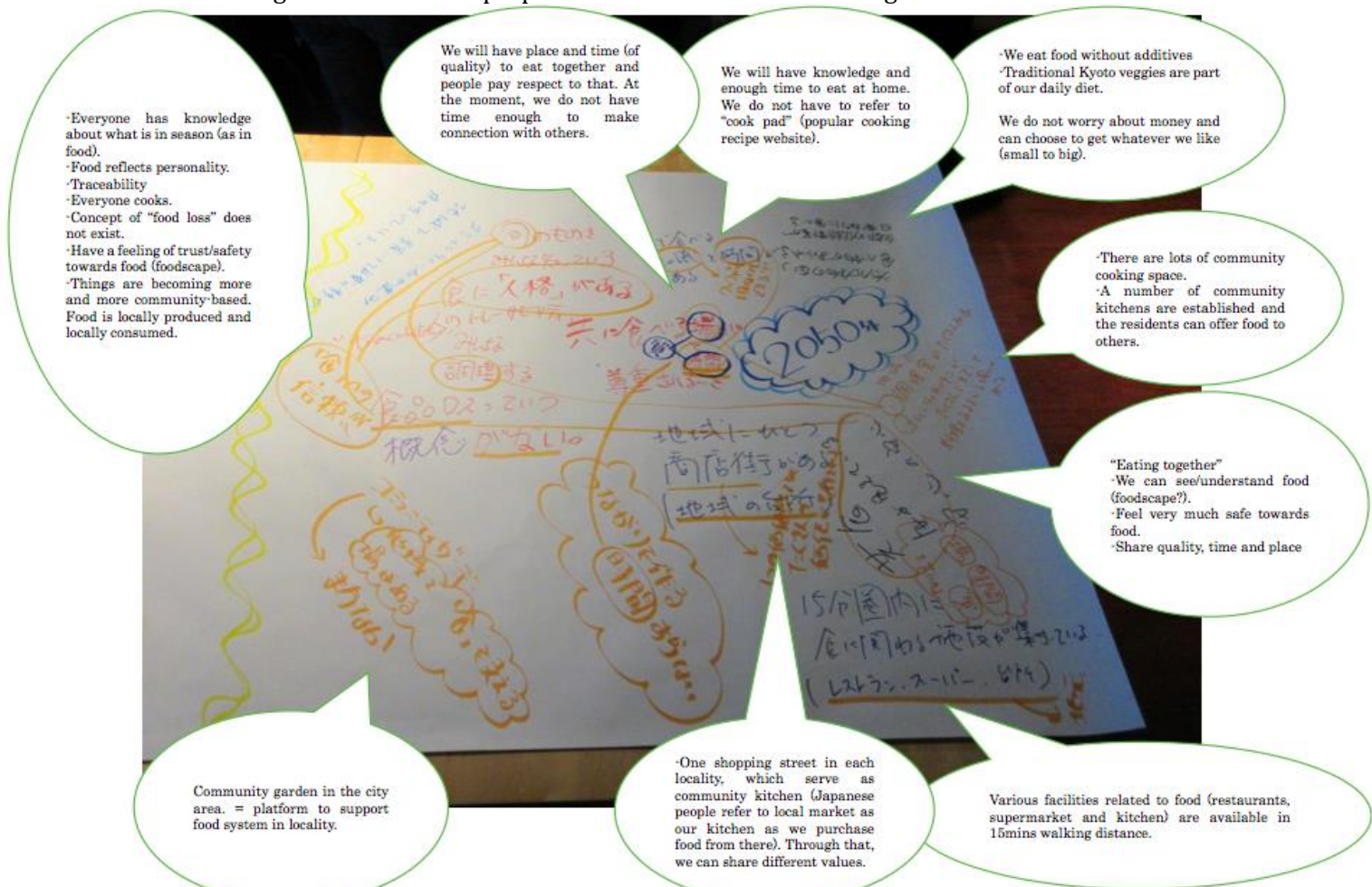
-Everyone has knowledge about what is in season (as in food).
-Food reflects personality.
-Traceability
-Everyone cooks.
-Concept of "food loss" does not exist.
-Have a feeling of trust/safety towards food (foodscape).
-Things are becoming more and more community-based. Food is locally produced and locally consumed.

We will have place and time (of quality) to eat together and people pay respect to that. At the moment, we do not have time enough to make connection with others.

-We will have knowledge and enough time to eat at home. We do not have to refer to "cook pad" (popular cooking recipe website).

-We eat food without additives
-Traditional Kyoto veggies are part of our daily diet.

We do not worry about money and can choose to get whatever we like (small to big).

-There are lots of community cooking space.
-A number of community kitchens are established and the residents can offer food to others.

"Eating together"
-We can see/understand food (foodscape?).
-Feel very much safe towards food.
-Share quality, time and place

Community garden in the city area. = platform to support food system in locality.

-One shopping street in each locality, which serve as community kitchen (Japanese people refer to local market as our kitchen as we purchase food from there). Through that, we can share different values.

Various facilities related to food (restaurants, supermarket and kitchen) are available in 15mins walking distance.

Figure 5.1 Definitive vision of FG1 – Social & technological innovation. The yellow line on the left marks the start of the back-casting session. Photo: Momoe Oga. Translation: Yuko Kobayashi.

5.3.1b Focus group 2 – Urban and rural areas

"The system has found a balance between the trends of urbanization and the exodus of people from the countryside. Young people that are interested in becoming farmers feel motivated and supported -with tools and knowledge- to move (back) to the countryside. They are able to stay connected to the city by way of new technologies. New ways of economically successful food activities, like "beyond organic" techno-farming, directs sales on farmers markets and profitable re-use of waste have become standard practice. They make the production chain more transparent and connect consumers more directly to the food they buy and eat. Because of this newfound sustainable balance, both the natural resources and the natural landscape of Japan are protected and preserved. A steady market share for local food, produced within Japan or even closer to people's own home, makes food supply more secure, generates an income within Japan and connects people to the food they eat."

The second focus group chose the juxtaposition of urban and rural areas and placed it at the centre of a vision in which fun and feeling comfortable are key. The group saw artificial intelligence replace human labour, but this would open up possibilities for smaller, local production and distribution systems to materialize. These small-scale

systems would connect producers and consumers in the city and countryside respectively. This connection would also lead to more people becoming interested in agriculture and perhaps becoming a farmer: becoming a farmer should be "cool" and people should be able to express their desire to works as a farmer. Like in the vision of the first group, good and delicious food would be available at a low cost. Furthermore, there is an important place for learning and development in this vision, with the participants noting that in their 2050, both children and adults have many chances and opportunities to learn. They mentioned initiatives such as the "Edible schoolyard" program and the "Kleingarten" community garden concept as inspirations. As the name suggests, the "Edible schoolyard" project is an initiative that turns schoolyards into vegetable gardens. The group envisioned this practice getting its own school subject that would teach children "taste". The "Kleingarten" is a similar concept, but in the form of a community garden that is targeted at adults. In addition to the "Kleingarten", group systems and shared houses make small communities self-sufficient, without the use of money but based on a goods exchange system or local currency. A final wish was that "people can get along in the field of their specialities": people have the opportunity to get by doing the things that they are good at and love.

5.3.1c Focus group 3 – Small and large actors

"New, ambitious and innovative farming technologies and organic local farming methods co-exist. Their combined efforts together create a more environmentally sustainable situation. It also enables a preservation of traditions and local food heritage, like Kyo-yasai heirloom vegetables, while also fuelling innovation that discovers new ways to further improve Kyoto's food system. Larger and smaller companies co-exist as well, and in all cases their production chain is transparent to all actors involved. The government actively addresses sustainability issues and listens to the needs of inhabitants with regards to food. This leads to people trusting the government to support both them and their citizen initiatives. The coordinated efforts of these actors together, as well as an increased knowledge of food among a new generation of consumers, changes food demands. Private companies embrace concepts like clear labelling and certification, as well as local produce, to meet this new demand."

In their discussion of the visioning narrative, the participants agreed that in the present, the power of large corporations is dominating Japan's food system. There was an ati-large actor sentiment in the group, and they adjusted the narrative to give small actors a more prominent position. In their ideal 2050, JA, AEON, 7/11 and other very large Japanese food system players would be gone. People growing and trading their own food would replace them, blurring the lines between producers, distributors and consumers. School lunches would be 90% local and organic food would be standard practice. Like the previous focus group, the participants argued for a shift in emphasis from money to an exchange of goods and services. In this system, the group envisioned that people would complement each other with their capabilities. By making these passions more visible, it would be easier for people to connect and organize in groups of shared value. A final and important point was time: at the moment, people do not have enough time to engage in all these activities so in the ideal future there would be more time available to engage consciously in communal food practices. Altogether, the participants expressed the wish that a "heart-head-hand"-balance would be realized in 2050: a balance between intellectual stimulation, economic security and sense of fulfilment.

5.3.2 Back-casting output
Like the back-casting process itself, this section describes the resulting pathways from 2050, the time horizon or the long term, through the mid-long term around 2030, to the short term of the next five years.

5.3.2a Focus group 1 – Social and technological innovation

As the penultimate step before the realization of their vision, the participants in focus group 1 identified institutionalizing of time for meals by the Ministry for Health, Labor and Welfare. It should implement a mandatory siësta for all workers and schoolchildren, and also establish a "danran"-department or a department that stimulates the family get-together. Before that, the government would already support restaurants using local food through subsidies. Before this last step of government intervention, the participants planned a push for food-related education. Schools should improve the school lunches, using local produce as ingredients. They should also make edible schoolyards and green roofs, and adjust school rules so there would be more emphasis on food in the curriculum. This would raise a student body that respects the time and place for food and eating.

On the medium to long term, the people themselves would gain a greater insight in the food chain through a greater transparency by companies. That way, consumers could decide to buy food that would otherwise go to waste. However, the participants noted that the producers should not dictate their menu by whatever leftovers they had. Meanwhile, the participants saw a role for community leaders and "meddlesome aunties" to take up a more active role in their neighbourhoods and establish places to eat together. These people would also encourage others to take a more active role so that everyone contributes. Large corporations and the government were assigned the task of subsidizing *jichikai* (residents' associations) to set up large-scale neighbourhood kitchens and canteens. The task for local people was subsequently to spend at least an hour for a meal there and make this a custom. Furthermore, they should eat a home-cooked meal at least once a week. Both the government and well as big corporations got assigned the task of re-thinking or reviewing labour hours to free up space for eating.

More towards the present, the plans became more specific. Large local government, schools and citizens should set up and buy from a local distribution centre that organizes the availability of local production for local consumption. As activities that could de implemented tomorrow the participants stated possibilities to have events that improve connection with producers, and the establishment of places where people can have easy access to good and healthy food, such as food stalls set up by interested stores or (super)markets. The session ended with the participants expressing interest in having more time to think together and plan activities that hey could start right away. For themselves, they saw the task of not eating alone starting tomorrow, and to take a proper lunch break to fully enjoy the act of eating.
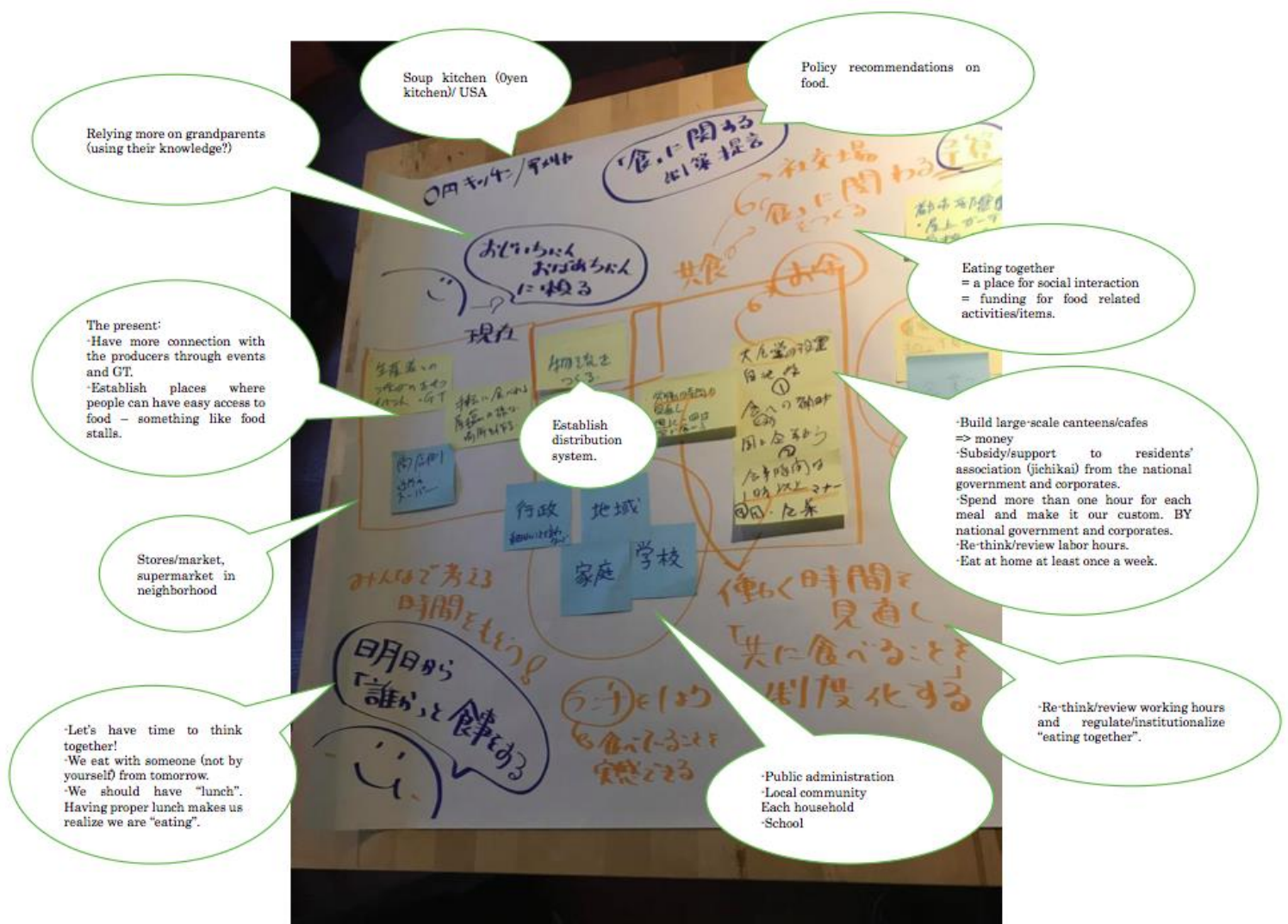
Figure 5.2 Part of the back-casting result of FG1 – Social & technological innovation.

Photo: Momoe Oga. Translation: Yuko Kobayashi.

5.3.2b Focus group 2 – Urban and rural areas

The results of the second focus group were somewhat more detailed that the first one placing more post-its on the sheet of paper. The back-cast started with institutional change as well: a new department for the museum of Education, Culture, Sports, Science and Technology. This should establish a farmer's market in every high school district, to be held 3 times a week. This way, all citizens can find a farmer's market near them. Also, a cook's union is created, preserving techniques and local cuisine. One step before these plans, children should grow vegetables as part of the school curriculum, supplying produce for school lunches as well as the farmer's markets. There should be a local currency that stimulates trading local production for local consumption. Right before, delicious foods are commonly available, enabling people to cook and produce what they eat by themselves. To preserve small shops in the shopping street, they should come together and make a centralized operations management system and capital fund, perhaps with an external financial supporter.

On the mid-to long-term, to prepare for the implementation of edible schoolyards into the curriculum, a planning meeting should be held with the City Board of Education

(especially person in charge of school lunch), edible school yard Japan and a coordinator present. Simultaneously, edible schoolyard teachers hold workshops with cooks of the school lunches and teachers in charge about what they would like to plant and grow and when they should start. A start-up company should jump in and organize a local distribution system. Supermarkets should shift their sourcing to this system. Meanwhile, ideally consumers would get a better idea of what is produced and also what is wasted, although the participants struggle to find a way in which this would happen. Before implementing the edible schoolyards, farming and agriculture would already get a more prominent place in the school curriculum. Also, domestically produced food should be a more viable business: they can do this by focusing on corporate social responsibility and consumers can coordinate in support networks.

On the short term, the government should roll out a large-scale campaign to make farming cool again. By having Johnny & Associates, a Japanese famous idols office, comics, teen magazines such as Seventeen depict farming n a cooler way, for example through peasant clothing that is popular right now, the profession will become more appealing and gain status among the young. Even schools could make an effort in their school newsletters. The Ministry for Farming, Fisheries and Agriculture should also roll out a set of TV advertisements or otherwise use new media much more to their advantage. The FPC of Kyoto could also do this. Furthermore, the ministry of Health, Labor and Welfare should address the work-life balance. Finally, actions that should be taken right now include a revision of the Agricultural Land Act by the Ministry for Farming, Fisheries and Agriculture so that everyone can start farming, and small-scale farmers organizations setting up events where the larger public can meet farmers face-to-face.

5.3.2c Focus group 3 – Small and large actors

The last focus group already debated the topic of having too little time in their discussion of the visioning narrative. Such a large overturn of the status quo, they argued, required a big reform. Therefore, their first long-term conceptualization was of a basic income - a construction in which every citizen receives a set monthly income without further requirements. Ministry for Farming, Fisheries and Agriculture should implement a construction like this by 2040. In addition to this, the national government should pass legislation that gives people a "right to food". At the same time, every citizen should reconsider their work style as well as their community. Community organizers and concerned citizens ("aunties") can take the lead in this, but there is also a task for every individual to befriend people with whom to go to various food-related events and gatherings. Two participants who had recently moved to Kyoto noted that there are many such events, but they felt a barrier to go if they had no one to go with.

In the medium to long term, a stronger community should be forged to support a drastic change like the implementation of a basic income. A group of community organizers, possible the people at the table, should unite and coordinate an effort that puts people in touch with one another and connects communities in a fun way. Furthermore, a community vision should be established through dialogue. The central question should be: how can we achieve commitment in the community? One option is to make community gardens by utilizing vacant plots in urban areas. The participants see a task for intermediary organizations such as NPO's and government departments, as well as interested citizens. A crucial moment before this is a moment of realizing a Food Policy Council (FPC), around 2030. This FPC should learn from precedents and case studies, overseas and in rural areas. Through FPC initiatives, people should learn how to produce and cook food, the Ministry of Education, Culture, Sports, Science and Technology should introduce agricultural training in schools, and schools themselves

should set up an "Edible schoolyard" committee. Before the realization of the FPC, every corporate and public administration building should have a rooftop garden, organized by the city development office and the agriculture and food safety departments at the prefectural level. Work should be reduced and free time increased by both a protest of individuals and a change in legislation from the government. Product exchange stations should be set up, by either citizens, NPO's of government. Meanwhile, individuals should take care to guard their free time.

As a last step, the participants came up with a significant number of actions that they themselves could realize right away or the next day. Firstly, there should be an increase in possibilities to use free plots of land for small-scale agriculture. A joint effort of NPO's, government and citizen initiative can push for this. Also, more markets should be organized. The participants also assigned themselves a set of tasks: invite others to food-related events and gatherings, establish an information-sharing platform, start growing some kind of vegetables and make a complaint call to the local government. Furthermore, they said that the *sekkaku dakara*-spirit should be utilized: this phrase is used to describe "making use of the opportunity available". In this case, the participants met today, which brought about a momentum that should be utilized. Finally, to realize the element in their vision that states that people can get by doing what makes them happy, they propose that people start wearing a third business card on which they list their hobbies and things that they enjoy next to their day job. This makes it easier to find and organize with likeminded people.

5.3.3 Survey results
To assess the effects of the back-casting process on the participants, the questions of the post-survey provided information on the motivation to act, new ideas about the topic and network. Figure 5.3 displays the results of the three non-open questions. The rest of the section combines these results with those of the open-ended questions for each variable. Because there was no role-playing involved in this method, empathy was not measured.
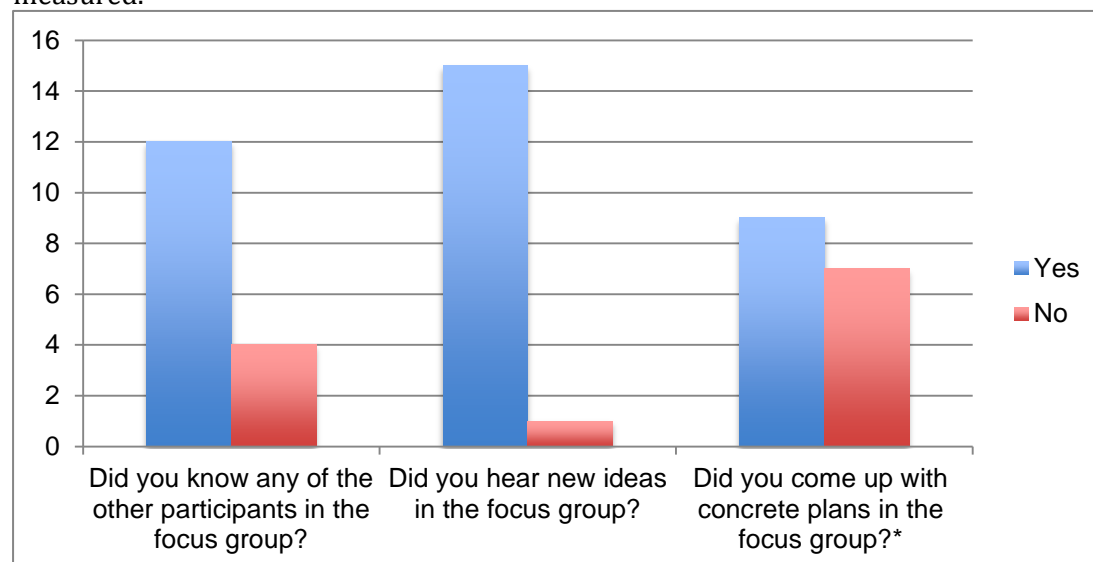
*"concrete plans" refers to concrete actions to be taken in the immediate future.

Figure 5.3 Result of polar questions in back-casting survey.

5.3.3a Motivation to act

The question "Did you come up with concrete plans in the focus group?" showed that over half of the participants of the back-casting focus groups gave a positive answer. When asked to elaborate, they gave a number of different answers. Many related to visiting each other's initiatives such as the farmer's market. Others planned to visit or even organize concrete activities that came up in the back-cast, such as a Thailand-inspired night market. A last group got new ideas for the initiatives they were already organizing, such as how to connect it more to the neighbourhood in which they were located.

5.3.3b Understanding of topic

In all focus groups, there was only one person who did not encounter any new ideas about the subject of the session. Many new insights that participants mentioned came from encountering new initiatives that the participants had not heard of before, such as the Edible Schoolyard food education program, and the latest developments in clean energy generation. Participants also reported learning more about other people's attitudes, as was illustrated by the two participants who responded that they realized that other people have a desire for more community as well, and are also afraid to engage sometimes.

5.3.3c Network

The majority of participants knew people in the focus group. However, the majority of the people who answered "yes" knew one other person, suggesting that they met at least two others. Only one knew her entire group, and one other participant knew two others.

5.3.3d Method and experience

As for their experience with the method, five people indicated that it was their first encounter with the back-casting method. Others had heard of it before or had tried to do it by themselves, but for them it was the first time engaging in a guided back-casting process. The overall experience of the participants ranged from fun to difficult to informative. Multiple participants indicated that it took them some time to start thinking from the past to the present, rather than letting the problems of the present influence their ideas for the future. Five participants indicated that they saw ways to use it in their daily lives in for example city council meetings or research.

5.3.4 Intermediate summary

The back-casting focus groups started out with three pre-written narratives for a sustainable food future in 2050. They were based on three key themes that emerged from the first seven semi-structured interviews: urban and rural areas, small and large actors, social and technological innovations. In the first focus group the participants chose social and technological innovation, in which they placed the emphasis on the former. On the long term, their back-cast planned institutional change, preceded by a period of civil activity to create pressure for this. On the short term the participants planned to start by taking more time for lunch and not eating alone. In the second focus groups the participants chose the urban and rural areas-narrative, in which they placed the emphasis on integrating the two rather than connecting them. Subsequently, they worked back by planning a new department of farmer's markets in every neighbourhood, for which they would set up the infrastructure in the mid-term. The short term consisted of a large-scale campaign to appeal to seventeen year-olds and a change in the agricultural land act so that everyone could start farming. In the final focus group, the participants opted for the small and large actors-narrative, which they

adjusted to mostly benefit small actors. Their back-casted plan consisted of a basic income for all citizens in the long term. In the mid-to-long-term, an FPC and an educational programme should pave the way for this. The participants saw many of opportunities for the short term, starting by making use of the workshop momentum, going to and inviting people for food related events, calling their local representatives and make a third business card to meet likeminded people based on interests and talents. Judged against the "quality of output" variable, the plans had a solid endorsement from their groups, and were quite visionary as well as coherent. The plans were reasonably feasible, although some participants indicated that they lacked some concreteness. With regards to sustainability, mainly social sustainability and resilience were addressed in the plans.

With regards to the process effects, empathy was left out as a focus question, since there was no role-playing involved. Learning about the subject through encountering new ideas proved to be very effective, with nearly all participants indicating that they heard new ideas or new approaches to existing issues. With regards to expanding people's network, the method was also quite impactful as most participants met at least two new people. Furthermore, the new ideas that participants mentioned oftentimes came from the occupations and experience of their fellow participants. Finally, the participants indicated that they felt motivated to act in two different ways: five participants saw opportunities to use the method in their daily life, and another nine participants identified new ideas that they could apply in practice.

5.4 Gaming

This section gives an overview of the results of the two games that were played during two subsequent workshops. The first section reports the results of the digital role-playing game prototype developed by HKU students: Let'sKyoto. The second part of the section contains the results of the tabletop role-playing game: The FPC Simulator.

5.4.1 Digital game

The digital game was a relatively minor element of the fieldwork, for which a comparatively small amount of time was reserved. While it was a pre-made game, it was set-up as a case of prototype testing, asking participants for their ideas on how to improve this basic first version of the game. This request for input from the participants added a participative component to the game play. While participants could not directly generate normative foresight outputs in the form of future visions or plans like in the other methods, there was some discussion amongst players during the playing time. Also, in addition to being direct feedback for the game, the suggestions that the participants gave for improvement of the prototype gave some indication of their insight in their food system and certain issues that had priority for them. Top points of improvement for the game were as follows: more (visible) feedbacks, a ceiling on local production so that it is more true to the

Figure 5.4 Two players in workshop 1 share the controller to play the role of a 48 high-income consumer. Photo: Astrid

real situation, include large-scale consumers such as hospitals and schools, make a punishment for waste or overproduction, and include (de)population issues. The points also corresponded to some key points of interest that resulted from the visioning and back-casting exercises, for example in the case of the school lunches and limits to local production for local consumption.

The game was not designed to generate foresight outputs in the form of plans nor was meant to evoke motivation to act, because it was meant to be a learning tool, but its experiential process effects were measured in a post-questionnaire. The three questions tested for learning about the local urban food system and the effect of interventions in it, and for people's perspective on other roles. Figure 5.5a, 5.5b and 5.5c show the results of the survey conducted after the workshop. The results indicate that most of the participants report that they benefitted at least a little in the two areas, although not overwhelmingly so. Also, results vary between participants: for each person that benefitted "a lot", there is one that answered "barely". During the workshops, some older participants already indicated that the technique and videogame language were difficult for them to understand. However, it can be argued that in each aspect, the majority of participants benefitted at least a little form the videogame, indicating a moderately positive effect on learning and empathy.
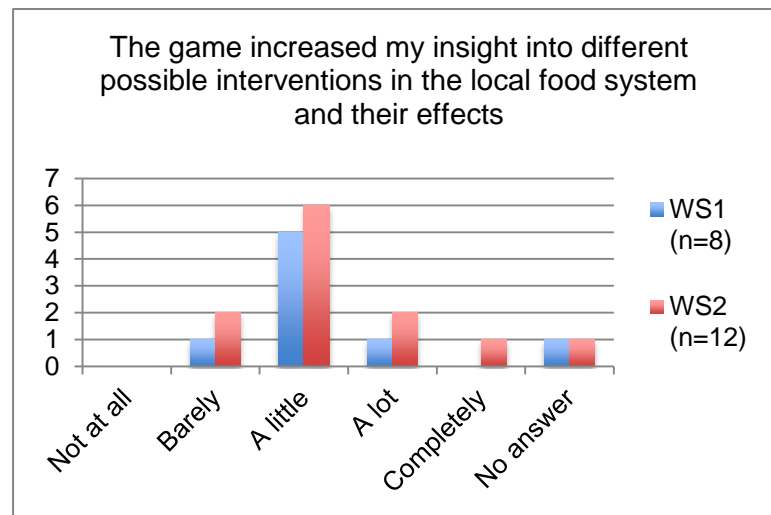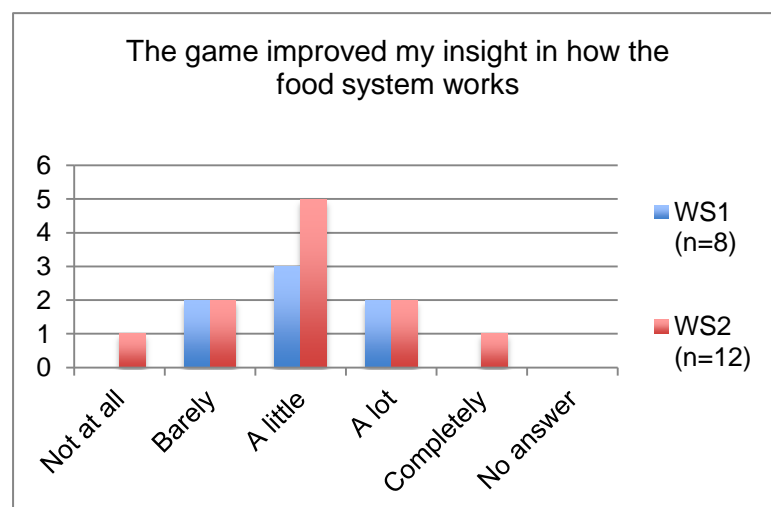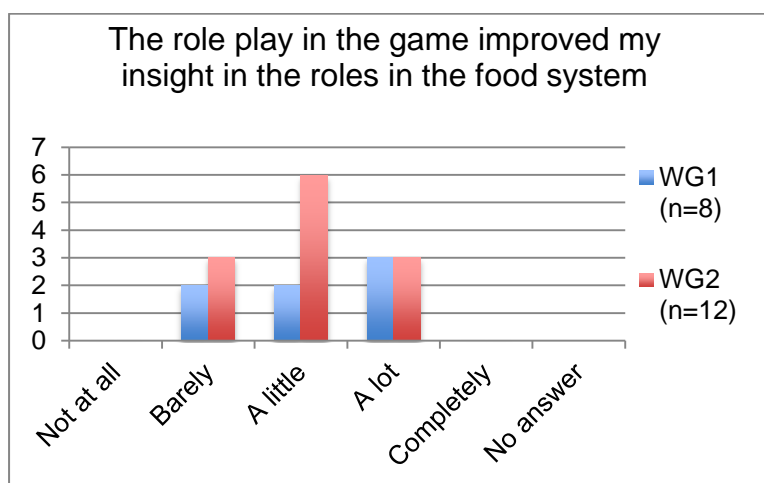

Figure 5.5a

Figure 5.5b

The role play in the game improved my insight in the roles in the food system

Figure 5.5c

5.4.2 Card-based live role-playing game

5.4.2a Output workshop 1

- *Round 1*

In the first workshop, the budget that the teams received was 1000.000 FEAST yen per round or per year in game time. In the first round, the two initiatives set up by the two FPC-teams were a certification scheme and Oyako Canteens - a parent-child community kitchen. The Oyako Canteens' plan failed in the first round, so they had to spend some budget on improvements. In the second round, they experienced an earthquake. In the second round, the certification scheme also experienced a landslide, but managed to get a second successful year so ultimately won the round. In both cases the players spent a significant amount of time discussing the budget, and actively aimed to not spend their entire budget. This resulted in detailed plans, but less idea generation.

- *Round 2*

In the second round, the two competing initiatives were an educational initiative targeting university students, and a scheme that would teach children about tea farming. The first team spent most of their budget on guest lecturers and excursions, while the tea-farming scheme was quite detailed. It consisted of four excursions throughout the year, in which children would learn all about tea farming in various seasons. The results would be sold to the parents at a school fair. Both initiatives were successful over two years - the tea farming scheme was the winner of round 2 due to its level of detail.

In the final round of voting, the tea farm came out victorious as well.

Table 5.3 Example FPC plan: "Kodomall kingdom" (workshop 2)

Round 1		
Seed cards	World: Recycle mall (ReTuna) in Sweden Japan: Takahata co-existence project Kyoto: Children's cafeteria (Kodomo Shokudo)	
Brainstorm ideas	• Make the neighbourhood eatery fashionable as "children's cafeteria". • If you go help out in the field, you will receive a meal ticket. • Food tickets are for children only. • Parent-child participation is possible in the field. • Activate shopping district at school curriculum and connect to children's cafeteria. • Use shops in local shopping areas. • Learn with the help of the town. • Connect production and consumption with digital signage in a public place. ⇒ Buy empty shopping mall and make a place for children's food education that also revitalizes the neighbourhood	
Plan + budget (no limit)	• Shopping centre infrastructure development: restaurant; greengrocer; tofu shop; fish; miscellaneous goods	9 million
	• Mutual communication system (connect production and consumption, digital signage)	3 million
	• Operating cost	7.2 million
	• Farm (10a) in shopping area	10 million
	• Transportation expenses, conference fee	2 million
	• Personnel expenses (3 staff members)	12 million
	• Expert farming consultant	2.4 million
	Total expenses (no limit)	45.6 million
	Success rate	*85% ⇒ success*
	Disaster	*None*
Round 2		
Seed cards	World: Union Kitchen Japan: Chiba ecofeed eggs Kyoto: Eco Money	
Brainstorm ideas	• Make the mall into a place for children's vocational experience • Make a playground (free space, with activities such as movie screenings, workshops, bouldering). • Make children's currency which can only be spent in Kodomall • Parents should be barred from taking and spending the currency • Encourage and support children's start-up shops in the mall • Develop systems, mail order and information dissemination. ⇒ Thinking about turning the economy	
Plan + budget (no limit)	• Expand KodoMall with restaurant + multipurpose room (food and movie theater, pool, exercise)	100 million
	• Development of KodoMall currency	8 million
	• Development of distribution system for produce from the mall	10 million
	Total expenses	118 million
	Time up - game ends	

5.4.2b Output workshop 2

- *Round 1*

After evaluation of the first round, the ideas were found to be not that innovative. To try and see if more innovative ideas could be stimulated, the budget was raised for the first round of workshop 2 to 1 million FEAST yen. This seemed to at least prompt participants to be more ambitious. The two initiatives that were started in the first round were a combination of Edible schoolyard, ecolabel and research centre, and a Vegetable Dating Service: connecting people to the farmers that farm their vegetables, and farmers to people with rare indigenous seeds. The former won the round due to its level of detail. However, there was some concern about the scope since the participants tried to include many different elements in the plan, making it quite ambitious even for the raised budget.

- *Round 2*

In the second round, the budget was said to be limitless. Interestingly, both teams still drew up a budget. The plans did become significantly more original again. The first team made the "KodoMall" (KidsMall), built in an empty department store, with an indoor field and other food related activities, running on a virtual currency that could only be spent by kids. The group also built in ways to prohibit parents from taking their children's money to buy food. The other team designed a plan for the Aori School, an educational tour plan in which small children would take tours all around Japan and help out and learn from older farmers on their farms. The facilitator judged the second group quite strictly, putting them at a lower success rate, so the KodoMall won.

In the final voting round, the Edible schoolyard label and research centre was voted best plan of the day, due to its level of detail and ambition. As an example, Table 5.3 gives a schematic overview of the game process and plan of the KodoMall.

Figure 5.6 Players in workshop 1 write up an FPC plan. In the left part of the photo their budget, role and seed cards can be seen. In the middle their FPC agenda is shown.
Photo: Momoe Oga.

5.4.2c Quality of output

The output were analysed with regards to their sustainability, specificity, feasibility, consensus, visionary character and absence of internal contradictions. With the changing of the budget, the different parameters of quality of outcome also differed. In the first workshop, the teams were focused more on their budgets, arguing from their real-life experience what feasible costs would be and who might be able to provide goods and services cheaply. This can be considered to increase the feasibility in the budget sense. It also created plans that were born out of a stronger consensus, because the negotiation could be quite intense. These plans were also quite specific, both in terms of budget and scope. On the other hand, the plans from the higher and limitless budget round in the second workshop resulted in more visionary plans, that participants indicated were more new and also dared to look and invest further into the future.

5.4.2c Survey results

Figure 5.7a

Firstly, with regard to learning, in both workshops most of the participants indicated that they encountered many new ideas, as shown in Figure 5.7a. Examples that participants gave had mostly to do with the initiatives on the seed cards that they had not heard of before. Furthermore, they mentioned discovering a greater demand for local produce than they previously thought, mentioned the discovery of many different perspectives among their fellow participants and the importance of education for children. The second question that addressed learning was meant to inquire about the experiential effect of the card-based live role-playing game. Figure 5.7b shows the results, which indicate that all but one participant had an increased level of understanding what being a member of an FPC would entail.
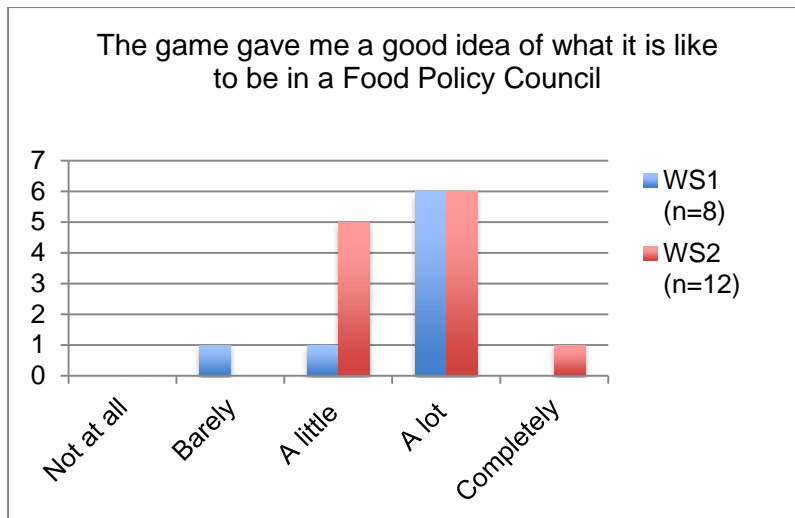
Figure 5.7b

The next variable was "motivation to act", in this case motivation for being in an FPC. As Figure 5.7b indicates, a majority in both workshops indicate that they would either "probably" or "absolutely" join if given the opportunity. This indicates a motivating effect of the card-based live role-playing game. Both the results from Figure 5.7a and 5.7b indicate the reasonable effectiveness of the game as a simulator.
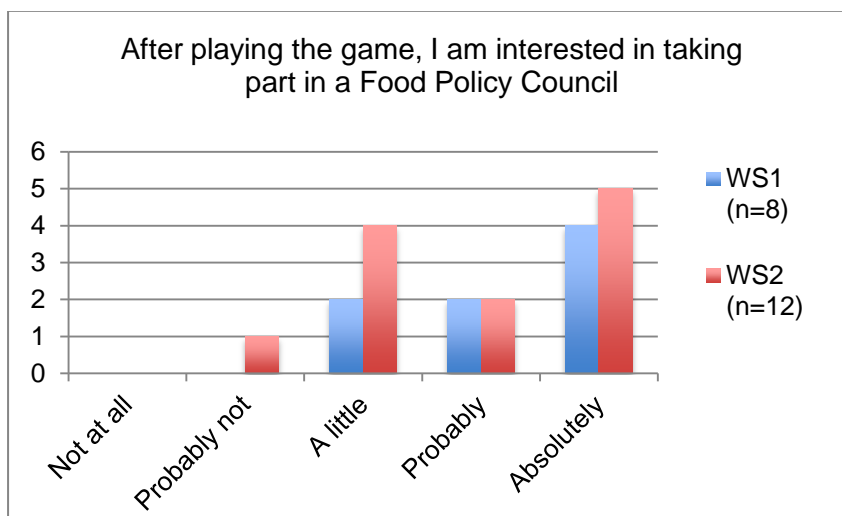
Figure 5.7c

The next variable tested in the survey was empathy for other people's roles. As the results in Figure 5.7d indicate, the participants were not very unanimous with regards to empathy. In the second workshop, two people reported feeling like they emphasized completely with someone else's role while four people reported to hardly having felt any effect. Still, in each workshop two thirds of the participants could at least empathize somewhat better with other people's roles, which indicates a certain effect.

Figure 5.7d

The final variable was networks: the amount of new people that the participants met in the workshops. Figure 5.7e shows that many people knew other participants in both workshops. However, most people knew only one other person, suggesting that they at most met six new people in WS1 or ten new people in WS2. The participating research project members were quite known among the people: most new contacts were among participants that were unrelated to the FEAST project.
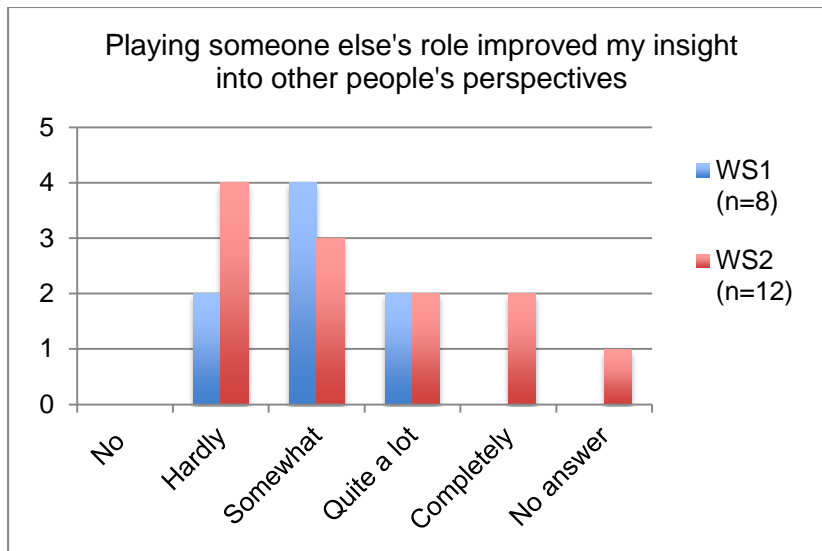

Figure 5.7e

5.4.3 Intermediate summary

The two games that were played differed from one another on key themes such as end goal and artefacts, and they also yielded quite different results. The videogame prototype showed moderately positive effects on learning and empathy. The other variables were not measured. Furthermore, the suggestions for improvement showed some overlap with earlier visioning and back-casting key themes, such as school lunches and depopulation.

In the card game, the nature of the output differed depending on the amount of money the fictional FPC's could spend. In short, the first workshop with a smaller budget yielded detailed plans where especially the budget received a lot of attention in the

discussion among the players. Conversely, the second workshop with the larger and limitless budgets yielded original plans that were less dependent on or connected to real-world resource constraints. With regards to the other variables, learning, motivation to act and network were all positively impacted by the gaming workshop. Empathy was less unanimously positive, but still showed some positive impact among a majority of the participants.

6. DISCUSSION

The first two chapters of this thesis were built around the current debate in sustainability research, in which multiple authors signal that thinking about pathways and ideas towards sustainable urban food futures is too limited. It tends to focus on objective detrimental changes, which can be argued to be both relatively ineffective and a one-sided representation of the challenges of the Anthropocene (Lövbrand et al. 2015; Bennett et al. 2016; Bai et al. 2016). The aim of this thesis was to study the ways in which innovative urban food practices can imagine, explore and forge pathways towards good Anthropocenes using complementary foresight methods. The previous chapter reported on the various results generated with regards to the three foresight methods for normative futures at the core if this thesis: visioning, back-casting and serious games. The first and second section of this chapter discusses the output and process results between the methods and in the larger context of the theoretical framework. It follows the general order of the dependent variables in the conceptual framework. The third section identifies a number of limitations, and the chapter ends with suggestions for future research.

6.1 Output

The research design for this thesis followed a pattern of action research: an orientation towards knowledge creation that arises in a context of practice and requires researchers to work with practitioners. Unlike quantitative or qualitative social science approaches, its purpose is not primarily or solely to understand social arrangements, but also to effect desired change as a path to generating knowledge and empowering stakeholders (Bradbury Huang 2010: 1). The focus on research with practitioners from the field that would be useful for both them and this thesis led to the use of three different methods in a non-experimental setting.

Davies (2014: 182) argues that in countries where hunger is not a policy driver, food sustainability discussions tend to "*focus more carefully on the demand-side of the food equation; essentially on people and the practices of eating which in turn have complex relationships with agricultural production, food processing, transport, storage, retail, cooking and disposal*". Indeed, this variety of practices seemed to be present throughout the fieldwork results, leading to a plurality of futures and plans. Following the elements specified in the operationalization of the quality of output-variable, this section looks into how the futures resulting from each method complement each other, and what the outputs could mean for the practitioners that are working towards sustainable urban food futures in the Kyoto area.

6.1.1 Linking key themes to previous research

The output already outlined a number of key themes that were shared among multiple participants. A number of these themes are also supported by observations in the existing literature. Firstly, there is a general desire for transparency, which is in line with McGreevy & Akitsu's (2015) observations on the formation of ties between producers and consumers in Japan. Results of a large-scale survey conducted by the authors show that Japanese trust in government is generally quite low compared to other OECD countries, and that trust in general produce is neither positive nor negative. However, produce with a photo of the farmer next to it improves trust significantly, and also much more than it does in European countries or the US. One main explanation that McGreevy & Akitsu's (2015) give for this is a low systemic trust in Japan, leading to a higher desire for interpersonal trust. This also offers an explanation for the broadly shared belief among participants that local food is better than certified organic food. Furthermore, it ties in to the larger second key theme from the visioning interviews that came back throughout the back-casts and in the FPC plans generated by the FPC Simulator game: a desire for local production for local consumption. In the 1990s, a local

production for local consumption (*chisan-chisho*) movement came up in Japan through promotional efforts of the Ministry for Agriculture, Forestry and Fisheries and Japan Agriculture Cooperative (JA). It was hailed as a solution for the multifaceted problem of Japan's modern agriculture and food systems (Kimura & Nishiyama 2008).

6.1.2 Internal consistency

JA, the country's main producer cooperation, has grown very large. The organization was set up by the central government in the 1950s, to aim for national food self-sufficiency and efficiency. It aims to standardize practice and products (Parker 2014). JA organizes most *choku-bai-jo* (local farmer's markets). Kimura & Nishiyama (2008) provide a critical reflection on the adoption of the *chisan-chisho* movement by these large institutions. They argue that an overemphasis on the local might oversimplify food by considering all local foodstuffs good and all global foodstuffs bad. Furthermore, by focusing only on proximity of production, other problems in the social or environmental domains might go unnoticed (Ibid.). This is an important thing to be mindful of with the output of the three foresight methods as well. Kimura & Nishiyama (2008) give two main criteria for local food to be truly transformative: marginalized people should be included, and if it does not only tries to change consumer habits but also tries to involve them in the larger political issues around this food as stakeholders. In the back-casting process, some of the practical barriers to local food were already addressed: the visioning discussion already started a discussion on most working people's lack of time, especially if they had children. During the back-casting process, topics like isolation or loneliness as a barrier to joining the local food movement also came up and solutions were searched for. Examples of those were for example inviting new neighbours to food initiatives and organizing inclusive neighbourhood open kitchens. The fact that the hopes from visioning were complemented and nuanced by the back-casting process suggests a benefit of using different complimentary methods.

6.1.3 Sustainability blind spots

The comparison of the output with the literature also shows that despite the complementary methods highlighting different issues and solutions, a few "blind spots" in the participants' normative futures remained. Certain sustainability issues are quite pressing but seem to receive little attention in the lifeworlds of participants. One example is the absence of direct environmental considerations like organically produced food. As mentioned before, one participant complained that people valued safety over organic food, even though the latter is lower than 1% in Japan but the food is generally safe. From the general themes that came up throughout the workshops, it emerges that participants value local over organic production if they are made to choose. When asked, the participants agree to its importance, but in their futures and pathways towards them, there is an emphasis on social factors such as community building, safety and education for food literacy. While sustainable and local production methods can be intertwined, and many of the participants' seed initiatives engaged with both, such blind spots can still result in unsustainable futures. Another example of a blind spot that was partly obscured by the emphasis on labour intensive local production was technological advancement. The indoor vertical farm was an outlier in that sense, even though their thriving business suggested that there was a place for them in this urban food future as well. Considering this, the multi-method approach gives a quite rich picture of the practitioners' personal normative futures, and reveals relevant barriers and pathways as well. However, some futures get less attention than they deserve if the goal is to move towards a more sustainable future in the social as well as environmental and economic domains.

6.1.4 Disruptive change

The results from the visioning, back-casting and gaming workshop also uncovered a few clear disruptive drivers for change within the urban food system. Firstly, multiple authors note how large natural disasters can mobilize a new kind of civil society. Pekkanen (2004) notes how the 2005 Kobe Earthquake brought about the ascent of a large number of non-governmental organizations. McGreevy & Akitsu (2015) describe how Japan describe something similar after the Great East Japan Earthquake of 2011, which brought a new wave of engagement in civil society. The findings from the visioning interviews confirm that this was a catalyst for many initiatives marked as "seeds" in this thesis to start their practice. Multiple authors also suggest that a citizen push for safer food began after a series of scandals at the beginning of the millennium, most notably of the "mad cow disease" (Kimura & Nishiyama 2008; McGreevy & Akitsu 2015). Furthermore, the results also show that these disasters spurred this activity due to a lack of trust in government to step in or an attempt to move them to intervene. This might also be an explanation for the relatively large desire of participants in both the visioning and back-casting exercises for a future with on safe food that they can trust. In the game, there was an element of disaster incorporated in the form of the disaster dice. However, the teams mainly spent money on reparation, although based on other results and the literature and there may have been an opportunity for the FPC to push for systems change.

6.1.5 Feasibility

Returning to the dynamic between system and personal trust (McGreevy & Akitsu 2015), it became apparent over the course of the fieldwork that trust in the government end of the system is very low. Many participants did not see a specific role for the government in their sustainable 2050, citing slowness of interventions or overly stringent requirements attached to subsidies as reasons. However, in the back-casting and gaming plans, it became apparent that there would be a need for government intervention at some point on the pathway towards the preferred futures. To address problems such as time poverty by implementing a basic income that would give people more freedom to engage in food-related activities, there would have to be some legal changes. In addition to this, smaller changes like implementing a food-focused curriculum in schools or increased public procurement of sustainable or local food also depends at least partly on the government (Morgan & Sonnino 2008). In the case of the former, this is even a key policy focus of the Japanese government as well (Kimura 2011). In the back-casting and gaming sessions, the participants started thinking about how either they or their fictional civil society effort in the form of an FPC that could push for those changes in practice. Moreover, there were a number of government workers present at the sessions. This suggests that throughout the multi-method process as a whole increased feasibility by inviting participants to formulate futures, and subsequently to concretely and collaboratively think about the pathways and the governance structure needed to realize them.

6.2 Process effects

Since this thesis focuses on the mixed use of different methods, the effects of the process of engaging with these methods are as important as the direct output. As the aforementioned explanation of action research by Bradbury-Huang (2010) explains, the reported research process also aims to have an effect on the participants, by changing their practices, providing them with new information on the subject of the action research or otherwise. This section discusses the impact of the combination of methods on each of the four process variables: understanding of topic; motivation to act; network and empathy.

6.2.1 Understanding of topic

All three methods had an experiential element that required participants to either imagine themselves in their preferred future and identify various elements of it, or even to participate in a simulation of possible futures in a game. For this reason, is was expected that there would be some degree of experiential learning, leading to an increased understanding of Kyoto's urban food system and innovative urban food practices that take place in it. The positive results for encountering new ideas and increased knowledge of what it is like to be in an FPC in the surveys for the back-casting and gaming sessions indicate that there was a certain effect of experiential learning. As was to be expected because of the different setting with regards to group side and method, the specific types of information about the topic that the participants encountered differed between both cases. The participants in the back-casting focus groups reported ideas that had to do with perspectives of others heard in the visioning or back-casting discussions, or with possible interventions that were mentioned by others and were new to them. In the case of the gaming workshop, most people encountered new practices that they had not heard of before through the seed cards. These different types of learning suggest a benefit for the participants and a positive effect of the complementary use of methods. By feeding back information from The FPC Simulator game into the Let'sKyoto game combined with the participant feedback, the digital game environment could be developed into a tool to share the experiential learning experience with a wider audience in an accessible format. Such a game could combine experiential engagement with analytic processing by showing different systems and interventions in the urban food system. Together, this could result in an effective tool to increase both understanding and engagement among a broad range of stakeholders (Vervoort et al. 2012).

6.2.2 Motivation to act

Like in the results for the understanding of topic-variable, both the back-casting focus groups and the card-based live role-playing game resulted in participants indicating that they felt motivated to engage in certain new or different behaviour. In the gaming workshop, the question was whether people felt motivated to join an FPC. The positive results for both indicate a motivation to engage in changed or new behaviour on different levels of the urban food system: in participants' own direct environment and in a novel governance mode like in this case the FPC. This can be argued to be a positive effect of the multi-method approach. In the back-casting focus groups, over half of the participants could identify some concrete actions for themselves to be taken in the immediate future. This result might be considered quite successful since the participants were not explicitly asked to come up with tasks for themselves in the back-cast. Their ideas for new activities came especially from interventions that others mentioned or from hearing other people's experiences and desires. Thus, the motivation to act appears to be closely linked to the learning element of engaging in the foresight processes. Especially the combination of learning about being in an FPC and feeling motivated to participate in one hints at the success of the applied simulation game method, with potential for behavioural change in the policy network (Mayer 2009). Because the fieldwork was conducted in the larger context of the FEAST project there is space for further assessing the effect of the foresight interventions on behaviour of the participants within the lifespan of the project. Crookall (2010) argues that ideally, this should go beyond a self-reporting post-test and be used as a new opportunity for learning, feeding back the earlier results to the participants while obtaining new information on their possible new or changed behaviour.

6.2.3 Network

The effect on the network of participants can give an indication of a possible creation of knowledge networks and new communities of practice (Bennett et al. 2016). The results

of the survey questions that inquired about the number of people that participants knew already indicated that there were only a few participants who knew no others in their session. However, most people met at least one new person in their back-casting focus group session, and at least 3 in their gaming session. The reporting of participants that they knew quite some people already suggests a certain existing network among the innovative practices and practitioners in the urban food system of Kyoto. Partly, an explanation for the existence of this network is the FEAST project context: the FEAST researchers had organized workshops with some of the participants before, and participants were recruited again through their channels this time. However, participants' specific naming of the others they knew indicated a number of central people in the network that were not FEAST researchers. As predicted in the visioning work by D'Hondt (2012), the interactive setting appears to have uncovered a number of key people. The potential of these key people as "project champions" deserves attention, as they can increase the effects of the interventions greatly by keeping the momentum in the new networks and perpetuating their existence independent from the research context (Brown, Farrelly & Loorbach 2013). In addition to this, it should be noted that the new ideas that participants report indicate that they primarily learned from and about others and their initiatives. This indicates a connection beyond bringing people together, where there is a mutual discovery between the seeds through engaging with the complementary foresight methods. This could be argued to be a first step beyond a network of acquaintances towards a knowledge network or community as described by Bennett et al. (2016).

6.2.4 Empathy
Empathy is the variable for which the results from the surveys were relatively the most ambiguous. In both games, where this variable was measured due to the role-playing element, a majority of players indicated that they had at least a slightly better insight into other actors' perspectives. However, for every participant whose insights into others' perspectives improved a lot, another one indicated that for him or her it increased only marginally. It could be hypothesized that this might have been due to the heterogeneity of the groups of participants in gender, age and occupation which might have led to different levels of receptiveness for the role-playing setting. However, a number of other actors report positive results especially with heterogeneous groups, for example in a neighbourhood game (Gordon & Schirra 2011) or groups in conflict (Belman & Flanagan 2009). Belman & Flanagan (2009) argue that the potential of role-playing for empathy comes from its capacity to immerse players in the new role, which raises the question if the prototype and low-tech settings of the games used in the workshop were immersive enough to have a strong effect on all players. Shen et al. (2017) describe how virtual reality technology can increase the immersion level of games. However, there are also low-tech options: another interesting way to address this can be found in the work of Kamijo et al. (2017), who physically incorporate future generations in their game as a role and report positive results with regard to empathy as a result.

6.3 Extended and new imaginaries
The previous sections shed light on the variety of futures outputs and process results when compared to one another and to the existing literature. However, returning to the theoretical framework, the question whether the combined impacts on the variables led to extended and new imaginaries should still be addressed. As collectively held, institutionally stabilized, and publicly performed visions of desirable futures (Jasanoff 2015: 4), imaginaries form the link between generating a plurality of futures and the impact of those collectively imagines desirable futures in the real world. Each of the three methods used in this thesis provided a different way to engage with aspects of imaginaries. Firstly, the individual visioning interviews provided information on both

the imaginaries that led the participants to their current situation as well as on their current imaginaries for the future. The five key themes that emerged from the visioning give a broad overview of what are arguably the most important imaginaries from the visioning process. The back-casting focus groups complemented the initial visioning outcomes as a second source of data on currently held imaginaries with added benefit enabling participants to discuss their visions with one another, indicating whether certain imaginaries are indeed shared among multiple participants. The visioning interviews also contributed to the back-casting process by serving as input for the pre-written visioning narratives. In the focus group, the discussion of those narratives outlined a shared desire among the innovative urban food practitioners for collaborative social innovation, for integration of agriculture in the urban environment and for a stronger position of smaller food system actors. The results of the visioning and back-casting processes were also implemented in the FPC Simulator game. Conversely, the game was also largely based on existing seeds, exposing the participants to new knowledge outside of the individual experience or group process. FPC plans resulting from the card-based live role-playing game some more shared imaginaries could be distilled such as more attention for food in education at all age levels, improved food literacy and time and space for engaging with food.

These outcomes can be argued to increase the knowledge of existing imaginaries and extend existing imaginaries. One participant even explicitly stated that the seed cards in the FPC Simulator expanded his perspective on the future. A second question is whether the participants also encountered and adopted entirely new imaginaries. It could be argued that the combination of a certain motivation to act on ideas that participants noted after the back-casting focus groups and to take part in an FPC after the gaming workshop would suggest that participants have encountered new imaginaries, causing them to act towards those at different levels of their urban food system. The new ideas that participants reported to have encountered could also indicate the outline of the new imaginaries. After the first gaming workshop, one participant responds that he was positively surprised by the involvement of younger people in the workshop, and that he now has higher expectations for a future that will be changed for the better driven by the younger generation. Another participant noted that after participating she felt like "lots of things take place the world and Japan", indicating an expanded or new global imaginary. From the back-casting focus groups, participants reported being able to see futures with structural new elements like a basic income. Altogether, the complimentary methods appear to have extended and enriched participants' imaginaries. The focus on seeds can also be argued to have contributed to this, since many new ideas reported by the participants and present in the foresight outcomes can be traced back to the participants' initiatives.

6.4 Limitations

There are a number of limitations to the research performed in the context of this thesis that should be mentioned. Firstly, the limited time available for the thesis project made it impossible to conduct a follow-up impact assessment for the various foresight interventions that were done during the fieldwork. Therefore, it could not be tested if for example the participants' stated motivation to act materialized in the weeks after their sessions, or if any type of knowledge networks formed afterwards. However, as the fieldwork took place in the larger context of Working Group 2 of the FEAST project, the results are likely to be incorporated in their follow-up activities. Secondly, important limitations to note are the cultural and language barriers inherent to conducting fieldwork in Japan as a European student who does not speak Japanese. While a number of participants spoke English and interpretation was arranged at every step of the fieldwork, observing discussions and non-verbal communication in the group sessions was a challenge. A final limitation is the precarious balance between control and effect

in the participatory action research design. The design of this thesis was to focus on one set of innovative food practices and the actors involved in them, in order to closely observe practice while influencing this practice at the same time. Since it can be argued that it is nearly impossible to find a control group that matches the complex urban food system setting of Kyoto, this method is pursued at some cost of external validity. Also, due to the changing nature of the urban food practices, this research might have limitations with regards to repeatability, which has implications for its reliability.

6.5 Future research
The limitations of this study are the main starting points for future research. Firstly, future research could consist of a follow-up study that tests the outcomes of the various foresight interventions and of the overall action research approach. Specific focuses could be the materialization of the motivation to act expressed by participants in this thesis, or the effect of the use of the FPC governance mode on the participants. Secondly, the positive effects of using complementary foresight methods could be explored further in both practice oriented research and more controlled environments. Thirdly, the potential of these complementary foresight methods could be reviewed in light of global scenarios and foresight activities. A fourth suggestion for future research could be to take a closer look at the outcomes of his thesis that were relatively ambiguous. It would be relevant to test whether the digital prototype testing would yield more unanimously positive or negative outcomes with regards to learning and empathy in a more group that is more homogenous in age, gender and occupation.

7. CONCLUSION
The main aim of this thesis was to test how innovative urban food practices can benefit from collecting, exploring and combining such practices through the use of different

methods for normative foresight with relevant actors from the field. The central question that guided the research was derived from this aim and formulated as follows:

To what extent can complementary methods for normative foresight create valuable insights about innovative urban food security practices for the actors involved?

The thesis started with a literature review resulting in a theoretical framework detailing theory on methods that can be used to generate normative futures, specifically visioning, back-casting and serious role-playing games. Subsequently, the case study of Kyoto city and prefecture in Japan was introduced. This was followed by the methodology for the visioning, back-casting and serious role-playing game interventions conducted there. The visioning was done through a series of semi-structured interviews with actors form different sectors of Kyoto's urban food system. The back-casting happened in a focus groups setting, and the playing of two different games was done in a workshop setting. These methods generated a variety of results, indicated a rich set of futures resulting from the methods. Furthermore, the participants reported a number of effects from engaging in the foresight processes: an increased understanding of the topic of urban food systems and governance, a motivation to act upon the new information and an increased network. The only variable that yielded somewhat more ambiguous results were the feelings of empathy with other food system actors: some people reported a positive effect, but others reported that the method did not work in that way for them. An important element of the thesis was the comparison of the separate outcomes to see if and how they were complementary, which on several points they were.

In conclusion, the complementary use of methods generated a variety of rich and varied shared futures, the key themes of which were largely supported by existing literature. Furthermore, the extension of most participants' network and the unexpected emergence of key "project champions" suggest that the methods contribute to the formation of knowledge networks and collaborative communities. When grounded in practice by placing a set of existing, thriving initiatives at the centre of the methods, these seeds both connect the methods and have a positive impact on the number of new ideas and plans coming up in the sessions. Finally, the results indicate that engaging with complementary methods for normative foresight can lead to extended or even new imaginaries for the actors involved in innovative urban food practices. The multi-method approach combined different aspects of engagement with imaginaries: vivid visions were generated in the visioning interviews, that were made concrete in the back-casting focus groups and to which an extra layer of new governance forms was added in the gaming workshops. The largely positive effects suggests that the complementary foresight methods are able to impact a deeper layer of drivers for change, towards a good Anthropocene for urban food systems and the actors involved in them.

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APPPENDIX A - BACK-CASTING SURVEY

- Backcasting survey (English version)

Your network
1a. Were there people in this workshop that you had already met before?

o No
oYes, I knew the following people:

Name   *Our connection*
_____
_____
_____
_____
_____
_____

2. Did any new ideas come up in the workshop?
o No
o Yes, the following ideas came up in the workshop:

_____
_____
_____
_____
_____
_____

3. Did any concrete new plans come out of this workshop?
o No
o Yes, the following plans have come out of this workshop:

_____
_____
_____
_____
_____
_____

3. How would you describe your personal experience of this workshop?
_____
_____
_____
_____

4. Was this method new to you and do you think you might use it in your own work?
_____
_____
_____
_____
_____
_____

APPENDIX B - GAME RULES & SURVEY

- Let'sKyoto survey (English version)

1. The game improved my insight in how the food system works:

O   O   O   O   O
Not at all   Barely   A little   A lot   Completely

2. The role play in the game improved my insight in the roles in the foodsystem:

O   O   O   O   O
Not at all   Barely   A little   A lot   Completely

3. The game gave me insights in different possible interventions in the local food system and their effects:

O   O   O   O   O
Not at all   Barely   A little   A lot   Completely

4. If I could add another intervention to the game, it would be the following:
_____
_____
_____
_____
_____
_____

- The FPC Simulator survey (English version)

1. The game gave me a good idea of what it is like to be in a Food Policy Council:

O   O   O   O   O
Not at all   *Barely*   *A little*   *Mostly*   *Completely*

2. After playing the game, I am interested in taking part in a Food Policy Council:

O   O   O   O   O
Not at all   *Probably not*   *A little*   *Probably*   *Absolutely*

3. If I would be in a Food Policy Council for Kyoto prefecture, I would want it to do the following things:
_____
_____

4. I heard new ideas in this workshop:
O No
O Yes, the following:
_____
_____

5. The role playing in the game gave me a greater insight into other people's perspective:
O   O   O   O   O
Not at all   *Barely*   *A little*   *A lot*   *Completely*

- Gameplay & rules for FPC SImulator (English version)

You and your group are the new Food Policy Council (FPC) of Kyoto prefecture. The mission of your FPC is to make Kyoto's prefecture's more environmentally sustainable and socially just, and stimulate local economic development. Let's play!

❖ STEP 1 - INTRODUCTION AND ROLES
The game starts with the players filling out the role cards from their own role. In round 1, the players play their own roles. In round 2 ~~and 3~~, the players introduce themselves with their own name, but otherwise assume the role of someone else at the table by using each other's role cards.

❖ STEP 2 - SET FPC AGENDA
Every player has 3 main issues on their role card that they think the FPC should address. During the introduction round, the facilitator writes down each player's top issues on the FPC agenda sheet. Afterwards, the main themes on the agenda are shortly discussed together. After determining the agenda, a chairperson should be appointed who oversees the budget, does the writing and leads the FPC's discussion.

❖ STEP 3 - DRAWING A SET OF INTITATIVES
Now that the FPC is in business, a timer starts counting down 45 minutes. It's time to support food initiatives in Kyoto prefecture that do good work. The FPC also looks outside of the prefectural borders and outside of Japan for inspiration. The FPC draws one card from each deck of initiatives: green = Kyoto, red = Japan and yellow = world. First, shortly discuss the potential of the three initiatives.

❖ STEP 4 - SUPPORTING THE INITIATIVES
Each round represents a period of one year, for which the FPC gets 1000.000 FEASTyen from the bank. This money does not all have to be spent in one round. To support it's initiative(s), the FPC should make a plan, drawing possible inspiration from the intervention list and involving as many roles as possible. Write the intervention down on an activity card, and allocate a budget to it. The facilitator gives the FPC a feasibility rating, based on 1) feasibility of plan 2) budgetting, 3) inclusion of all different roles and 4) ambition. The FPC can shortly plea to raise this rating. Once it's set, roll the 10-sided dice. A score within the feasibility rating means success, one above it means failure. Move on to the next round and draw 3 new initiatives. In case of failure, first take some time and spend some budget to make the failure right. Then roll the dice again and try to get to success. A final step at the end of each round is rolling for disaster: roll the dice once more. If you get 1, roll again to find out which disaster off the disaster list has hit you. You have to deal with this disaster in the next round.

❖ STEP 5 - TIME'S UP
After 45 minutes of playtime, the different FPCs in the game shortly present their agenda and set of interventions to one another. The team with the highest number of successful initiatives wins a prize!