Utrecht University

A Recipe for Success? - Developing and Testing a Practical Conceptual Framework for Urban Food Systems Governance

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Foreword

I officially started work on this Master's thesis sometime in November 2013, when I began my internship at Metabolic. I was there to pursue work and research specific to urban agriculture, but to my chagrin there was actually no specific work to be done at the company regarding the topic at that time. I began to panic, as much of the work I had done up to that point at university had led me specifically in this direction. However, as I came to realize through the excellent work of my colleagues from the transdisciplinary case study, there was an immense range of problems affecting the sustainability of urban food systems. The result of our work together led to a series of recommendations to make the Amsterdam region's food system more sustainable through various projects. Our main suggestion was that some type of body to coordinate the various projects be created, as the collaboration necessary to address a structure as complex as an urban food system is a daunting, multifaceted task; it seemed that I had found a research topic.

While writing this paper has not been a particularly easy undertaking, a lot of people have helped me along the way. Firstly, I would like to thank my supervisor Frank van Laerhoven, who not only provided me with excellent feedback, but also challenged me to be creative in my research and go the "extra mile". Also, my internship supervisor and friend, Chris Monaghan, has provided me with a great deal of flexibility to shape my internship around my research and given me a "real world" perspective on the implications of my work. Furthermore, all of the interviewees who gave me their valuable time, especially Kees van Oorschot from Stadsontwikkeling Rotterdam – my research would not have been possible without their help. Lastly, I want to thank my fiancée Lisa, who put up with my mood swings and took care of basically everything while I was writing this beast of a paper.

Abstract

Across the world, cities are growing at a rapid pace. Over half of the world's population currently lives in cities – a trend only expected to continue into the future. At the same time, the global food system that sustains us is heading a dangerous direction. Environmental damage from the farm to the waste bin is rampant, worker exploitation continues, living wages continue to diminish and people – city dwellers especially – are losing touch with the system that provides them with sustenance. Combine these problems with a changing climate and dwindling resources, and it is not difficult to realize the food system as a whole is in a bad place.

Some of these problems are even more glaring in cities, as they are devoid of food production, create massive amounts of (food) waste, and are host to a unique range of other troubles; however, hope is not lost. Stakeholders are starting to take production and self-sufficiency back into their own hands through urban agriculture. NGOs are trying to make consumers aware of the health and environmental effects their eating habits through information campaigns. Local governments are facilitating farmers' markets to provide local economic growth opportunities and increased access to fresh food. Unfortunately, it is not likely that these individual, isolated efforts have little chance at having a large effect on the general direction of the food system.

Food policy councils (FPCs) have recently come to the fore as a form of uniting body that coordinates, focuses and upscales such efforts. However, there have been few attempts to uncover what makes these and similar organizations successful forms of urban food systems governance. Thus, this is the topic of this research – to elucidate what makes effective food systems governance, based on what we know from the empirical literature, with additional insight coming from the co-management literature, from both an institutional and network perspective. I will attempt to merge these literatures in order to provide a framework that could provide a rough blueprint for successful urban food systems governance via such governance arrangements.

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1. Introduction

1.1 Problem Background

1.1.1 The Global Food System

In the field of sustainable development there are some problem areas that academics and practitioners attempt to address through myriad techniques, whereas for others there are one or two tried and trusted approaches. Certain problem areas deal with energy sources (e.g. solar vs. oil), others to common pool resources (e.g. forestry or fishing), and yet others are not so easily classified. However, regardless of the subject, it is well known that these issues are not only complex on their own, but that they are also connected with one another in numerous ways and on various scales adding to their complexity. From the local, to the state, to the national, to the global, or in intricate relationships of codependency, sustainable development issues are indeed very convoluted problems. In fact, upon critical reflection one would be hard pressed to find any environmental problem that can be easily isolated from others (Meadows 1999; Folke et al. 2005; Plummer & Armitage 2006). This is fitting, as most approaches to sustainable development require the "three pillars" to be taken into account when addressing issues, namely social, environmental and economic aspects, so as to promote development that can serve the current generation's needs without sacrificing that of future generations (de Vries 2012). From such a starting point, it is apparent than any attempt to tackle a problem like those just mentioned must do so from a more comprehensive perspective, with a longer time scale, while considering all of the relevant aspects of the problem area and the relations between them (Ibid.)

The focus of this research regards specifically the sustainability of urban food systems. Therefore, the scale will be narrowed considerably. In order to understand food systems issues as they regard urban areas, one must first know what constitutes a food system, and moreover see how they fit into the bigger picture. This paper will use the definition of a sustainable food system from Feenstra (2002), as it describes both the concept of a food system briefly, but adequately, as well as gives an idea of the goal to which this research is oriented. With this in mind, a *sustainable* food system can be understood - in comparison to most current ones - as a more locally based, self-reliant

food economy, one in which sustainable food production, processing, distribution and consumption is integrated to enhance the economic, environmental and social health of a particular place (Ibid.).

Currently, most food systems as they exist, whether at a village, city, regional or country level, in addition to the global one to which they are all connected, are largely unsustainable – from the field to the trash bin (Feenstra 2002; Pretty 2008; McRae 2012). Crucial to issues of sustainable development, many of the natural *feedbacks* that used to govern mankind's behavior have disappeared from the food system, or at the very least, have become much less tangible (McClintock 2010). Processes of globalization, rationalization and specialization have created long, complicated and fragmented supply chains with little transparency and little to no responsibility for the social, economic and environmental externalities generated; we are simply not being held for responsible for our actions, at least in the short term. In turn, more stakeholders have been brought into the fold, as we no longer rely on a few local farmers for our food, but instead a complex, international system that requires the typical meat, potato and vegetable dish to travel approximately 30,000 kilometers before reaching our table (Koc & Dahlberg 1999; City of Amsterdam 2012).

The structure of the food system as whole has come to produce heavy consequences for all three pillars of sustainability. The current *agricultural* system alone – just *one* part of the complete food system - is responsible for up to 29% of global CO2 emissions due to its dependence on fossil fuels for production inputs, harvesting, transport, and numerous other steps throughout the value chain - a frightening consideration for food security considering the waning and volatile supply of readily available oil (Weber & Matthews 2008; van der Schans 2010; Vermeulen et al. 2012). In addition to its large contribution to climate change, other environmental externalities produced by conventional agricultural activities include ecosystem degradation, watershed abuse, the growth of commodity market driven monocultures and the associated biodiversity losses, to name just a few (Feenstra 2002; Weber & Matthews 2008; van der Schans 2010).

Moreover, the skewed financial structure of the current global food system is also such that smaller, more sustainable producers are finding it increasingly hard to stay in business due to misguided subsidies, crop commodity speculation, and competition from developing world counterparts that can produce the same crops for a lower market cost by over-exploiting local labor and resources (Humphrey 2002; Feenstra 2002; Pretty 2008; Weber & Matthews 2008 van der Schans 2010). Not only does this lead to the loss of higher paying jobs and a weakening local economy in the country of consumption, it is causing the loss of knowledge of more sustainable production techniques. There are fewer new farmers in each generation, with remaining few most often converting or clinging to the "conventional" model of production; this works to create vicious cycles in regards to the previously mentioned environmental damage (Tilman et al. 2002). Likewise, within the current configuration of the global food system, fresh, healthy food is often more expensive and less accessible than processed, unhealthy alternatives. This has been linked to a significant rise in diet related illnesses, especially amongst young people and poorer socioeconomic groups in the Global North (Drewnowski & Darmon 2005; Fresco 2009).

1.1.2 Urban Food Systems Issues

Zooming in to the level of urban areas, a majority of these same problems are present, while others become more dire and apparent, and yet others are unique to this context. Firstly, over half of the world's population lives in cities and more are moving to them - a trend that is only expected to continue into the future (Morgan & Sonnino 2010). As food production is by and large absent from most cities, we are reliant on food to be transported over long distances for our subsistence. Terms such as "food miles" are now commonly used to conceptualize the impact of shipping food from point A to B on the environment (Ibid.; City of Amsterdam 2013). Furthermore, it is often the case that many cities would only have approximately enough food for a few days before supplies became scarce, given a disruption in the supply chain from, for example, an oil shock due to the reliance on hinterlands that are becoming ever more distant (Tilman et al. 2002). Additionally, larger amounts of food waste are produced and accumulate in urban areas due simply to the fact that many people live in them – upwards of 18% of the total amount of food in cities (Rabobank 2013); this is not only a burden on waste

management systems, it is lost nutrition and potential inputs for other processes that could produce value, e.g. food compost as a farming input.

Food systems issues also become especially complex on a social level within urban areas. In the governance literature, "stakeholder" is a term often used to refer to someone to whom an issue is relevant (Glicken 2000). Therefore, amongst those parties that must be accounted for when addressing problems in urban food systems are producers, processors, wholesalers, logistics operators, store owners, restaurants, NGOs, governmental actors and basically anyone who comes into contact with food a few times a day. Amongst these players are countless interactions, with intersections of conflict and interest ("growth" oriented actions vs. ecologically oriented ones), overlaps of jurisdiction (e.g. regional vs. international policy, or issues that concern multiple government departments), in addition to numerous other confounding factors. This makes developing approaches to address such problems especially difficult when compared to issues found in simpler, more isolated systems (Bryld 2003; Cissé et al. 2005; Feenstra 2002; Pearson et al. 2010; Pothukuchi & Kaufman 1999; Rogerson 1993).

1.1.3 Isolated Efforts To Address Urban Food Systems Issues

Despite the complexity and scale of urban food systems problems, concerned parties are making efforts to address them. Social justice advocates are working to increase access to fresh, healthy food for disenfranchised groups in cities like Detroit, which have been classified as "food deserts" due to the lack of supermarkets easily reached by a majority of the population. The promotion of farmers' markets combined with government supplementary assistance programs have been developed to increase the uptake of better quality food while stimulating the local economy (Hesterman 2011). Similarly, urban agriculture (UA) advocates want to change the imbalance between consumption and production in the city, while bringing more sustainable sources of food back into the daily lives of people. Some advocate that urban areas should be self-sufficient, while more moderate supporters see UA as having a supplementary, or even symbolic role (Feenstra 2002). Yet, other actors strive to work to influence policy on a higher level to give urban food system a chance to become more sustainable by promoting small, local producers over distant mega farms, e.g. fighting GATT and

NAFTA tariffs that are unfavorable to such goals (McRae 2012). Whether they originate from civil society, the business community or the governmental sector, there are numerous actors working on urban food systems issues.

It would give one hope to think that the sum of these efforts could make a large contribution towards achieving more sustainable urban food systems. However, this is not necessarily the case. Although the common logic used to address complex problems is to break them down into smaller, more concise ones, this approach can fail to see the bigger picture and miss out on opportunities for synergies with other undertakings, or worse, cause more damage than the previous status quo (Meadows 1999).

Take for instance a well-intentioned policy that leads to the proliferation of small-scale, sustainable producers. If successful, the environmental impact of food production may in fact decline while producing more wealth for the local economy (Feenstra 2002). However, the more fragmented nature of the small producers' may lead to more overall food miles, causing potentially more overall environmental damage (Meadows 1999; City of Amsterdam; de Vries 2012). Another example could be a program that intends to expand farmers markets in the city, but is having a hard time finding where to set up. After a few attempts and failures the initiative takers give up, because they are simply unable to locate a market for their goods. Yet, had they known about a government undertaking like the "double-down" program to expand the access of fresh, affordable food to Detroiters through the doubling of EBT (electronic benefits transfer, a welfare program) when purchasing at farmers markets, they could have merged their initiative with another, enjoyed mutual success and perhaps cut down on costs and shared knowledge and resources with one another throughout the process (Hesterman 2011). These few brief examples serve to demonstrate that some type of coordination is needed amongst such efforts in order to more effectively change urban food systems into ones that sustain the people that live in them and the environment on which they are dependent.

1.1.4 More Coordinated Approaches to Urban Food Systems Issues

With such a broad and multifaceted issue as the sustainability of urban food systems, it can be difficult to imagine an approach that can effectively address such complexity;

indeed, this is a problem that is faced by many actors in the field of sustainability. The literature on (adaptive) co-management refers to such arrangements as "social-ecological systems" (SESs), in which humans and nature are deeply intertwined (Folke et al. 2005). In these contexts, environmental concerns must be balanced with human ones in order to achieve effective interventions towards the desired goal, reflecting yet again the "three pillars" of sustainability. To reach these ends, actors must come together under certain institutional circumstances (e.g. established rules and norms) and have relationships of a certain nature (e.g. the characteristics of their network and interactions in said network) in order to share their knowledge and resources, and moreover adapt to environmental shocks and changes that the system in which they are found might experience (Ibid.; Gupta et al. 2010; Sandstrom & Rova 2010).

Although it does not appear to have been done with this specific theoretical underpinning, a comprehensive approach to urban food systems issues has been on the rise in recent decades: the Food Policy Council[1] (FPC). While they can take on different names and configurations, these types of organizations, originating nearly thirty years ago in Knoxville, Tennessee, in the US, have come to prominence as a type of governance arrangement[2] in this problem area (Schiff 2008; Hesterman 2011). Since then, exemplary FPCs have been developed in major North American cities such as Toronto and Vancouver, with numerous others spread throughout major UK cities such as Bristol, London and Manchester, and even more springing up throughout Western Europe. In a strong parallel with the (adaptive) co-management of SES literature, these organizations attempt to bring together the relevant stakeholders in urban food systems, in order to create a common understanding of the problems they face, develop goals in this regard, share resources and knowledge to these ends, and learn from the experience garnered in the process (Friedmann 2006; Schiff 2008; Mansfield & Mendes 2012; Zwart 2012). What is more, in an era of changing governance paradigms, in which the state is acting as more of a facilitator than an implementer, organizations such as

[1] From this point forward, organizations that attempt to address food systems issues comprehensively in the form of a roundtable, platform or similar such formations will be referred to generally as FPCs for the sake of simplicity and conceptual clarity.

[2] Briefly, a *governance arrangement* can be understood as a group of actors that come together in order to tackle a problem common to them all in a manner different from that of the traditional governmental-led top-down approach. (Bevir 2013)

FPCs that capitalize on civil society initiatives and synergies between existing and future undertakings are crucial for contributing to governance, including that of urban food systems.

However, despite their importance as a method of addressing urban food systems issues, to date there have been few undertakings that have tried to uncover and piece together generally the factors that lead to successful FPC performance or more broadly urban food systems governance, and none that do so while addressing the various phases of the FPC process, from formation to the evaluation and redesign of implemented programs and. Moreover, several studies have shown that FPCs are not always successful; in fact, due to their often ad-hoc, unofficial nature, they face a variety of barriers to their success and therefore, contribution to urban food systems governance (see Dahlberg 1994 and Harper et al. 2009). Indeed, with the spotlight on FPCs as a primary tool for tackling urban food systems problems, there is a need to clearly close this gap to provide insight to stakeholders, i.e. current and would-be FPC advocates and participants.

It is also the case in the academic community that there is a lack of literature that attempts to address (urban) food systems issues from a specific theoretical standpoint, e.g. (adaptive) co-management of SESs; in fact, there is a general dearth of literature regarding urban food systems problems. Such a theoretical lens could highlight additional elements that contribute to FPC success and failure, which otherwise might not be, given the lack of a specific theoretical framework. Likewise, with a focus on adaptive capacity[3] - as is the case with most co-management theoretical literature - in the face of climate change, oil shocks and commodity market volatility - food systems stakeholders would be wise to incorporate the considerations of co-management into their actions as food security is predicted to become an issue in the future, even in developed countries (Tilman et al. 2002; Gupta et al. 2010).

[3] Due to both time and data constraints, in addition to relatively new nature of the cases used, assessing their adaptive capacity is not a practical undertaking. Nonetheless, it is an important capacity of any governance arrangement dealing with food to be adaptive, especially in the face of external shocks like climate change.

1.2 Research Goals, Questions and Framework

With the above as a background, this research has several goals. My first ambition is that the application of an appropriate, specific theory (adaptive co-management of social-ecological systems) to a newly conceptualized problem context (urban food systems governance) will fill a major gap currently present in the scientific literature in this regard by generating some novel hypotheses on the implications of certain factors on the outcome of interest and given indications for the direction of future research in this area. The second aim is to derive a phase-based framework for successful urban food systems governance (with FPCs as the primary archetype) based on a review of the literature on both FPCs and (adaptive) co-management of SESs, and test its real world applicability. The third aim is to provide insight to the stakeholders in the FPCs being researched through highlighting their strengths and weaknesses via the framework described previously so that their efforts might be more successful[4].

As I am in interested in evaluating functioning FPCs' potential for effective urban food systems governance - based on their own goals - with a theoretical focus on their potential for being a successful co-management organization as a result of both institutional and social network factors, the central research question will be divided into four sub-questions that capture both the relevant aspects as they regard the outcome of interest:

Main research question: *What factors can help to explain successful urban food systems governance?*

Sub-questions:

1. *Which network characteristics of the actors involved can help to explain successful urban food systems governance*?
2. *Which network characteristics regarding the relationships between actors and organizations involved can help to explain successful urban food systems governance*?
3. *Which institutional characteristics can help to explain successful urban food*

[4] During this research, I was responsible for a food sustainability networking platform resembling an FPC, to which I attempted to apply the principles learned during the research process to my own project.

systems governance?

4. *Which exogenous factors can help to explain successful urban food systems governance?*

To answer these questions, I have derived a conceptual framework based on the appropriate empirical and theoretical literature for urban food systems governance. The conceptual framework will provide a list of factors that are hypothesized to have an effect on the outcome of interest. These factors will be operationalized via singular or multiple indicators, allowing me to give values to them and say something about how each case performs regarding the framework. The fourth sub-question was added, as it is important to realize that no system operates in isolation; it will not necessary, nor possible to analyze the indicators regarding this question in depth during this research, but it is nonetheless essential to be aware of them.

Therefore, the paper will proceed as following in order to provide a solid line of argument, while keeping the reader informed of concepts as they come into the fold (see Research Framework, Figure 1). First, I will give a more thorough background on Food Policy Councils, introducing what they are and what they are meant to do. Thereafter, a review of the literature on FPCs will follow, deriving a list of factors shown to affect their performance. Then, I will choose a specific theoretical perspective that incorporates the concept of (adaptive) co-management given the nature of the problem at hand and the results of the literature review. Once this is done, I will develop the research perspective specifically regarding FPCs and then explain key concepts. I will then apply this to two contrasting case studies in order to draw attention to differences and develop robust claims regarding the factors affecting FPC performance as a form of co-management. More specific information regarding case selection, data collection and analysis will follow in the methodology chapter.

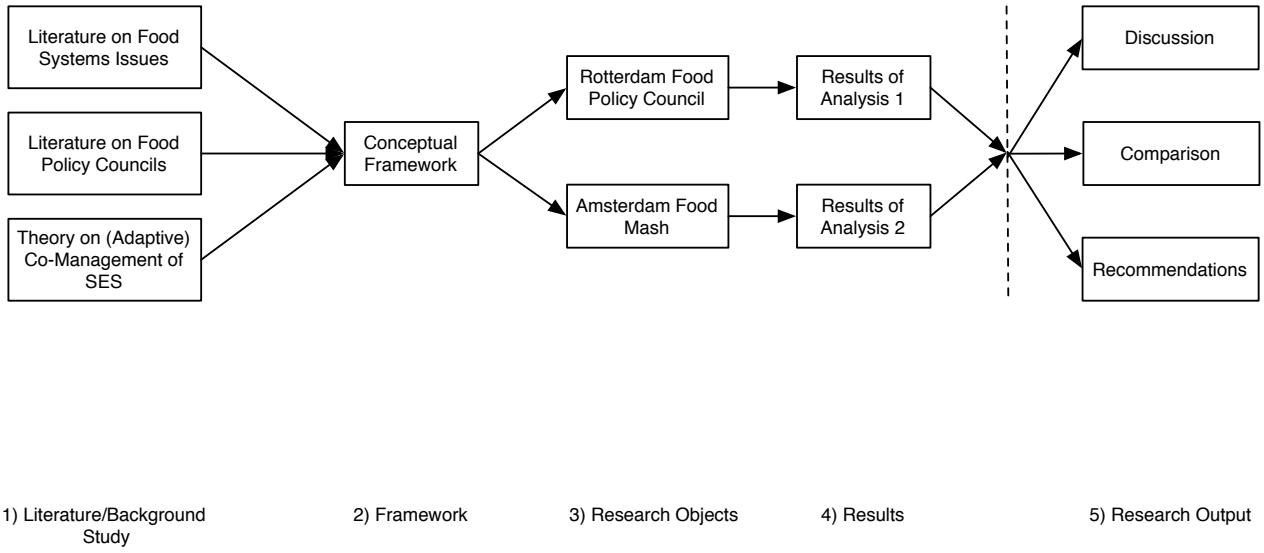

Figure 1: Research Framework

2. Food Policy Councils (FPCs): Background and Success Factors

2.1 FPC Background

Before discussing what makes an effective Food Policy Council (FPC), and what makes it capable of governance (specifically, co-management[5]) of urban food systems, it is necessary to understand what one is, what it is supposed to do and what some such bodies have done to date. As briefly mentioned above, FPCs can be understood as a type of governance arrangement for addressing food systems issues, typically at the city level, comprised of actors from various sectors of society, both political and non-political in nature. FPCs are a platform with both policy-oriented and programmatic aspects that attempt to move the food system towards a more desirable state, e.g. socially just or sustainable[6] one (Dahlberg 1994). The key goals of nearly all of the FPCs found in the literature are:

[5] The terms "governance" and "co-management" will be used somewhat interchangeably. The former refers generally to actor/institutional configurations while the latter refers to a more specific one addressed in this research.

[6] The definition of "sustainability" is not an issue taken up in this paper as an evaluation criterion. FPCs will be assessed on their assumed capability to achieve their own goals. Whether they actually contribute sustainability should be the focus of a study resembling and EIA.

- To bring the various actors in the food system together in an organized, regular manner, namely a platform
- To develop a common understanding of the complexity of the food system and the associated problems
- To develop goals for the food system regarding the identified problems
- Design, coordinate and implement projects to achieve the goals
- Share resources and knowledge to these ends
- Learn from experience and incorporate this into future work

FPCs have taken shape in different ways, in cities of various sizes and with diverse characteristics, with varying degrees of success. Toronto's FPC is amongst those often held up as an example for those looking to emulate the model, as it has successfully achieved the above goals and is constantly striving to improve and broaden its influence (McRae 2012). For many, it has become the template of what an FPC should be and is often consulted when actors are attempting to form one of their own. On the other hand, more local undertakings, such as the Proeftuin in Amsterdam, had difficulties in becoming institutionalized and were little more than symbolic efforts before their eventual dissolution (Zwart 2012). It is a matter of scientific and societal interest to find out what makes some of these a success and others not.

Following are some examples of undertakings by the Toronto FPC (TFPC; taken from McRae 2012), in order to provide a more concrete idea of what such a body carries out as its work. At its beginning, the TFPC was a roundtable, specifically bringing together stakeholders with different views on food systems issues in order to build a common understanding of the problems, their connections with one another and to develop common principles and goals. Once this process had established a common ground on which the actors could work together, more tangible undertakings began. A food charter was developed, comprised of the TFPC's goals for the city's food system. As all actors were already "on board" due to the success of the roundtable, the organization was able to leverage resources from its diverse membership, e.g. money, political power, public approval, technical knowhow, research capabilities, amongst others. The TFPC was then able to take on more programmatic work, developing programs to glean excess fresh food for city soup kitchens from local producers, develop farmer's markets

for the socioeconomically disenfranchised, in addition to numerous further such projects. Members convene regularly to evaluate progress made, areas for improvement, possible future undertakings and the like.

Despite the differences in outcomes between the short-lived Amsterdam Proeftuin and the TFPC, a small, yet growing body of literature is promoting FPCs as a primary option for moving food systems towards sustainability through a somewhat novel form of governance[7]. Moreover, the approach and goals of FPCs overlap significantly with the theoretical and empirical literature on (adaptive) co-management of complex social-ecological systems (SES)[8], lending the approach some potential credibility in the academic world. Most notably, work by Folke et al. (2005) describes these types of environmental management approaches as ones that are able to accept and understand complexity, incorporate actor diversity into their structure, make use of the broad range of resources available, and learn from the process in order to address complex systems and to adapt to changing environmental conditions. Therefore, it would appear that there is growing support, both direct and indirect, for FPCs as being a prime option for addressing food systems issues comprehensively and effectively. Thus, this paper will then move from the hypothetical assumption that FPCs have the potential to govern urban food systems issues effectively as a type of co-management regime[9].

2.2 Factors Affecting FPC Performance

The following section was derived from a review of the empirical literature examining the factors that have been shown to affect FPCs' abilities to achieve their goals (governance of urban food systems). This field of study is relatively new; therefore, a limited number of papers were incorporated. However, it is promising that there was significant overlap in regards to the identified factors.

A logical starting point for the factors affecting FPC performance deals with those that comprise the broader setting in which the entity is nested. This wide-ranging category

[7] See Dahlberg (1994) and Harper et al (2009) for a review of a large body of FPCs across North America

[8] (Adaptive) Co-management will be the prime theoretical lens for this paper. As such, it will be defined in the following chapter.

[9] This assumption will not be tested, although it could provide grounds for interesting future research endeavors regarding FPCs.

includes elements at high levels of abstraction, such as laws or the dominant discourse regarding the problem, down to operational level variables regarding the regularity of FPC meetings. I will deal with the former first and the latter at end of this section.

On the broadest level, *time* is a factor that has been proven to be crucial for FPCs in numerous aspects. To begin, it is necessary in order for the various participants to become familiar with the food system and its complexities, to develop a common understanding of the problem and to develop trust in the early stages of the FPC process. Furthermore, time has been proven to be necessary to develop, implement, evaluate and learn from FPC undertakings (Harper et al 2009; Zwart 2012; Borron 2003). Secondly, the literature identified the *size of a city* has having a negative correlation with FPC success. Due to the numerous actors with their attendant goals, resources and the like, coordination and consensus building prove to be an onerous task in larger cities; however, as a factor of interest, the size of a city is rather a factor to be aware of, rather than something that is under control of FPC stakeholders (Dahlberg 1994). Additionally, existing international, national and state *legal frameworks* have a significant effect on the activities and ambitions throughout the FPC process. As the food system is tied to these various levels, changing aspects of it involve possible conflict with international law, such as EU CAP or GATT agreements, national law, e.g. the Farm Bill in the USA, or more local laws that determine the legality of activities normally vouched for by FPCs, such as urban agriculture (Harper et al. 2009; DFPC 2010; McRae 2012; Zwart 2012). However, only very few FPCs have taken a strong stand against the existing legal frameworks within which they are nested, e.g. Toronto challenging NAFTA and GATT (McRae 2012).

Shifting levels of abstraction, where the focus mainly lies in the literature regarding legal aspects concerns whether a mandate is given by the government – usually at the city level - that creates a *legal status for the FPC* from the outset of its activities. This formal "stamp of approval" has been shown to provide FPCs with certain more tangible resources, in addition to access to the "political machinery" of the area, and the legitimacy that is given by association with the government (Harper et al. 2009; Borron 2003). However, many authors point to the need to maintain a balance between dependence and independence regarding the government. This should be done such

that the necessary means are made available, but that the FPC may be critical of government actions should they run contrary to the former's goals (Dahlberg 1994; Schiff 2008; Harper et al. 2009; Vermeulen 2010; Mc Rae 2012; Zwart 2012).

Additionally, influential *politicians can participate* in the FPC, lending it credibility and access to legal power, especially as the FPCs begin to implement their projects and attract more attention. *Sector leaders*, e.g. public health, food industry, research institutes, etc. have also been shown to have significant influence on the efficacy of FPCs, and should therefore be included in the process as best as possible. While the previous factors concern access to some kind of power, politicians and government employees have also been highlighted in the literature as being particularly important for managing the diverse set of actors involved and to help them build trust, whereas sector leaders can be at times divisive figures (Dahlberg 1994; Harper et al. 2004; Borron 2003).

Relatedly, strong, positive *leadership*, embodied in one or a few people, has been identified as a factor promoting effective FPC performance for several reasons. Firstly, it is crucial to bridge the often differing backgrounds and interests of the diverse actors involved in the FPC, similar to the potential role of government actors described above: in fact, these two types of actors have often been one in the same person. This is needed to help translate the various ideas and aspirations of FPC members into common goals in the beginning phase, in addition to coordinating the various actions that flow out of this process from the implementation of programs and projects, to their evaluation and eventual redesign (Harper et al. 2009; Borron 2003). However, regardless of their affiliation, *liaisons that can bridge ties* between the numerous sectors represented in FPCs have been demonstrated to be of great importance to their functioning (Dahlberg 1994; Schiff 2008). Yet, an FPC must generally *not rely too heavily on one leader*, as their departure, e.g. due to the end of a term in office, has been shown to be extremely detrimental to the functioning and longevity of the entity (Dahlberg 1994).

More tangible resources key to FPC efficacy include *funding, materials, a place where meetings can be held consistently* and other such material goods (Harper et al. 2009; DFPC 2010; Borron 2003). FPCs often operate with limited funding, either derived from

grants that they solicit and donated in-kind materials, or from funds acquired from governmental entities, which are often limited to modest amounts. Therefore, *consistent funding*, namely a fixed budget from the government, has been shown as ideal both for meetings, as well as implementation of FPC projects. Also important is a *staff that can regularly commit time to FPC activities*. This is because most participants have a primary occupation, e.g. farmer, and contribute to the FPC in addition to earning their livelihood. Due to resource constraints, the literature has shown that a balance between volunteer staff, to keep costs low, and paid staff, to maintain consistency, is ideal for FPC functioning in the long run (Harper et al. 2009; McRae 2012; Zwart 2012; Borron 2003).

There are also numerous more process-oriented elements that are important for well-functioning FPCs. To begin, broad, yet strategic stakeholder inclusion is of the utmost importance. In order to understand and address a system as complex as the one dealing with food in urban environments, such an organization must draw on various types of knowledge resources and expertise, which can be garnered by including and coordinating this diverse array of actors (Schiff 2008; Harper et al. 2009; Borron 2003). These may range from farmers, to interested mothers, to consultants experienced in sustainability issues (Dahlberg 1994). Secondly, stakeholder inclusion can help to build consensus on problem definitions at the beginning phase, and solutions to them later on in the FPC process, thereby giving the FPC's actions greater legitimacy and better chance at longevity (Schiff 2008; Harper et al. 2009; Borron 2003). Moreover, by including actors and organizations already involved in food systems activities significant gains can be made by piggybacking on projects already underway; this can also help to avoid conflicting goals and activities further down the road, once the FPC's plans go into implementation (Schiff 2008; McRae 2012).

Continuing in the same vain, the FPC process should become *formalized* as best as possible in order to function well. According to the literature, this includes *an established budget, a consistent meeting place* with planned times, dedicated staff (whether paid or not), and a *defined operating process* and *decision-making system* (Dahlberg 1994; Harper et al. 2009; McRae 2012; Zwart 2012); clearly a consistent meeting place and time are early from the outset, whereas operating and implementation procedures become more relevant as the FPC develops. Lastly, the

output the FPC process should strike *a balance between policy-oriented and programmatic objectives* when developing solutions and implementing projects. The reasoning behind this is that policies take a long time to change, and despite their importance to FPC goals, "quick wins" that are easily demonstrable are important for proving the FPC's worthiness and developing a positive reputation for gaining additional future support (Harper et al. 2009; McRae 2012; Borron 2003).

3. Theoretical Background, Key Concepts and Conceptual Framework

3.1 Introduction

While the empirical literature review has provided insight into numerous factors affecting FPC performance, it is my aspiration that the comprehensiveness of the following theoretical background will provide insight into factors that were not accounted for by the former, in addition to providing a theoretical basis for the identification importance of numerous factors at the different stages of the FPC process. Moreover, as previously mentioned, there is a gap in the literature regarding the assessment of FPCs or urban food systems governance from a specific theoretical standpoint. Thus, this research has the possibility to make a contribution in this respect as well.

Thus, in the following sections I lay out the theoretical claims and concepts for co-management of complex social-ecological systems (SES), based largely on work by Gupta et al. (2010), Sandstrom & Rova (2010) and Bodin & Crona (2009) which have built upon an approach developed by Folke et al. (2005), amongst others. I will combine these with empirical findings in order to build the conceptual framework for this research, explaining key ideas along the way. This theory was chosen due to its similarity in success factors in comparison to those from the empirical literature review and the types of problems it is meant to address, in addition to the previously emphasized importance of adaptive capacity[10] for food systems governance given the

[10] The reader should be aware that it is not a goal to explicitly assess the adaptive capacity of the selected cases, as it is beyond the scope of this research to do this. However, some factors

likelihood of external shocks such as oil scarcity and climate change and their significance for food security (Tilman et al. 2002).

3.2 Adaptive Co-Management of Social-Ecological Systems General Background

In the following section the specific theoretical concepts will be placed into categories and explained in depth as regards their implications for FPCs and urban food systems governance more broadly. Theories that fall under the category of (adaptive) co-management describe actor configurations and institutional settings that together promote effective and adaptive management of highly complex systems with the potential for sudden and rapid change, in which man and nature are deeply intertwined, also known as social-ecological systems (SESs). These systems are characterized by a multitude of stakeholders, with differing types of knowledge, goals, and resources, whose relationships can be conceptualized as social networks, which are incorporated into the governance approach in a meaningful way, not unlike the FPC approach to urban food systems issues (Folke et al. 2005; Lebel et al. 2006; Armitage et al. 2008; Carlsson & Sandstrom 2008; Bodin & Crona 2009; Pahl-Wostl 2009; Gupta et al. 2010; Sandstrom & Rova 2010).

Using Folke et al.'s (2005) work as a basis, numerous studies have applied the concept "adaptive co-management" to approaches to environmental management problems characterized by complexity and with the potential for sudden change, from fisheries to forest management. "Adaptation" is embodied by several processes and characteristics of the actors, their networks and the institutions in which they are nested; these allow the governance regime adjust to changes in the multifaceted system, while working to achieve certain ends. "Co-management" refers to a type of governance that differs from the traditional top down approach; it assumes that environmental problems of the previously described nature are most effectively addressed when the relevant stakeholders are included at the right parts of the governance process, in order to – *inter alia* - draw upon their diverse resources in order to address the complex problem

accounted for by the co-management literature are synonymous with that adaptive capacity literature. Therefore, when insight can be drawn in this respect, I will attempt to do so.

they face together (Ibid.). From such a definition, it is not difficult to draw the parallel between this and the FPC approach to urban food systems issues.

However, there is no clear-cut formula for implementing and assessing adaptive co-management of SES, as each problem is unique and requires different levels of stakeholder involvement, different resources, etc. at the various points throughout the problem cycle (Glicken 2000; Sandstrom & Rova 2010). Nonetheless, there is an ostensible consensus in the academic community that both the social network aspects (e.g. who is involved with whom in what way) and institutional aspects (e.g. what are the rules in place) of (adaptive) co-management regimes have implications for their performance (Folke et al. 2005; Carlsson & Sandstrom 2008; Bodin & Crona 2009; Gupta et al. 2010; Sandstrom & Rova 2010).

While several studies have assessed co-management regimes' and their adaptive capacity (see Lebel et al. 2006; Armitage et al. 2008; Pahl-Wostl 2009; Sandstrom & Rova 2010), Gupta et al. (2010) have derived a specific, extensive framework for assessing this. They have done so by supplementing the co-management and adaptive capacity literature with that from other subject areas. Gupta et al.'s approach (2010) works from the assumption that (adaptive) co-management regimes are bodies of actors, with social relations, nested within institutions, which the existing literature had not adequately accounted for together; take for example an FPC, comprised of numerous actors, from varying backgrounds, acting as a semi-autonomous governance arrangement, yet nested within local, regional, national and international legal contexts. The resulting framework is called the "Adaptive Capacity Wheel", which is divided into six dimensions (variety, learning capacity, room for autonomous change, leadership, resources, and fair governance), each with criteria (22 in total; see Appendices 1 and 2) that have been shown to promote adaptive capacity (the ability to adapt to sudden and unexpected change) and the co-management of SESs (p. 362).

Gupta et al.'s (2010) Adaptive Capacity Wheel was developed in such a way that it could be modified for the situation at hand. This is to say, some dimensions or criteria might be more important given the nature of a certain problem and/or the governance arrangement of interest. For example, in a co-management regime in the early stages of

development, some aspects are less relevant to assess, as the governance arrangement is still attempting to crystallize. Thus, the focus should lie on aspects pertinent to this phase in the development process.

Therefore, it is up to the researcher using the framework to build a solid argument for the weight given to the various dimensions and criteria upon assessing the chosen research object and analyzing the data. While my own framework will not be weighted in this first iteration, I have made an effort to examine the empirical and theoretical literature to include those concepts that are most relevant for my own research topic; the section that follows includes these specific elements, some of which build on Gupta et al.'s (2010) approach and others that were missing.

In the original application of the Adaptive Capacity Wheel, Gupta et al. (2010) assessed rainfall and groundwater management regimes in the cities of Delft and Zaandam in the Netherlands. Although there might be some overlap between the importance of factors for this problem area and that of urban food systems, others are sure to be different (Ibid.: E. Bergsma, personal communication, 24 January, 2014). Furthermore, as it is not the goal of this research to explicitly examine FPCs' potential for adaptive capacity, but rather for effective performance as co-management bodies (FPCs in this case), taking their level of development into account, Gupta et al.'s (2010) framework has been taken as a starting point for developing the theoretical framework of this paper. This choice was made due to the high level of overlap between Gupta et al.'s (2010) framework and the co-management literature, and the comprehensive, comprehensible way in which it pieces the various factors together. Additional literature specific to institutional and network aspects of co-management will be brought in to render it more applicable to the organizations at hand. Briefly, adaptive capacity can be understood as one part of co-management, which allows the governance arrangement to "adapt" to changes in the system that it is managing, whereas Co-management more broadly is the process and act of collaboratively addressing a problem (previously explained more in depth).

3.3 Theoretical Concepts for Analysis by Type

The factors found in the sections below been shown in empirical studies to be important for effective co-management in numerous cases (see previous chapter).

Gupta et al.'s (2010) framework will inform the basis of this work, with supplemental literature being brought in to add robustness to and clarify concepts not addressed by said framework; as the factors are described, they will be placed into categories due to their distinct natures (see Conceptual Framework, Figure 2). These categories were developed by comparing the types of factors highlighted by the empirical literature review with the Adaptive Capacity Wheel and further co-management literature.

Moreover, some factors affecting the co-management process are important only at certain phases, whereas others are important throughout the entire process. For some of these it is apparent when they are relevant, e.g. project evaluation provisions are only a germane consideration after a project has been put into place, whereas for others it may be unclear, e.g. when is broad stakeholder inclusion desirable? Therefore, when appropriate, I will draw attention to the phase-based relevance of the identified factors.

3.3.1 Network Factors Affecting Co-Management

The following concepts can be understood as network factors, namely the characteristics of the individual and group actors (compositional variables) and the relationships between them (structural variables)(Wassermann & Faust 1994). The former refer to information about the actors (conceptualized as nodes in a network) themselves, whether it be their age, job title, or any numerous such characteristics of interest; the latter refers to the types of relationships between the actors, e.g. who communicates with whom, how often[11]. Much of the literature on (adaptive) co-management of SES has shown that network factors have significant implications for a governance arrangement's ability to manage the intended system – this conclusion hinges on the assumption that co-management takes place within settings and relationships conceptualized as social networks (see Bodin & Crona 2009, Sandstrom & Rova 2010)

In regards to the compositional variables, the first network factor that we will examine regarding FPC performance as a co-management arrangement is what Gupta et al.

[11] The section on network analysis (NA) operationalization in the following chapter (Methodology) will explain these metrics in detail and Table 2 will connect the network metrics with the appropriate criteria from the overall theoretical framework for this research.

(2010) refer to as *actor and responsibility redundancy*[12]. In order for a (governance) network to be resilient to shocks, e.g. a leading member leaving, there should be multiple actors capable and/or charged with the same tasks, in the case that one leaves its position and/or abdicates its responsibilities. Without a certain level of redundancy in high-level actors and/or responsibilities, co-management arrangements can find themselves with a shaky foundation.

Sandstrom & Rova (2010) and Bodin & Crona (2009) have shown that in order to address complex problems, a co-management body (a type of governance arrangement) should have a variety of actors from different sectors, to ensure that adequate *diversity in knowledge*, *skills, expertise* and *problem frames* are at its disposal (Sandstrom & Rova 2010). Due to the varied and broad nature of co-management issues, it is most often the case that diverse resources, e.g. scientific knowledge, familiarity with the problem area, legal mandates, rapport with the public, are necessary to carry them out effectively (Ibid.; Folke et al. 2005); to be lacking in any of these sense can hamper co-management efforts. The presence of such a comprehensive group of actors can be conceptualized as *broad stakeholder inclusion.* However, as the saying goes, too many cooks can spoil the soup. Therefore, the co-management arrangement should take time to form and institutionalize to some degree before including the full range of relevant stakeholders (Gupta et al. 2010).

Moving on, at times co-management arrangements may find it necessary to call in *outside experts* for a specific phase of the co-management process due to a highly specialized expertise or knowledge that is need and cannot be found amongst the membership, especially during the project development phase, e.g. architectural consultants for an urban agriculture project. Furthermore, amongst the actors present, it is particularly important that *government actors are involved* to grant both legitimacy and links to the "political machinery" (and resources associated with) of the local government. Similarly, it can be critical that sector leaders are also part of the co-management process, in order to represent the interests of a particular group, e.g.

[12] The italics will denote the factors that can be found in the conceptual model in the same or similar phrasing.

farmers, and grant legitimacy through representation (Ibid.; Biermann 2007; Harper et al. 2009).

Turning to the nature of the relationships amongst the actors within the co-management arrangements, our focus moves to the structural variables of the network (Wasserman & Faust 1994). To begin, Sandstrom & Rova (2010) have shown that in order to build trust and to *exchange resources and knowledge,* frequent and meaningful interactions between diverse actors and groups are crucial to a co-management arrangement's performance; the frequency and strength of network these interactions (ties) can help to determine to how *well-connected* or closed the network is – highly important for both building trust, as well as knowledge and resource exchange (Ibid.; Pelling & High 2005; Bodin & Crona 2009). There is a high congruency between this process and the different types of learning found in the literature, which are a crucial part of adaptive co-management (Argyris 1976, p. 368; Folke et al. 2005)

NA can also help to classify two of the three different types of leadership that Gupta et al. (2010) recognize in their work on the Adaptive Capacity Wheel through certain types of relationships found in structural variables. Leaders have been shown to be important for co-management in order to spur and coordinate action both short-term and long-term, and to bridge the potentially diverging views and interests of the participating actors and groups, especially at the beginning of the processes (Burt 2001; Bodin & Crona 2009). Typically, leaders can be identified by finding the highly *central actors* in the network, meaning they have significantly more connections to other actors than their peers (Wasserman & Faust 1994; Bodin & Crona 2009).

As previously mentioned, links with outside groups have been shown to be important for co-management configurations to access additional resources. Often, this type of network relation (tie) takes place in the form of certain individuals, usually a type of leader, exploiting what is known as a structural hole, i.e. reaching outside the network for network goal-oriented purposes, to increase network capacity and resources (Wasserman & Faust 1994; Burt 2001; Bodin & Crona 2009); these types of leaders have been described as *entrepreneurial*. In addition to their degree centrality, *collaborative* leaders can be identified by a high level of betweenness, e.g. falling

frequently on the path between two actors or groups of actors (Wasserman & Faust 1994); the implications of this type of leadership for co-management are significant. Co-management by nature includes a broad range of stakeholders that typically hold different views towards the problem at hand, and the solutions to it. This can lead to impasses and conflict, hindering co-management efforts. Amongst others, Bodin & Crona (2009) have demonstrated that certain individuals that communicate with and/or are members of multiple groups have the potential to mediate the potential conflicts.

3.3.2 Institutional and Process Factors Affecting Co-Management

This category of factors affecting (adaptive) co-management arrangements refers to the institutional setting in which they are found and the manner in which they operate. I made the choice to group these two somewhat different elements together due to the sometimes-blurry line between a process, e.g. the actual monitoring of a project, and a provision, e.g. the presence of a process and resources for monitoring. Furthermore, some institutional characteristics are a product of earlier process characteristics, e.g. an institutional openness towards discussing uncertainty can result from the process of discussing uncertainties. Moreover, I am convinced that the grouping of these factors in this manner will not cause conceptual confusion.

To begin simply, to operate well any co-management arrangement should have a *consistent place, time and interval for members to meet*. This lowers their transaction costs of participation, especially as most participants in co-management contribute in addition to their primary occupation, e.g. a fisher working with co-management project for responsibly managing local fisheries (Pretty 2003; Schiff 2008; Harper et al. 2009; Gupta et al. 2010; Borron 2013). Moreover, *enforced rules or norms* have been shown to be important to help build trust[13], which should not only improve knowledge and resource exchange, but also increase a co-management arrangement's legitimacy and longevity (Pelling & High 2005, p. 311; Bodin & Crona 2009 Sandstrom & Rova 2010).

[13] Although this study will not examine trust, it has been shown to be a key factor in building this pivotal aspect of co-management.

Also shown to be crucial to well-functioning co-management arrangements is an *institutional openness both to public participation* (stakeholder inclusion) and to *discussing uncertainty*. The former, as referred to in the previous section is important to develop legitimacy, include the relevant parties and take advantage of their skills, ideas, resources, etc. to tackle the complex problem at hand (Folke et al. 2005; Biermann 2007). The latter, openness to discussing uncertainty, e.g. a forum, is key for actors within the co-management arrangement to come to understand one another's' viewpoints and in order to potentially develop a common one; on a broader level, this type of openness can help to make sure that the group's efforts are directed at the correct problems due to the ever changing nature of environmental issues and the need for constantly re-evaluating approaches to them (Folke et al. 2005; Gupta et al. 2010). However, a caveat to stakeholder inclusion in the literature: it is not always necessary to include all potential participants in every phase of the co-management process. During the formation of the FPC, fewer participants can help the organization to get up and running more quickly due to a more-streamlined process, whereas more actors should come into the fold once problems and solutions are discussed to build legitimacy, trust and develop a broader perspective (Pomeroy et al. 2001; Plummer & Fitzgibbon 2004). However, once co-management arrangements go into implementation of projects and programs, *stakeholder inclusion has been shown to be more effective when it becomes more focused,* namely *including those parties with the specific expertise* relevant to the project or program[14] (Sandstrom & Rova 2010).

Two more institutional elements can help to build legitimacy and develop a co-management arrangement as a form of "good governance", crucial for its longevity. According to Biermann (2007), if an organization or regime *takes sustainable development principles into account* in its work, it can help to raise its legitimacy by accounting for the interests of future generations through considering the "three pillars" of sustainability. Secondly, some type of *accountability mechanism* for the broader public to hold their representatives within the co-management arrangement accountable and give them feedback, e.g. voting for politicians or electing leaders of

[14] Here the interplay between the different types of factors becomes apparent. The network factor of *diversity in skills, knowledge and expertise* is reliant on the institutional factors regarding *broad stakeholder*. This may give a first indication of weighting for the framework's criteria.

unions, helps to create additional legitimacy through public representation (Ibid.). As the types of problems addressed by co-management arrangements are typically complex and wide sweeping, thus affecting broad proportions of the population to whom the system at hand is relevant, the significance of legitimacy cannot be overemphasized.

If the early phases of the co-management process are successful, the organization's participants should develop both *a clear, common understanding of the problem(s)* at hand, as well as *goals* that flow naturally out of this process, as a means to solving the problem(s) (Folke et al. 2005). To have these two elements in common amongst members within the co-management arrangement is crucial, as it provides a clear direction for future efforts and can help to minimize potential conflict, as views on the problem will have been discussed by this point (Ibid.). In order to achieve these goals there should be a *diverse range of solutions*, with some ideally implemented simultaneously to address the complex issues facing the organization, and to provide provisional actions should one project or program fail for any reason (Ibid.; Gunderson & Holling 2002; Gupta et al. 2010).

Rounding off institutional and process factors that affect co-management are elements that comprise a phenomenon most often referred to in the (adaptive) co-management and natural resource management literature as "learning". It is a process whereby participants not only act, but they *monitor* the progress of their actions, *evaluate* its outcomes and then *react* to this information gained to reconsider the next step to be taken (Argyris 1976; Folke et al. 2005). This reaction can be an improvement of their current practice, referred to as single-loop learning, or it can constitute a more complete reconsideration of the underlying assumptions behind the activities and direction of the organizations efforts in light of the information at hand (Gupta et al. 2010). Learning is necessary for (adaptive) co-management processes given the uncertain, complex, quickly-changing nature of the processes they typically address; it can never be assumed that a course of action will always be relevant over the long term (Pahl-Wostl 2009). Therefore, in order to be effective in their efforts at learning, a co-management arrangement should have effective, consistent monitoring, evaluation and reaction provisions in place. These can be different depending on the problem at hand;

A fishery can monitor progress through catch levels, whereas more complex indicators might be necessary for a FPC assessing its progress towards its goals.

3.3.3 Assets Affecting Co-Management

As the title suggests, this brief section deals specifically with assets that the co-management arrangement (FPC) may have that could help it to more effectively carry out co-management of the intended system. I have made the distinction between assets an organization possesses and those of the individual members for one primary reason; assets that are specific to the governance arrangement will or should be used towards its goals, whereas individual and group assets (conceptualized as compositional variables) can be withheld by members due to the non-binding, non-obligatory nature of many co-management arrangements.

With this in mind, both the empirical literature and the theoretical literature have shown the *legal resources*, namely a mandate or some other similar such power, should be possessed by the co-management arrangement in order allow it to carry out its various activities. This is especially important as co-management issues often cross numerous jurisdictions, e.g. food systems issues concern with agricultural, economic, health and environmental departments and may require actions or changes that are relevant to several or all of these. Moreover, a legal mandate works to provide co-management arrangements with legitimacy, as governmental undertakings are usually assumed to be on behalf of the people (Biermann 2007; Gupta et al. 2010).

Secondly, *financial resources* have been shown to be crucial to co-management undertakings. This concerns the ability to pay the staff necessary to run the organization consistently, as most participants, e.g. farmers, fishers, etc., can only contribute a limited amount of time and resources due to the fact that regime undertakings are in addition to what they do to earn their living. Without consistent staffing to administrate the co-management process, maintain communication between participants and the like, it is less likely that it will be successful (Nelson et al. 2010). Usually, financial resources come along with a mandate from the government that provides a provisional budget for co-management operations. However, new

governance formations, FPCs amongst them, often challenge the government-led paradigm, which can have implications for legal authority and funding.

3.3.4 Exogenous Factors Affecting Co-Management

These factors comprise the broader setting in which a co-management arrangement is nested. They are assumed by and large to not be malleable, and if they are, to a very small degree. Their effect on the co-management arrangement as a whole can be assumed to be of an intervening nature, yet to determine the degree to which they affect it can prove exceedingly difficult. Thus, for co-management practitioners, as well as most theorists, it is best to be aware of their potential affects on the organization and its process.

The first of the exogenous factors that can potentially affect co-management is the *perception of a crisis*, real or imagined. It has been shown to often be the impetus for a group of actors to come together to address a common problem, e.g. a waning fish population (Olsson et al. 2004; Plummer & Fitzgibbon 2004; Plummer 2009). If actors perceive that the system upon which they are dependent for the livelihood is at stake, they are more likely to challenge their regularized routines in order to promote their well being in the long term.

The second exogenous factor refers once again to *legal and jurisdictional considerations* that affect co-management, albeit from a higher level. Due to the cross-border, cross-jurisdiction relationship of governance, in which, for example, a fisheries co-management arrangement might find itself subject to multiple countries authority or laws (due to shared coastline), as well as government influence from higher levels, these aspects must be considered as potentially having an effect (Pomeroy et al. 2001; Olsson et al. 2004). To make the concept concrete, an FPC may have little power to change its local food policy, despite having a municipal mandate, if national law contradicts the action.

Lastly, the literature considers *local culture and attitudes* as having an effect on the co-management process. Peoples' traditional attitudes towards the problem at hand, e.g. whether they believe in human-induced climate change or not, can have a significant

effect on their perception of the problem as real and that it needs to be addressed. Therefore, it has become an object of consideration in the (adaptive) co-management literature, as it can have implications especially in the early phases of the process (Plummer 2009).

3.4 Conceptual Framework

Below is the conceptual framework for this research (Figure 2). The divisions amongst the various factors are the same as the same categorization scheme used above. Moreover, two continua have been placed at the top of the conceptual framework in order to add a temporal/development dimension; these phases were derived from a review of the theoretical literature on (adaptive) co-management and compared with the phases that could be distilled from the empirical literature on FPCs. As also described both of these sections (empirical and theoretical literature reviews), certain factors were mentioned as being more or less relevant during certain phases of the process at hand, e.g. project-based stakeholder inclusion once the co-management arrangement goes into the implementation phase. Therefore, the conceptual framework places the factors of interest at points along these two continua – one highlighting the various FPC phases and the other showing the level of development, from an organization/regime with low institutionalization up to a fully concretized one. Here, I have made the assumption that in order for an FPC to progress on to further stages, it must reach a higher level of development; this is a seemingly logical assumption, yet remains to be tested. Therefore, further research examining the connection between levels of institutionalization of co-management regimes and the phases in which they are found could shed light in this regard.

Moreover, regarding the phases, certain elements are assumed to be relevant for the entire (or rest of the) FPC process. Thus, these are depicted in the solid boxes; factors that are assumed to be only (or most) relevant to one phase are shown in perforated boxes. It is my hope that by drawing attention to elements that are important at the various stages of the FPC process that stakeholders will be aware when designing and running FPCs, taking into account elements that are most relevant for that particular stage. Moreover, no theoretical framework found in the literature has to date attempted to organize factors for effective (adaptive) co-management temporally or in phases of

development. Finally, the blue-colored boxes are those that will be investigated for this research, given the phases in which the FPCs at hand are found and the data assumed to be available; more information in this regard will follow in the methodology section.

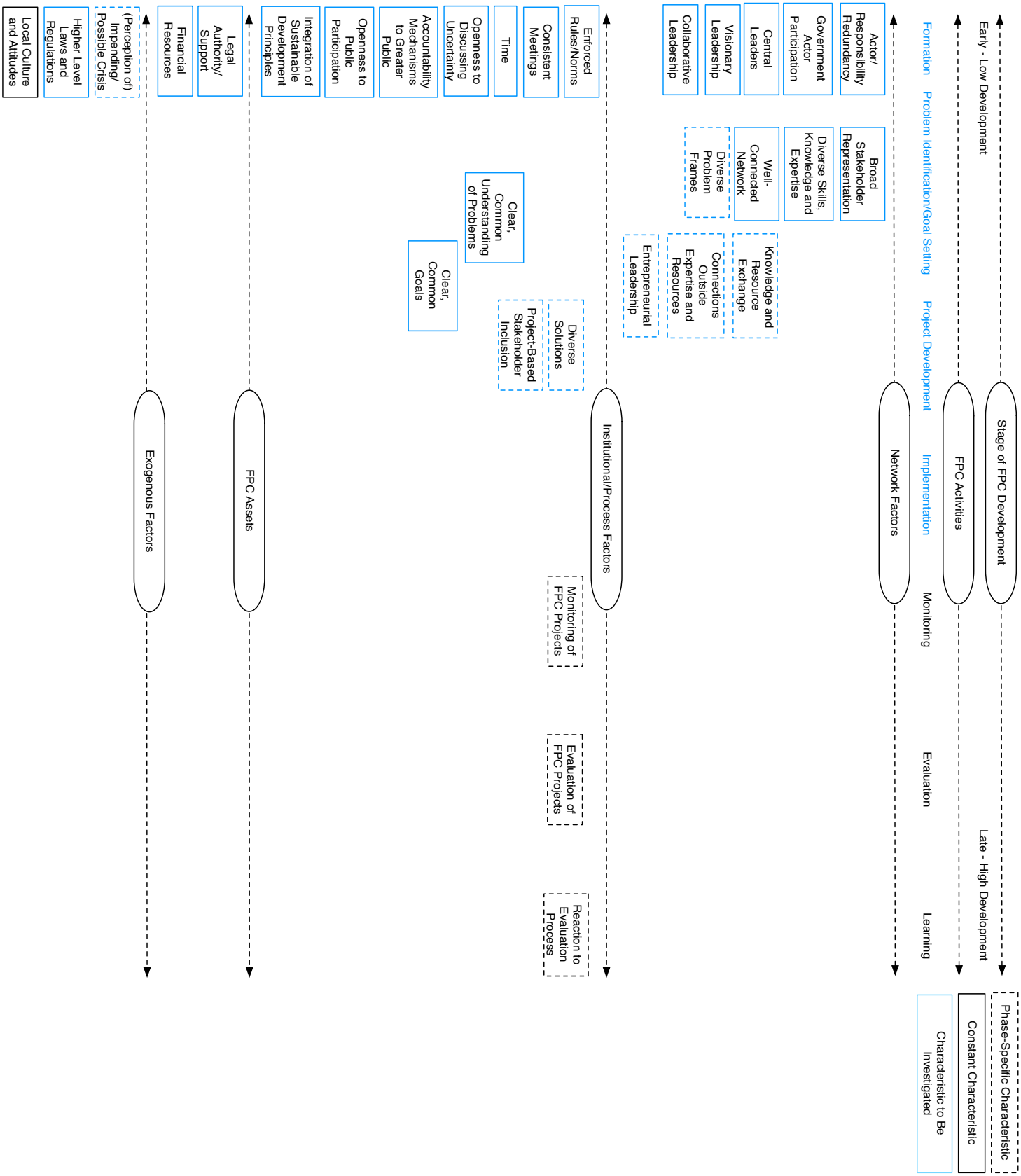

Figure 2: Conceptual framework

4. Methodology

4.1 Background

The following section outlines the methodology for this research. First, I give the case selection and the justification for the choices made given the research questions, the gaps in the literature and the theoretical-analytical approach chosen. Thereafter, I describe the operationalization of the criteria derived from the development of the theoretical framework by translating the more abstract concepts into ones that are more concrete in nature and can be measured by the chosen data collection methods. Lastly, the methods for analyzing the data collected will be explained.

4.2 Case Selection

According to Flyvbjerg (2006) in his work on qualitative inquiry, a comparative case study can be used in a manner that allows for the application of a theory or set of assumptions in a new problem setting, in addition to providing practical insight for the interested parties. In order to achieve the most generalizability from the research results, the cases selected should vary on differing independent variables; ideally, there should be as much variation as possible on these factors in order to highlight mechanisms of interest. This allows the researcher to draw attention those that have an effect on the dependent variable, if any is in fact present (Ibid. 2006).

The first case is an Amsterdam-based initiative that was generated by the company Metabolic, with whom I carried out my internship, along with its partner BiteMe. The former is a sustainable development agency that undertakes consulting and technology design, while the latter is a self-described "conceptual food laboratory", bringing the consumer into contact with their food, its origins and impacts in engaging ways (www.biteme.co.nl). Together, these two companies created the Food Mash, a bi-monthly meeting meant to connect the various actors involved in making Amsterdam's food system more sustainable through specialized network events focused on different parts of the food system. During the designing of the platform, it was clear that civil society would play the primary role in this organization, with government actors playing a more peripheral role. Since this research began, the founders of the Food

Mash have decided that it will not go on for several reasons, rendering it a "failed case". That it was in the very early stages of development (founded in November 2013), as well as being an initiative independent of government impetus, in addition to being a failed case, makes it an interesting case study considering that all of the FPCs in the literature have at least to some degree been government affiliated, in addition to being studied typically later on in their development. Therefore, I hope these unique factors will provide distinctive insights regarding FPC performance. Lastly, the Food Mash was not explicitly an FPC, but does possess several of the same goals and characteristics as these types of organizations. Consequently, a choice was made to consider it an FPC for the purposes of this research in order to yield insights into its functioning and improvement by applying the principles I derived through the development of the conceptual framework.

The second case for this research is the Rotterdam Food Council (RFC). True to FPC form, this organization's formation was informed by Wayne Roberts, the founder and head of TFPC for a majority of its existence. The RFC was founded in 2012, as a joint initiative between government officials and civil society groups that were interested in creating a more healthy, vibrant food system for Rotterdam (A. van Huffelen, personal communication, 25 February, 2014). Since then it has taken on numerous activities, from developing regional farmers markets to supporting urban agriculture (Ibid.). However, according to Mrs. Van Huffelen, true to the Rotterdam style, it works in a largely ad-hoc fashion, with the government playing a facilitative role (Ibid.). As it has now existed for going on two years, it has gone into full implementation, with some projects already being evaluated. Additionally, as it is a partially government-led initiative, it provides a contrast to the bottom-up case of the Food Mash.

Both of these entities have similar goals, namely to bring the actors involved in their respective food system together in order to move it towards sustainability. But, from these brief descriptions it is apparent that they are different in nature, in several aspects. This should allow the research to yield deeper insights than a traditional case study, by activating "more actors and more basic mechanisms" (Flyvbjerg 2006, p.229).

4.3 Operationalization of Indicators

4.3.1 General operationalization

In order to operationalize the criteria for the conceptual framework, I performed a review of the literature on food policy councils (FPCs), (urban) food systems sustainability and (adaptive) co-management. Within this literature, I sought out the operationalization of specific concepts such as "single-loop learning" and tried to interpret them in order to make them applicable by keeping in mind what such a concept means in the context of urban food systems governance, e.g. for FPCs. This is a somewhat subjective process, as I had to rely on my own judgment, based on the empirical and theoretical literature, to develop adequate operationalization for each criterion. Nonetheless, the table below (Table 1) contains the results of this process. The reader should be aware of the possible interplay between certain factors, as positive performance in one can affect another negatively, e.g. a highly homogeneous network can more easily promote trust, but has access to a more narrow range of knowledge and resources (Bodin & Crona 2009). Attention has been drawn to this where possible in the table, however much of this interplay will likely be first realized upon data analysis. Moreover, sensitivity to the phases in which certain factors are relevant will be necessary operationalizing certain factors from the framework, e.g. it makes no sense to give an FPC a poor rating for "project specific stakeholder inclusion" for a phase in which the framework does not show it to be a relevant element.

Furthermore, there are other aspects of the process of operationalization that the reader should be aware of. Operationalizing some factors is more straight forward, such as resources, which can be done by acquiring the FPC's budget, how many dedicated staff there are, and so on. In the same vain, redundancy can be operationalized for example by accounting for different actor types and measures, and how many of each there are through both interviews and network analysis (NA) metrics (see following section) (Wasserman & Faust 1994). Others, such as leadership quality and type, must be teased out of respondents through more open interview questions, as these are based largely on perception. NA techniques, specifically APES (to be defined in the coming section) can be a valuable addition here through identifying leaders through metrics such as degree centrality, or liaisons through their degree of betweenness, or a

network's propensity for knowledge and resource exchange (Ibid.; Bodin & Crona 2009). Therefore, in some cases multiple measures will be used to operationalize one factor – this should help to provide more robust claims based on the data (see Table 1 for a more complete explanation of this and the operationalization of the factors). Lastly, not all factors could to be operationalized for each case due to the different phases that they are found in, as well as data limitations – namely the fact that the Food Mash and the RFC have different manners of and degrees to which they keep records has determined in part what I was in fact able to analyze them. These should not be considered to be less important, but rather more difficult to collect adequate data for during the course of a Master's thesis. With this in mind, they could in fact provide fertile ground for future research.

Table 1: FPC Specific Definition and Operationalization of Criteria from Conceptual Framework

Category	Factor	Definition	Operationalization	Measurement/Scale
1) Network Factors				
	A) Actor Responsibility/Redundancy	Overlapping leadership, responsibilities and staff reducing overreliance on one person	Identification of FPC positions, responsibilities and to what degree these are shared	Numerical: how many are present and how many actors are assigned to key responsibilities
	B) Government Actor Participation	Government representatives active in FPC	Identification of (#) government representatives and from which departments	Numerical: how many are present and from how many departments/levels
	C) Central Leaders	Person in a leadership role being highly central to the FPC network	Identification of leader(s); network degree centrality (APES/NA)	Network centrality measure
	D) Visionary Leadership	Leaders with long-term vision and reformist mentality	Identification of leader; description of this type of leadership by FPC members	Likert scale
	E) Collaborative Leadership	Leaders who encourage collaboration between different actors within the FPC	Identification of leader; description of this type of leadership by FPC members; betweenness centrality (APES/NA)	1) Likert scale; 2) Network betweenness measure
	F) Broad Stakeholder Representation	Involvement of a wide-rage of different, relevant	Identification of different groups present in FPC,	1) Numerical: How many different groups are present

		actors, levels and sectors in the FPC process	comparison with identified relevant stakeholder groups	compared with identified potential stakeholders
	G) Diverse Skills, Knowledge and Expertise	Linked to broad stakeholder representation, the capacities possessed by the included, (ideally) diverse stakeholder group	Identification of different groups present in FPC, comparison with identified relevant stakeholder groups; Network heterogeneity (APES/NA)	1) Numerical: How many different groups are present compared with identified potential stakeholders; 2) Network heterogeneity measure
	H) Diverse Problem Frames	Multiple frames of reference, opinions and problem definitions	The diversity of problem frames expressed by FPC participants; proxy, same metric as broad stakeholder representation[15]	Numerical: See above
	I) Knowledge and Resource Exchange	FPC-oriented exchange between different actor groups	Network heterogeneity throughout the FPC process (APES/NA)	Network heterogeneity measure at each phase
	J) Connections with Outside Expertise and Resources	Topical experts included in specific parts of the FPC process, based on their knowledge	Identification of topical experts participation in specific phases of the FPC process	Numerical: identification of topical experts at key phases in the FPC process
	K) Entrepreneurial Leadership	Leaders that stimulate novel actions and undertaking, lead by example	Identification of topical experts brought in specifically by leaders in specific phases of the FPC process	Likert scale
	L) Well-connected network	A network that is well-connected as a whole, with a high level of interaction amongst actors	Level of network closure (APES/NA) = network centrality + network density	Numerical: combined network measures for overall network centrality and network density
2) Institutional/Process Factors				
	A) Enforced Rules/Norms	Rules or norms that FPC that are (perceived as) consistently	Identification of guidelines/rules/norms for FPC in document;	Likert scale

[15] Proxy metrics (stakeholder groups represented and cross-boundary resource exchange) is used here to measure the diversity of problem frames (Factor 1, H) as well as knowledge and resource exchange (Factor 1, I) as it is beyond the scope of this research to do a framing analysis and formal network analysis of all FPC interactions that could lead to knowledge and resource exchange. Instead, the APES network analysis should provide a simple overview of the diversity of actors present (assuming different actors groups have different problem frames and skills) and how they interact with one another.

		followed/enforced	perception of participants to which degree these are enforced	
	B) Consistent Meetings	Meetings that are held at regular intervals	Identification of regular meeting intervals	Likert scale
	C) Time	Adequate time to carry out FPC oriented activities and build trust	Perception by FPC participants, especially leadership, that they have enough time to carry out their work in between phases	Likert scale
	D) Openness to Discussing Uncertainty	Institutional (FPC) openness towards uncertainties informing plans and activities	The degree to which FPC participants consider uncertainties like climate change, resource scarcity, etc. in FPC-oriented work	Likert scale
	E) Accountability Mechanisms to the Greater Public	Provisions for constituents to hold of societal representatives to the FPC accountable	Identification of accountability mechanisms (e.g. voting, open office hours) for government representatives and sector leaders, or FPC in general	Likert scale
	F) Openness to Public Participation	FPC position towards stakeholder inclusion at the various parts of the FPC process	The degree to which the FPC intends/attempts to include stakeholders broadly at the various stages of the FPC process	Likert scale
	G) Integration of Sustainable Development Principles	Sustainable development principles (economic, environmental, social) are a part of FPC goals	The degree to which sustainable development goals are (implicitly or explicitly) included in FPC activities/processes	Likert scale
	H) Clear, Common Understanding of Problems	FPC members agree on problem definitions after initial phases	The degree to which FPC participants agree with problem definitions stated by FPC documents and/or leadership	Likert Scale
	I) Clear, Common	Goals for the FPC	Identification of	Likert Scale

	Goals	are clearly articulated (e.g. in a document), on which members agree	goals in FPC documents, and the degree to which FPC members agree with these goals	
	J) Diverse Solutions	The variety present in solutions (e.g. programs and projects) relative to FPC goals	The number of programs/projects oriented towards the same FPC goal	1) Numerical: proportion of programs/projects to goals; 2) Likert Scale
	K) Project-based Stakeholder Inclusion	Stakeholders are included in programs/projects (during implementation) based on their capacities	Identification of stakeholders with phase-relevant expertise (APES/NA)	Numerical: proportion of participants to those with topic-specific expertise
	L) Monitoring of FPC Projects/Programs	Provisions for monitoring FPC projects/programs during their lifecycle for eventual evaluation	Identification of monitoring processes/provisions for FPC projects and programs	Likert Scale
	M) Evaluation of FPC Projects/Programs	Provisions for the evaluation of FPC projects/programs	Identification of evaluation processes/provisions for monitored FPC projects and programs	Likert Scale
	N) Reaction to Evaluation Processes	Provisions for improvement/adjustment of FPC projects/programs following their evaluation	Identification of processes/provisions for resdesign/improvement of FPC projects and programs	Likert Scale
3) Individual and Group Assets				
	A) Legal Authority/Support	Laws, charters, programs from the government that either directly establish the FPC or sanction ist undertakings	Identification of laws, charters and programs that either directly establish the FPC or sanction its undertakings	Likert Scale
	B) Financial Resources	Financial resources possessed by the FPC as a group to carry out work	Quantification of funds for FPC oriented-work; the degree to which FPC members describe funds as adequate	Likert Scale
4) Exogenous Factors				
	A) (Perception of) Impending/Possible Crises	FPC members perceive a crisis and the necessity to do something	The degree to which FPC members perceive a crisis as rendering	Likert Scale

		about it, namely via FPC activities	the FPC and its undertakings as necessary	
	B) Higher Level Laws and Regulations	Laws, regulations and agreements on higher levels that can help/hinder FPC-oriented activities	Identification of higher level laws, regulartons and agreements that are relevant to FPC-oriented activities	Likert Scale
	C) Local Culture and	The attitudes of the people from the region to which the FPC is relevant towards the issues the FPC addresses	Identification of discourses from the region regarding FPC-oriented issues	Likert Scale

4.3.2 Network Analysis (NA) Operationalization

Network analysis (NA) is a field that studies the relationship between people and organizations (nodes) in a given social context, and the implications of these for an outcome of interest (Wasserman & Faust 1994). NA techniques can be used to account for both the range of actors involved the organization of interest (FPC), their characteristics, as well as the connections between them (relationships) and the consequences thereof for the network's functioning. To collect data on the former is simple enough. Documents and interviews can help to identify who takes part in a network, what their occupation and expertise is, and so on. In NA terms, the data that refer to the former are the *compositional* variables (Ibid.). These concern characteristics of each actor or organization as a node in the network.

However, obtaining the other type of information for NA concerning *structural* variables, which regard the relationships between the different nodes (individuals or the organizations that they represent), is more difficult (Wasserman & Faust 1994). It is rarely the case that a researcher is able to accurately and completely account for the full range and nature of the relationships between all actors required for formal network analysis; this can be troublesome, as the nature of these ties has been shown in to have implications for adaptive capacity regarding the governance of SES (Folke et al. 2005; Bodin & Crona 2009; Sandstrom & Rova 2010). Therefore, in addition to using NA for obtaining information about specific actors or organizations, I have also employed the APES method in order to analyze the nature of structural variables due to the lack of

access to all FPC members and the limited feasibility of accounting for all interactions between them.

The Actor-Process-Event-Scheme (APES) is a program/approach that allows one to carry out a network analysis not based on the direct interactions of actors within a network, but rather on their coincidence and role at relevant events of the policy process, e.g. a roundtable or consultation. Based on the role that actors have (leading, active, passive, or not present) at a certain event, formal network analysis hypotheses can be tested, e.g. the effect of network heterogeneity on resource exchange (Bodin & Crona 2009). The added value of this approach is that it allows one to carry out formal NA with the type of data that is readily available, e.g. expert interviews, literature reviews and document analysis. Moreover, given the novel, phase-based conceptual framework used for this research, the event-based approach of APES is a fitting choice for identifying different factors present at the distinct phases of the FPC process.

With APES as a tool for the research, several network metrics[16] can be used to identify whether the FPC network possesses the characteristics and relationships to be effective; the table on operationalization (Table 1) shows which network metrics relate to which factors from the conceptual framework. Some of these are explained in more detail below.

Regarding the first network metric referred to in the operationalization table (Table 2), actor *centrality*, the following calculation below can be used: $C_A(n_i)$; or the simply the (*d*) degree (number of connections) of the node (*n*): $d(n_i i)$ (Wasserman & Faust 1994).

The centrality metric[17] measures to what degree an actor is the "center" of the network – in other words, how many direct connections this actor has, and how many

[16] Unfortunately, it is beyond the scope of this research to explain network analysis in full; therefore, the reader should refer to Wasserman & Faust (1994) for a more complete explanation of the concepts and notation used in the following paragraphs.

[17] Although *betweenness* centrality would be a valuable metric for determining which leaders fall between actors within the network and therefore encourage collaboration, the data available does not allow for its calculation. However, if possible, similar future efforts should attempt to carry this out, as collaboration between groups and actors that encourage this process have been shown to be crucial for both co-management and FPC performances

connections within the network are indirectly channeled through him/her (Wasserman & Faust 1994). Leaders, whether named explicitly or not can emerge through the identification of the most central actors in a network; this actors can also act as hubs for resource and information exchange (Ibid.). Using APES, the researcher is able to analyze the *eigenvector centrality*, which is measured by assigning relative scores (0-3) to "all nodes in the network based on the concept that connections to high-scoring nodes contribute more to the score of the node in question than equal connections to low-scoring nodes" (Wikipedia 2014).

Additionally, by calculating *group level centrality* (see below), the variability between the centralities of all actors in the group can be calculated. This is important for co-management and FPCs, as if only one actor is highly central and happens to leave the regime it could have serious implications for its continuation.

$$C = \frac{\sum_{i=1}^{g}\left[C(n^*) - C(n_i)\right]}{\max \sum_{i=1}^{g}\left[C(n^*) - C(n_i)\right]}$$

C(n) = the centrality of the most well-connected individual,*
C(ni) = the centrality of the ith individual, and maximum is taken over all possible connections with g actors.

Nevertheless, exchange between these different actor groups and how many of them are represented in the network can be calculated through the *network heterogeneity metric* (Wasserman & Faust 1994). The first step in this calculation is simple and requires the identification the different participants in the network (FPC) and place them into categories (for an example of this, see Diercks 2012). The second step is to use a network metric to account for the connections between the different actors; only then can the one make the assumption that there is the possibility for *cross-boundary exchange* of knowledge, resources and the like; this means dividing the total number of links by the number of cross-boundary links:

Cbl

——

L

Cbl = cross-boundary links

l = number of links

The higher the outcome of this calculation (a percentage), the more a network can be said to be heterogeneous.

In addition interviewing FPC participants about the types of leadership they believe are present, NA can be used to determine if certain actors act as leaders, and which type of leadership they exemplify (see Table 2 for types of leadership), either through displaying a high number of connections, i.e. degree centrality or reaching out to other groups to acquire additional resources for the FPC, i.e. linking ties. Additionally, actors within the FPC can be liaisons by bridging groups that might otherwise not come into contact by showing a high degree of betweenness, and/or bridging ties (Bodin & Crona 2009). However, due to a lack of data regarding all of the interactions amongst FPC members, it will not be possible to calculate this.

The overall structure of the network can be assessed with NA techniques, as it can have implications on FPC functioning regarding (adaptive) co-management. Firstly, it has been shown that a high level of network closure (how insulated the network is), combined with a higher degree of heterogeneity (the presence of several types of organizations and actors), along with high network density (the number of actual links out of all possible links) can promote trust and eased transfer of a diverse range of resources and knowledge, in addition to increasing (social/institutional) memory (Sandstrom & Rova 2010). Too much network closure on the other hand can limit innovation and too homogeneous a network can limit the resources available, while an extremely heterogeneous network might undermine trust (Ibid.; Bodin & Crona 2009).

Since network density describes the number of connections present in a network in comparison to the actual number of connections, it can be formulated as follows:

$$\frac{l}{n(n-1)/2}$$

l = the number of links

n = the number of actors

Combined with the measure of overall network centrality, one is able to determine the network's closure or *well-connectedness* (Wasserman & Faust 1994).

4.4 Data Collection

As this research has applied an approach similar to ones developed by Gupta et al. (2010), and Sandstrom & Rova (2010), in addition to having a comparable method of case selection (comparative case study), it was logical to make a similar choice regarding data collection. However, as previously described in the section laying out the theoretical background, there are several types of data that must be collected, in addition to several forms of data analysis being used for the research at hand, thus necessitating the use of multiple collection methods. Leading up to the decision of which method was be used to collect which type of information, a list of questions that should provide the relevant information regarding the framework's criteria was developed. Then, depending on the type of information needed to answer each question a choice was made concerning which collection method will be used (Appendices 3 and 4).

Concerning the process-oriented components to be accounted for, such as the "presence of institutional provisions that promote…" learning, e.g. monitoring processes, in addition to formal rules and resources, and print versions of problem frames, document analysis proved to be a fitting choice for data collection (Gupta et al. 2010, p. 465). These could be documents from the FPC itself, or they could be from the participants, regarding their financial resources and other such attributes. Regarding informal rules, perceptions of trust between actors, views on leadership, legitimacy, problem frames and the like, semi-structured interviews provide a better option for data collection (interview forms Appendices 3 and 4). Too structured or closed an interview would, for example, restrict the participants' ability to explain to what degree they give a certain

criteria a certain value and why, e.g. trust in another actor. For simpler questions that require respondents to answer a multiple-choice question, or indicate to what degree something is present, a questionnaire was adequate.

According to Gupta et al. (2010), the questions posed to interviewees should not use technical language, but rather layman's terms that can understood by all, thereby providing data that is more comparable. Therefore, care was taken when constructing questions for data collection, so that concepts are explained and the appropriate information can be gathered.

4.5 Data Analysis and Interpretation

4.5.1 General and Qualitative Data Analysis

As much of the data gained was of a qualitative nature, e.g. how well an FPC includes stakeholders in the appropriate phases, requiring the researcher to compare the actual state of the FPCs at hand to the ideals represented in the framework; this requires a sound understanding of both the empirical and theoretical literature used to create the conceptual framework. For the sake of simplicity and consistency, a qualitative Likert scale using the same range as the APES scheme (0, 1, 2, 3) was used. Zero again represented "not present" with the degree increasing once again up to three. However, the quality that the Likert scale embodies was different for the various factors. For example, regarding the factor "broad stakeholder inclusion", "0 "would be that the FPC is very closed to other stakeholders, with no provisions for including further actors in the process; "3" would mean that there is virtually no barrier to stakeholder participation. Regardless, upon analysis, the quality is mentioned along with the value given, e.g. "not at all or very open; not present or very present, and so on. However, it is not enough to simply give a value to a factor and leave the interpretation up to the reader. One must also give a description of the information that has led them to assign the given value. This does somewhat lower the validity of the values given, as another researcher could possibly interpret the framework somewhat differently than the previous one. Nonetheless, I hope that by including a description of the factor under analysis, a more clear understanding can be gained.

In order to streamline the process of qualitative data analysis, I created detailed tables in Microsoft Excel that allowed me to place the information gained from both interviews (transcripts) and document analysis in fields together, each relating to a specific factor from the conceptual model. After the data was completely placed into the charts, a value using the previously described Likert scale was given.

Lastly, the scores given to the FPCs at hand were be pieced together as a type of story that describes their ability to promote effective urban food systems co-management via FPCs. Attention was drawn to strengths and weaknesses discovered, in addition to the relative importance of certain aspects given the institution at hand, e.g. what does a 1 for broad stakeholder inclusion mean. Moreover, the interdependencies and the interaction between the various factors needed to be explained, e.g. which reinforce, or conversely, conflict with one another, for example central leadership may clash with certain elements of broad stakeholder inclusion. Hereafter, the data was translated to tables communicate the interpretation of the data in a clear and comprehensive manner[18]. I attempted to explain the values given in the tables and their implications for the FPCs being researched. Lastly, these interpretations have been distilled into suggestions for the concerned stakeholders to improve their FPCs adaptive capacity and governance of urban food systems.

4.5.2 Data Analysis of Network Characteristics APES and UCINET

In order to perform the analysis of network data for this research, two programs were used. The first, as previously described in brief is APES (Actor-Process-Event Scheme). The use of APES allowed me to show which actors (and groups to which they belong) have been present at certain points throughout the FPC process and what type of role they have played (passive, active or leading). This allows for the visualization and analysis of stakeholder inclusion, identification of leaders and actor/group interaction during the various phases, as well as the calculation of the proposed network metrics.

[18] Throughout the data analysis, individual data sources will not be referred to, e.g. "one can see from Document x that…", but rather data interpretation will take place in the form of a "story" pieced together from document, network and interview analyses, only drawing attention to certain documents or interviewees when particularly relevant. This is because to operationalize the framework's factors, multiple data sources had to often be used, which would make this a cumbersome process if each source were referred to every time it was used. I am aware of the implications of this for data transparency, however saw no simple way around it.

The relevance of this capability for the research is very high, as actor collaboration, stakeholder inclusion and the salience of certain factors at various points throughout the FPC process are key points of consideration. In order to show actor participation at the different phases, in addition to its nature, the scheme following scheme was used, as suggested by APES tutorials online and as employed by Diercks in his 2012 thesis work:

- 0 = not present
- 1 = passive
- 2 = active
- 3 = leading

A second, necessary consideration when using APES is to develop actor categorizations into which network nodes (actors) can be placed to show which groups have the greatest and least presence, in addition to other possible outcomes of interest. Therefore, the following categories were developed into which all actors identified in this research could be placed:

- **FOA-FP** (Food-oriented actor for-profit) – producers, restaurateurs and other actors who make their living from food
- **FOA-NP** (Food-oriented actor non-profit) – NGOs and other such organizations who have non-profit food-oriented goals
- **Niche-FP** (Niche actor for-profit) – Actors with a specialized service that can be related to food, e.g. consulting or environmental technology design
- **Niche-NP** (Niche actor non-profit) - Actors with a specialized background that can relate to food, e.g. an organization that promotes actors making cities more sustainable
- **Governmental Actors** – Relevant governmental authorities
- **Academic Community** – Members of universities, research institutes and the like that work with food related issues
- **Individuals** - Concerned and/or active individuals involved in the food system at the level of a citizen or founder of a nascent project

Lastly, in order to calculate network metrics, the software UCINET was used. This program allows one to carry out the calculation of network metrics such as centrality and network heterogeneity, as well as to display the networks and the relationships found within them visually. This can be helpful as the visual depiction of network can give insight into relationships that might have not been otherwise recognized, e.g. the formation of sub-groups within a network based on interaction patterns.

5. Results

In the following sections I will present and interpret the results of the research. This will be done first for the Amsterdam Food Mash and then for the Rotterdam Food Council. As much the nature of the data requires me to interpret, as well as explain the score (0-3) given, the presentation of the results will be done in a piecemeal fashion, based upon the different divisions of the factors as shown in the conceptual framework: network factors, institutional and process factors, FPC assets and exogenous factors. Tables will be used in order to present the information gained during data collection as well as the scores given on the Likert scale (0-3). Thereafter, I will provide a more in depth description of the analyzed data and its implications for the case at hand.

At the bottom of each table, I will aggregate the scores (0-3) for all factors for each phase; I will also do this for the entire FPC, creating an overall score and a percentage (for comparability between the cases). This should help to give an overall sense of how each case performs regarding each factor group, therefore how they should be expected to perform overall. Moreover, by aggregating the scores[19] and comparing them with the real world outcomes observed, I should be able to make statements regarding the importance of certain factors, if they should be weighted or included in the framework at all for future applications. For example, if an FPC performs very well according to my framework or the scores given, yet fails to bring any real world results, the value of my framework – or certain aspects - would be low; on the other hand, corroborations of scores given with real world results would strengthen the framework's hypotheses.

[19] The aggregation of the last category, "Exogenous Factors", will not take place as there was not enough data to adequately operationalize it and that each factor could be the focus of a study on its own.

5.1 Amsterdam Food Mash

5.1.1 Case Specifics

Since the Food Mash is a "failed case", as it no longer exists and did not result in the development of any specific projects, it was only evaluated for the first three phases of the FPC process, "formation", "problem/identification and goal setting" and "project development", with the latter having little data available. This choice was made due to the fact that at the last two meetings of the Food Mash there were talks amongst members about taking concrete steps to collaborate, i.e. a sustainable supermarket chain taking in the produce of some of the members.

In regards to the data that could be gathered, detailed records of who belonged to the network, their attendance at the various meetings and minutes were kept. This was coded in the "0-3" APES scheme easily in the following manner[20]: "0" is presence in the network list without RSVP to an event, assumed as a non-active participant; "1" or "passive" is presence in the network list with an RSVP and no attendance, assumed to be active in responding and reading information sent out by the network; "2" or "active" represents network members that came to meetings; "3" represents network members that assumed a leading role, either by organizing the event, holding a talk or running a breakout session. Additionally, in my role as an intern for Metabolic, I kept notes of planning and evaluation meetings, minutes of each instance of the Food Mash, published reports for the network following each meeting, as well as collected network data, e.g. who was present and what they did. Lastly, the two leaders, Chris from Metabolic and Jonas from BiteMe, along with a six other active members of the Food Mash, and two government actors involved in a nascent government-led food platform were interviewed (ten in total) in order to operationalize the framework's factors as best as possible (see Appendix 5 for interviewee list). Certainly, access to more Food Mash members, as well as having been more objective, i.e. the researcher as a non-participant, would increase the reliability of this research. However, it was my desire to test the framework via an application on my internship project, designing and executing the Food Mash.

[20] For the sake of comparability, the same coding procedure was followed for Rotterdam, even if the process did look slightly different. More importantly, this allows for a quick, yet comprehensive overview of who is present in which capacity in each FPC.

5.1.2 Amsterdam Food Mash: Network Factors

Network Factors - Formation Phase

Let us begin with the analysis of the first of the three phases analyzed, the *formation*, regarding the network factors. As shown below in Table 2, the Food Mash did not have a large group of dedicated actors charged with its running. In fact, I was the only "leadership" member that contributed more than a nominal amount of time to Food Mash undertakings. Participation by the other two leadership members from Metabolic (Chris) and BiteMe (Jonas) was limited to the planning phase right before the actual Food Mash events and a short follow up thereafter. Moreover, there were only a few tasks that were clear, namely reaching out to current members to keep them up to date, looking for new members and contacting potential speakers and breakout session leaders. However, this was all carried out in an ad-hoc fashion depending who amongst the three had the most time. As shown by the APES diagram in Figure 3, only two of the three leaders, along with a member of CITES the magazine were present in the formation planning phase of the Food Mash[21]. This was probably for the better, as including too many actors at this point could have made the process more lengthy and complicated through discussing what the point of the Food Mash should have been and how to go about it – but, I cannot say this with certainty as the Food Mash did indeed come to an end relatively quickly. Furthermore, as will be discussed in the following section on problem identification and goal setting, more actors quickly became involved in the process as it developed, albeit with falling attendance in the latter two iterations (see second APES diagram, Figure 4)

Moving on, there was a very limited level of government actor participation. At the first Food Mash event, one member of the health department and one strategic advisor to the municipality were there. However, their participation was of a more passive nature and they did not return for future meetings.

Regarding leadership for the Food Mash, three actors already mentioned (I, one member of Metabolic and one from BiteMe) were shown to be the most central figures according to network data. Not only were they present for the planning and evaluation

[21] This graph also shows all of the actors who were present in which phases, at which events and to which of the stakeholder groups they belonged

stages, they were also present in leading roles at every Food Mash event as well. A former Food Mash initiator was also shown to be a central figure in the network, although she removed herself from a leading role after the first meeting due to differences in approach and goals. Overall, these three actors were present at every meeting (in all phases) and had a significant number of ties with the network as a whole (highly central, see Table 2 "Central Leaders", Figure 8 and APES Centrality[22] Figure 5 below). In general, smaller actors that were directly involved in food issues either in a non-profit (FOA-NP) or for-profit manner (FOA-FP) comprise the most central actors in the network.

Table 2: Amsterdam Food Mash Network Factors Data - Formation Phase

Factor Name	Information	Value(s)
Actor/Responsibility Redundancy	3 members (2 Metabolic; 1 Bite Me) responsible for running Food Mash (FM); 1 was charged with it full-time, the others 2-4 hours a week; no clearly assigned roles or tasks - fluid process.	1/3
Government Actor Participation	Negligible; one meeting had two government representatives	1/3
Central Leaders	Food Mash documents identify Metabolic and BiteMe being the initiative leaders. All interviewees either refer to Chris and/or Peter from Metabolic, or the company itself as being the leading party. The network degree centrality data confirm this, with Chris and, Peter from Metabolic, as well as Jonas from BiteMe at 3.8; for reference, the next closest score is CITIES, an early initiator of the Food Mash with 3.4, and the lowest non-omitted score is Soep met Ballen at 0.4.	3/3
Visionary Leadership	The above identified leaders evaluated the Food Mash network after all three iterations in a attempt to see which types of actors were present and who should be actively pursued as a member given the goals of the group and select individuals (based on interviews). Action was taken to bring the "missing pieces" to the Food Mash, with mixed success	2/3
Collaborative Leadership	The purpose of the Food Mash in general was to plug actors in the food system to each other via networking events. However, specific efforts by Food Mash leaders at helping groups collaborate with one another were nominal, with 4 instances identified.	1/3
Overall Score	5 Factors, 3 potential points each (15 total)	8/15 (53.3%)

[22] In Figure 5, the centrality (eigenvector) of the most central actors of the Food Mash Network is depicted. In the center of the diagram are the most central actors (higher percentage value), with the less central actors being located proportionally further away from the center (lower percentage value). Refer back to the methodology section for an explanation of eigenvector centrality.

In order to actually identify visionary leadership (as well as to determine the other types of leadership more in depth), it would have been necessary to interview a large sample of Food Mash participants to find out how they would describe these actors and the way in which they led. However, such an in depth analysis was not possible for reasons of feasibility. Therefore, I used document analysis and a few key interviews to approximate this. For the purposes of this research, I defined visionary leadership (see also Operationalization Table 1) as that which takes the initiative to improve and change the direction, if necessary, after every FPC iteration. In this sense, the Food Mash leadership performed well, as they took it upon themselves to identify who was present and who was not at each Food Mash meeting, as well as to interview key members, as to who they saw as being necessary for the Food Mash to be a success. It should be stated that this took place in the later two iterations of the Food Mash, once the leaders became more familiar with network members and their goals.

Lastly, regarding collaborative leadership, there were few instances of this to be identified. This lies with two factors: 1) as previously described, few Food Mash members could be reached for interviews to describe leadership, and 2) in recording minutes at each Food Mash instance, I was not able to record all interactions. However, I was part of a few specific instances in which either I took it upon myself, or the BiteMe and other Metabolic member of the Food Mash leadership specifically tried to bring certain members together based on mutual goals or interests. It should be said though that one of the major goals of the Food Mash was to bring actors together to collaborate and it was therefore not such an explicit goal of the leaders to make this happen by their own efforts aside from organizing the events. As with visionary leadership, efforts to promote collaboration between members took place primarily in the latter two iterations of the Food Mash.

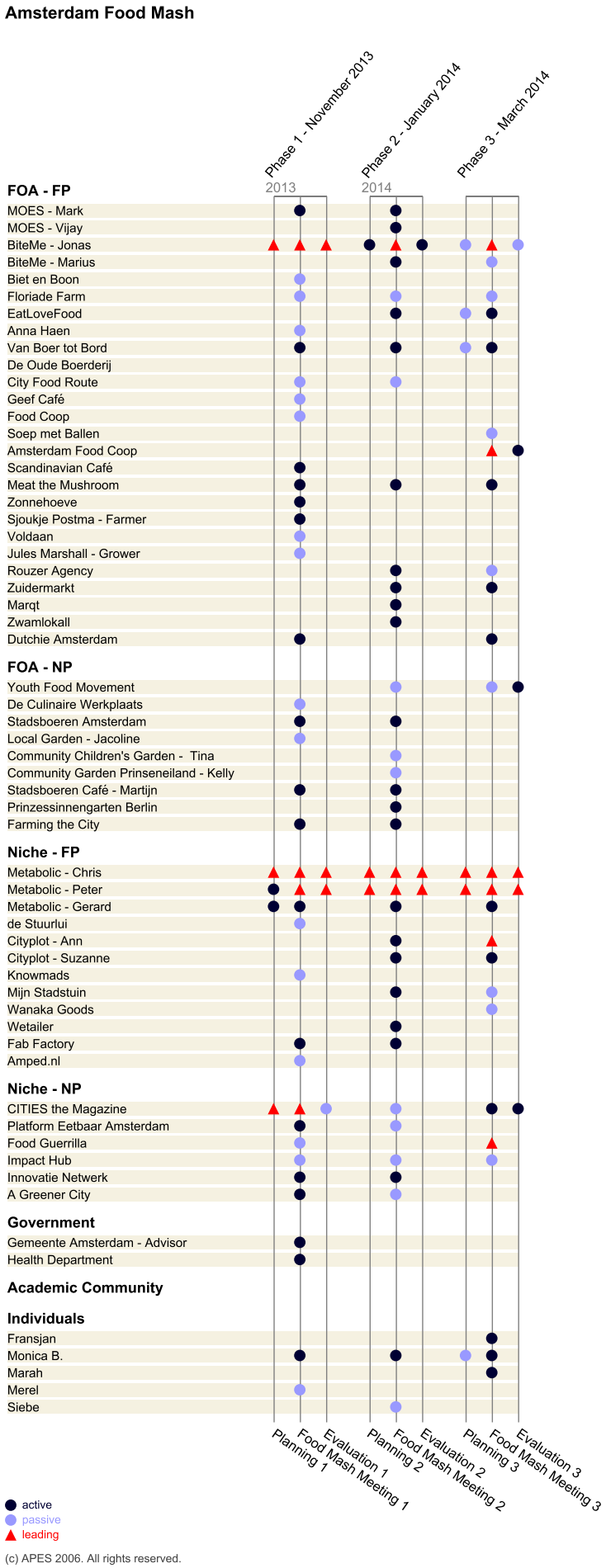

Figure 3: Amsterdam APES Graph 1

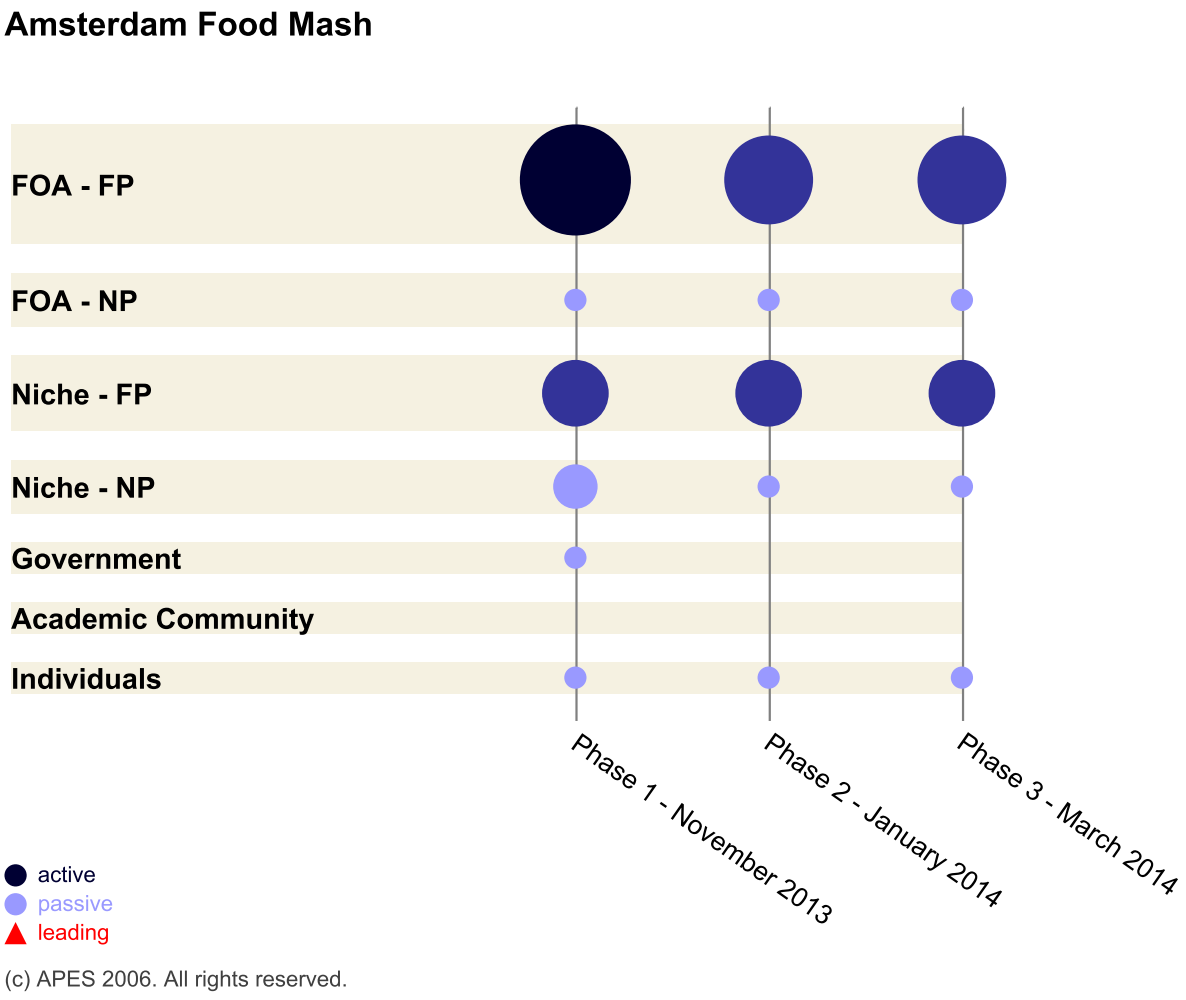

Figure 4: Amsterdam Food Mash Attendance – Aggregated Actor Groups

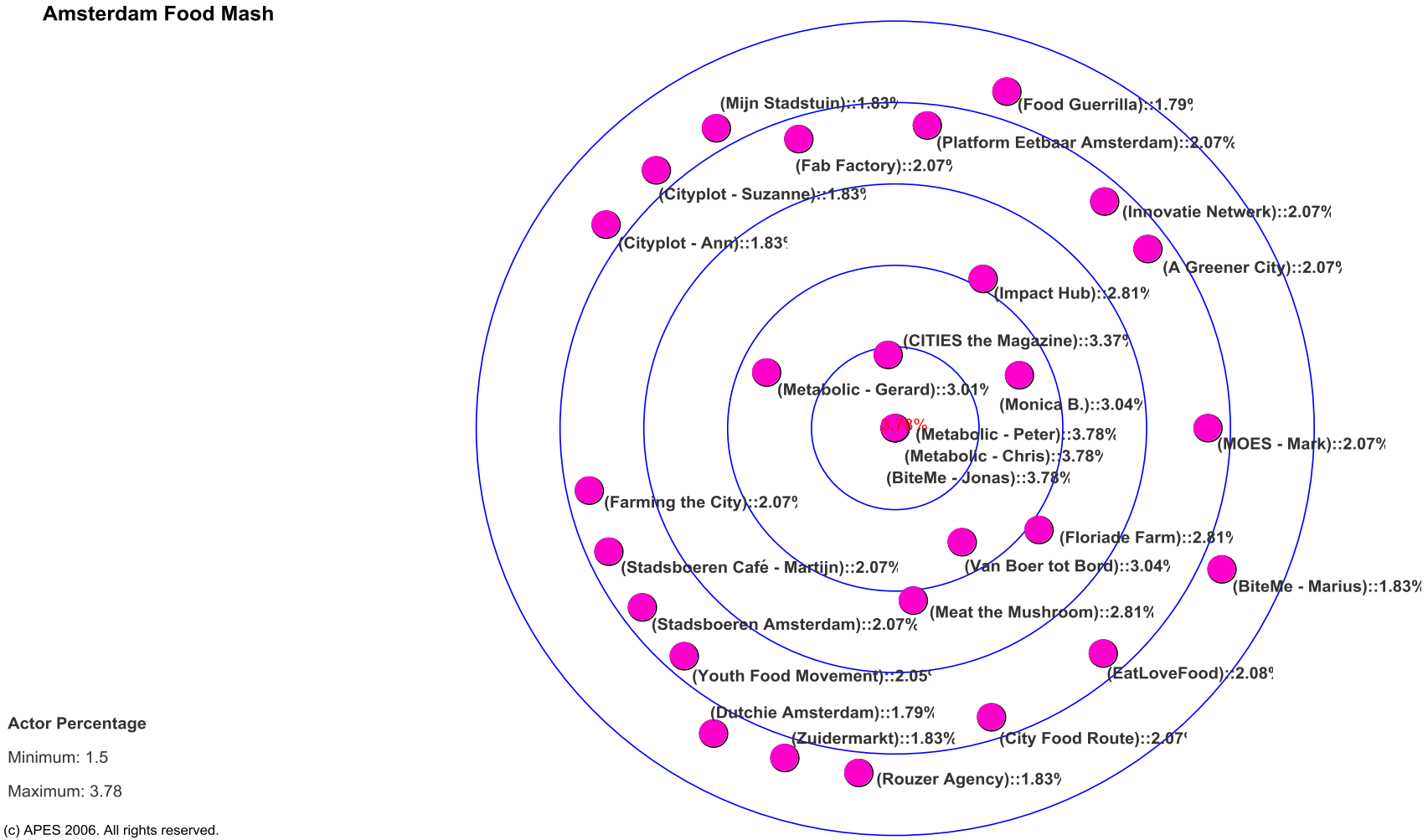

Figure 5: Amsterdam Food Mash Standardized Actor Centrality

Network Factors - Problem Identification and Goal Setting Phase

We now come to the next phase for which the Food Mash was evaluated: *problem identification and goal setting*. The content of this phase is rather self-explanatory, however let us put it into context for the Food Mash. Realizing the plurality of actors amongst the membership, the Food Mash leadership held a first meeting (one of the three) in order to ask the question: "What do we want from our food system?" This turned out to be a rather divisive question for a few reasons. Firstly, as identified by a few members in interviews, there were two distinct types of actors involved in the Food Mash. The first group works on policy and larger issues of a more "meta" nature. The second group's efforts were focused specifically on their more practical undertakings, like running a restaurant focused on sustainable ingredients. Therefore, in asking the previous question, there were starkly different statements on what needed to happen. Although they were asking in essence for similar types of a change, e.g. a more transparent food system from farm to plate, their solutions and perspectives on the matter were quite different from one another, e.g. local and practical vs. broader policy solutions.

Table 3: Amsterdam Food Mash Network Factors Data - Problem Identification/Goal Setting Phase

Factor Name	Information	Value(s)
Broad Stakeholder Representation	a) 26 FOA-FP (43%), 9 FOA-NP (15%), 12 Niche-FP (20%), 6 Niche-NP (10%), 5 Individual (8.3%), 2 Government (3%); AC not present; b) All but one identified stakeholder groups are identified in the Food Mash network. Moreover, some groups, namely for-profit FOA and niche actors comprise a large majority of the network (63%). Government actors, have very little presence despite being important actors. Lastly, non-profit niche groups that represent societal interest are largely absent.	1/3
Diverse Skills, Knowledge and Resources	a) See values above, with the implications that a relatively broad range of skills, knowledge and resources are potentially available to the Food Mash; b) 76.6% Cross-boundary resource exchange throughout the observed FPC process. This is a high value, as over three-quarters of interactions are with groups other than one's own. Yet, very little participation from key government actors.	2/3
Diverse Problem Frames[23]	Same values as for *Diverse skills, knowledge and experience* are valid; the implications of them for this means that the problem frames assumed to be present are overwhelmingly from for-profit niche and food-oriented actors (63%), with	1/3

[23] To remind the reader of how to read the conceptual model and tables, Factor names in italics denote a factor that is only hypothesized to be relevant for the phase in which it is found. Those in normal text are assumed to be relevant from that moment forward for the rest of the process.

	government, academia and non-profits being largely unrepresented; however, due to the high level of cross-boundary exchange, e.g. interaction with groups other than one's own, members often come into contact with problem frames other than their own.	
Well-Connected Network	a) Network centrality index: 37%; b) Network density: 66%	2/3
Overall Score	4 factors, 3 potential points each (12 total)	6/12 (50%)

The literature shows that given adequate time, and forums for discussion, such debates and differences can be beneficial for actors to learn from each other (Pretty 2003; Schiff 2008; Gupta et al. 2010). However, as there were only 3 Food Mash events in total, each lasting about 3 hours, with 1 about hour of time to speak about these issues in a group of about 40 to 50 participants, there was little opportunity for concrete, common understanding of problems to form (in the following phase), and therefore, goals oriented towards addressing them.

However, something positive can be drawn from the lack of consensus regarding problem frames present at the Food Mash meetings – it was comprised of a diverse group of actors, a factor shown to be of great importance for both co-management arrangements, as well as FPCs. As can be seen above in Table 3, 6 out of the 7 stakeholder groups identified were present throughout the Food Mash process. A caveat to this is that a majority of these actors were profit-oriented, either as food-oriented actors (FOA-FP) or niche actors providing related services. While these groups and actors are no doubt an important part of the food system, it was a seemingly lop-sided representation, especially when comparing it with FPCs like Toronto's more diverse and yet balanced one (McRae 2012).

Nonetheless, what this rather diverse representation of stakeholders means for the Food Mash is not only that more societal actors to whom food issues are relevant were included, but also that as a type of governance arrangement that it was in possession of a relatively diverse set of skills, knowledge and experience that could have been *in theory* put into use to address complex food systems issues (Bodin & Crona 2009; Gupta et al. 2010; Sandstrom & Rova 2010). In fact, when calculating the cross-boundary resource exchange (the number connections with groups other than ones own/the total number of total connections), the Food Mash network performed very well, with this

figure coming in at 76.6% of all ties being of such a nature (see Table 3). This means that throughout the Food Mash process actors had many opportunities to exchange knowledge and resources, learn from one another and potentially collaborate on issues related to the food system. Yet, this does not mean that this necessarily took place, as many institutional and process factors provide a foundation for and facilitate such exchanges; this will be treated in the following section.

Coming to the final network factor regarding the Food Mash in this particular phase, we look at how well-connected it is (measured by network closure, which is network centrality + network density); briefly, this is important both for transfer of knowledge, resources and the like, as well as for resilience in times of crisis, although the latter is not a focus of this research (Gupta et al. 2010; Sandstrom & Rova 2010). As can be seen in Table 3, the overall network centrality is 37%, which means that a relatively low number of actors are the most central, with a larger number being found somewhere in the periphery (see Figure 5). This means that a majority of the connections, especially those of a stronger nature pass through a relatively small number of actors, e.g. the leadership of the Food Mash would have to facilitate a large portion of the exchanges instead of them taking place amongst the participants themselves. This implication of this is that not only can less knowledge, fewer resources, etc. be transferred overall, but also that if one of these key actors goes missing, that the network will perform more poorly in this regard. When examining the second measure of "well-connectedness", network density, we find that the score is 0.66, or 66% of all possible ties in the network are present, a relatively good score. The implications of network density for a platform like the Food Mash is that many connections were potentially made amongst actors meeting at its events. Therefore, it would seem that overall that the Food Mash network is relatively well-connected, with a high(er) density, albeit having high reliance on certain actors in the network.

Network Factors – Project Development Phase

We now come to the last network factor, knowledge and resource exchange, for the last phase for which I was able to evaluate the Food Mash, *project development*. In actuality, there were no specific projects that were a part of the Food Mash, as it was meant to act more as a facilitative, networking body. However, by the time the last Food Mash took

place in March of 2014, a few collaborations were starting to take place between members, for example an Amsterdam-based research group for urban agriculture linked up with a Bolivian educator looking to introduce urban agriculture into a La Paz university's curriculum, or a gourmet mushroom grower started to supply to a local sustainable food distributor. It its for interactions like these that the cross-boundary resource exchange metric proves again an effective measures. As Table 4 shows, and as mentioned previously, an overwhelming majority of network interactions were of a cross-boundary nature, meaning that the chance for exchanges were relatively high.

Table 4: Network Factors Data – Project Development Phase		
Factor Name	**Information**	**Value(s)**
Knowledge and Resource Exchange	76.6% Cross-boundary resource exchange through the observed FPC process. This is a high value, as over three-quarters of interactions are with groups other than one's own. Yet, there was very little participation from key government actors.	2/3
Overall Score	1 Factor, 3 potential points (3 total)	2/3 (66.6%)

5.1.3 Amsterdam Food Mash: Institutional/Process Factors

Now, the analysis turns to the institutional and process factors that are hypothesized to have an effect on FPC performance. Their analysis is much more straightforward and does not require as much description as network factors, whose metrics require interpretation so as to understand their importance for the outcome of interest.

Formation Phase – Institutional/Process Factors

Once again, this section will assess the Food Mash for the same three phases as in the previous section, beginning with the *formation* phase. To begin, the Food Mash did not have rules, nor did it have a form of enforcing them. Moreover, meetings were most likely not frequent enough (once every two months, three in total), nor was member turnout consistent enough for norms to develop. Although rules, or at least norms, have been shown to be important to FPC functioning, it is often the case that they become more relevant once more serious responsibilities need to be taken on by the members, for example project leadership. Since the Food Mash did not have any projects of its own, nor did it possess a very formal structure, it is likely that the absence of rules is was not the most detrimental factor regarding its performance. However, the presence

of shared norms amongst the membership could have led to less divisive and perhaps more productive meetings.

Table 5: Amsterdam Food Mash Institutional/Process Factors Data – Formation Phase		
Factor Name	**Information**	**Value(s)**
Enforced Rules/Norms	There were no norms or rules as a part of the FM; it was a very informal setting. The closest thing to a norm was the moderator for discussions.	0/3
Consistent Meetings	The FM met every two months, 3 times. These intervals were well known to participants and was communicated to them regularly.	3/3
Time	The FM existed from October 2013 until March 2014, a period of six months. For many participants, this was the only instance in which they came into contact with one another.	1/3
Openness to Discussing Uncertainty	One of the strengths of the FM was that it was an "open forum". There were many opportunities for members to voice their opinions to the group as a whole and one-on-one. However, uncertainty itself was not necessarily an explicit theme.	2/3
Accountability Mechanisms to Greater Public	As there were no public officials that were consistent members of the FM, their accountability did not need to be kept in check. However, due to the open, participatory nature of the FM, the public could voice their concerns at will. Moreover, the FM did not have any specific projects of its own as such, there for its accountability was not relevant	1/3
Openness to Public Participation	The FM was a completely open event. Anyone who was interested in participating could come. The one limitation to participation was the reach of the network, e.g. had more people known, perhaps more would have come.	2/3
Integration of Sustainable Development Principles	Sustainability was an implicit underpinning, but rarely explicitly mentioned. Minutes show that words with similar meanings like "healthier" or more "resilient" or "circular" food system are used most frequently.	1/3
Overall Score	7 factors, 3 potential points each (21 total)	9/21 (42.9%)

Nevertheless, regarding the meetings, the Food Mash performed well when compared to the standards set by the analytical framework. Meetings with the entire group were consistent, once every 2 months, an interval well-communicated to the members. The planning and evaluation meetings were limited to 2-3 core members and attendance at these was consistent, whereas attendance for the group meetings was not very consistent (refer back to Figure 3). As shown by the second APES graph (Figure 4; actors are aggregated into one symbol – the larger, the more attending), attendance went down slowly as the Food Mash went on. According to several interviews conducted with Food Mash members, this was as they were not sure what the specific

value of the meetings were, e.g. “what was in it for them?”. Moreover, some members did not come because English was the main language in use, as the group was comprised of nearly 50% non-natives. Relatedly, two of the active expatriate Food Mash members interviewed communicated that they would have not been able to attend had the event been held in Dutch due to the fact that they did not yet speak the language – thus, language proved to be an issue (personal communication, J. van Cornelis., 19 March 2014; J. Groen; 11 April 2014).

Regarding the third factor in this section, discussing uncertainty, it would have been ideal to interview a large sample of the Food Mash members to find out how free they felt in discussing uncertainties, risks, and the like during the meetings. However, this was not possible, so the available interviewees were asked what they thought regarding this, in addition to my own reflections on this aspect during Food Mash meetings. The results of this show that the Food Mash was in most respects a very open forum, in which members had a large degree of latitude to discuss objects of interest during the plenary sessions and breakout groups. Due to the fact that sustainability was more of an undertone, something that most members tacitly agreed on, but rarely specifically spoke about, issues of environmental uncertainty, resource scarcity and the like were seldom topics. Discussions centered on more practical matters, like how to get one’s organic produce into organic supermarket chains.

Similar to openness to discussions of various types, the Food Mash was open to anyone who wanted to join the network. In fact, membership was in part quite fluid, with some “members” only present for one of the three meetings and not present in information exchange in between; this provided for a wide range of actors to come, participate, voice their concerns and collaborate with one another However, as Figure 4 (above, in previous section) shows, certain groups were highly represented and others were not. This most likely lies with the fact that members were explicitly sought out by the Food Mash leadership, brought by friends or heard of the event series word-of-mouth. No large-scale efforts were made to reach out to the wider public. However, due to the nature of the Food Mash, namely comprised primarily of actors looking to carry out practice-oriented activities in food sustainability, it perhaps would not have been adequate as a public forum for voicing general concerns regarding the food system.

Lastly, the only actors within FPCs that should be held accountable by the public are government actors, or representatives of public interest organizations, e.g. NGOs and unions. As public representatives, their presence not only gives an FPC legitimacy, it also gives the wider public an avenue through which to voice their concerns regarding the food system. As the APES graph (Figure 3) shows, these actors were hardly present, thus meaning there were few opportunities for the non-attending public to act through their representatives. Although the Food Mash did not take on any projects by the time it finished, this could have been a problem regarding legitimacy of projects should any have gone into implementation.

Institutional/Process Factors – Problem Identification/Goal Setting Phase

As already discussed in the previous section regarding the variety of problem frames, out of interactions between members of the FPC environment, a clear, common understanding of the problems with the food system should ideally come to form, out of which goals can also take shape. In the case of the Food Mash, it appeared that there was a general understanding at the meetings that there were problems with the food system; this was in fact is why most of the participants were there on some level. However, there are a few factors that might have led to a lack of a common understanding of problems. Firstly, in the plenary sessions, a competitive, accusatory environment arose once more basic questions such as "who is to blame for the food system's problems?" or "how do we solve these problems in Amsterdam?" As time was limited (meetings lasted 2-3 hours with including time for dinner and drinks afterwards) these discussions never had time to play themselves out fully and allow actors to hear one another in depth (see Table 6).

Table 6: Amsterdam Food Mash Institutional/Process Factors Data – Problem Identification/Goal Setting Phase

Factor Name	Information	Value(s)
Clear, Common Understanding of Problems	The minutes show that at every meeting, discussions became heated once discussing the nature and root of problems; this led to divisive discussions. Moreover, interviews showed that vaguely respondents agreed on what the problems were, but not in substance. However, there was a general understanding that the food system was problematic.	1/3
Clear, Common Goals	There were two attempts through various activities to help	1/3

	actors cluster around common goals. Some were commercial, some were environmental and some were educational. However, no common goals emerged for the FM as a whole. Moreover, the FM organizers struggled to figure out what its purpose should be in a city full of similar initiatives.	
Overall Score	2 factors, 3 potential points each (6 total)	2/6 (33.3%)

Moreover, when talking to different interviewees and listening to members comments at meetings about what they saw the problems as, I noticed that there was clearly a lack of exposure to others' perspectives, as they came from a very ego-centric perspective, e.g. "the problem with the current food system is that small producers like me can't compete with the big guys" or "where the problem lies is with the system's dependence on long food chains and waste at every step", or "the fact that people aren't aware of problems have led to many of these issues getting out of hand". Had these actors been exposed to each other consistently in a manner that produced productive exchange of perspectives, a common, more comprehensive understanding of the problems and their sources could have arisen (Bodin & Crona 2009; Sandstrom & Rova 2010; Gupta et al. 2010).

Relatedly, common goals were scarce if not almost entirely absent at the Food Mash. At two of the sessions, attempts were made to help actors cluster around similar goals through various networking activities. During one instance, a form of speed dating was used whereby members were brought into contact with ten others in rapid fashion in order to hear their perspective on problems, what there goals for the food system were and what they needed to achieve it, e.g. collaboration. It seemed as if members were optimistic about the activity and the potential collaborations it brought to the fore. However, to my knowledge, there has been little if any follow through based on the connections made that night. Lastly, efforts to form overall group goals for the Food Mash as a whole proved difficult, since, as discussed previously, the variety of actors working on various levels, e.g. policy vs. growing food, had very different ways of seeing

the problems and goals that should work to solving them. Therefore, this was little more than a symbolic activity that had no follow through[24].

Institutional/Process Factors – Project Development Phase

The following paragraphs regard the *project development* phase, although the Food Mash did not have any of its own projects per se, nor did any specific projects go into "implementation" to my knowledge during the course of the research, there is nonetheless some data available that allows for a brief discussion of the two factors found below in Table 7, (diverse) solutions and project-based stakeholder inclusion.

As described in the theoretical literature review on (adaptive) co-management, as well as in the empirical literature on FPCs, a variety of solutions are necessary in order to tackle the multi-faceted problems of the food system, and to have redundancy built into the system, i.e. there is another option to pick up the slack in the case that one should fail and to adjust to the rapidly changing nature of a structure such as an urban food system.

Table 7: Amsterdam Food Mash Institutional/Process Factors Data – Project Development Phase

Factor Name	Information	Value(s)
Diverse Solutions	The FM was not lacking in the amount of projects that its members wanted to undertake - educational, commercial, social, environmental, etc. Resources and a clear vision were most lacking, rendering many "solutions" unrealistic at the time of data gathering	1/3
Project-Based Stakeholder Inclusion	The FM did not have any projects as an organization - this was not its purpose. However, specific stakeholders were sought after regarding the focus of each Food Mash.	1/3
Overall Score	2 factors, 3 potential points each (6 total)	2/6 (33.3%)

As shown in Table 7 and can be expected from a set of actors as diverse as the one present in the Food Mash, there were a number of "solutions" very different in nature. An important thing to note is that these solutions were rather the individual ambitions and projects of the various members and were not geared at common goals that belonged to the Food Mash, as previously noted. Therefore, these cannot be considered solutions as such. Rather, the various projects of the members can be understood as

[24] Since then, I have worked with a graphic designer to turn the Food Mash network data based on goals and activities into a small information pamphlet to allow the former members to move forward and possible collaborate (see Appendix 7)

projects that could/should have a positive impact on the state of the Amsterdam region's food system. But, the point of the Food Mash was to help them link up regarding these initiatives and upscale them to have a greater impact, or be possible at all due to a general lack of resources, a result that to my knowledge has failed to materialize.

Coming to the last institutional/process factor, our focus shifts once again to stakeholders. Ever important in a co-management process, is bringing actors in with the appropriate expertise during discrete phases of projects can be a way to streamline redundant participation, whilst including those with capabilities to really move the project forward. Once again, as no specific projects took place as a result of the Food Mash I cannot say anything in this regard specifically. However, worthy mentioning is that given the primary purpose of the Food Mash, a networking platform for sustainable food actors in Amsterdam, the leaders took it upon themselves to seek out specific potential members to compliment the current membership and their needs regarding projects and goals. A few of the interviews with members showed that the Food Mash was more worth their time if and when the necessary potential partners were there. Therefore, in a sense specific stakeholder inclusion was implemented by the Food Mash leadership, if not for specific projects in a more general sense to create a well-rounded network.

5.1.4 Amsterdam Food Mash: FPC Assets

In this section, the focus shifts to those assets that have been shown to affect co-management and FPC performance generally. As these factors are relevant throughout the entire process, they will be treated generally instead of in the phased-manner as in the previous sections.

Table 8: Amsterdam Food Mash FPC Assets Factors Data – All Phases

Factor Name	Information	Value(s)
Legal Authority/Support	No legal support was obtained by the FM from any government actor; only one government actor present at one FM event throughout the lifecycle of the process	0
Financial Resources	The FM was a free event. Metabolic contributed 60€ of materials in total, along with dedicating an intern to the project.	1
Overall Score	2 factors, 3 potential points each (6 total)	1/6

Due to the crosscutting nature of urban food systems issues, legal authority and support have been shown to be crucial to FPC performance. Taking urban agriculture as an example, it concerns governmental departments concerned with water, health, urban planning and agricultural issues, amongst others that vary by location. By having governmental actors presence, this complex legal framework can be navigated by FPC members more easily. Moreover, the FPC in general, as well as individual projects can benefit from the support and/or presence of government actors. However, as the APES graph (Figure 3) shows, there were only two government actors present at the first meeting of the Food Mash. Thereafter, government participation was non-existent therefore support was also non-existent. This was relevant for several members, as one could not use raw local milk due to health regulations, and others were looking to start urban agriculture projects, yet lacked the understanding of the complex Amsterdam spatial planning regulations.

Regarding the second and last asset, the Food Mash was very limited on financial resources. My own work was the primary input, as I was in charge of organizing, outreach and logistics for all Food Mash events. This posed no financial burden for the hosts Metabolic and BiteMe, as it was an unpaid internship. The only costs incurred during the process were €60 used for buying paper, markers and other such materials for networking activities. However, an interview with the Food Mash leader from Metabolic showed that this was the maximum that could be contributed to the effort due to a lack of financial resources on their own behalf and the fact that the Food Mash was a non-money making endeavor.

5.1.4 Amsterdam Food Mash: Exogenous Factors

These last factors are not ones that can be evaluated in depth in a study that attempts to account for as many factors as the one at hand does. Indeed, local culture and attitudes, higher level laws and regulations and the perception of impending/possible crises by society are subjects that can themselves be the object of research regarding their implications for co-management and governance of urban food systems. Nonetheless, it they are elements of which both practitioners and researchers should be cognizant, as they have been shown to be relevant in cases such as these. Therefore, they will be

treated in a superficial manner, using the information that was available, in order to provide a context for the Food Mash.

Table 9: Amsterdam Food Mash Exogenous Factors Data – All Phases		
Factor Name	**Information**	**Value(s)**
(Perception of) Impending/Possible Crisis	Some group members, namely biodynamic farmers, spoke of an impending crisis of infertile land and lack of adequate and appropriate production. However, this concern was not brought up frequently. Metabolic also had the sense that some kind of economic/systemic crash in the future will cause a major food system disruption.	N/A
Higher Level Laws and Regulations	Regulations like organic certification, the costs, prohibition of the use of raw products and certain land for agriculture were mentioned by participants as inhibitors to their own activities. On the other hand, interviews with the DRO showed that there are some incentives for UA projects. Moreover, there are government policies for sourcing local, sustainable food; yet, participants are rarely aware of these or do not meet requirements due to high barriers to certification	N/A
Local Culture and Attitudes	Several interviewees involved deeply in the Amsterdam "good food" scene referred to the rise of initiatives, restaurants focusing on more sustainable ingredients and the like. However, two respondents also referred to the fact that these were often elite initiatives with little societal reach.	N/A

The first factor in Table 9 refers to the perception of FPC members that there is a potential crisis that threatens the food system, e.g. climate change. In cases such as Vancouver, Toronto and various FPCs throughout the UK, hypothetical environmental crises have helped to motivate FPCs actions. However, as interviews in both Rotterdam and Amsterdam revealed, in developed countries such as the Netherlands, food security in the face of such shocks is not seen a very pertinent matter; however, this also depends on who one asks. At the first Food Mash meeting, biodynamic farmers from Zonnehoeve farm in Zeewolde gave a talk on their style of farming and how approaches like are the only way that we can avoid a colossal collapse of the modern food system. In general, within the Food Mash actors seemed to agree, albeit to varying degrees. Moreover, after this meeting, the subject did not arise as a group issue for the remaining two iterations and seemed to inform little of what the Food Mash did explicitly. It is likely that participants of the Food Mash are of a more informed nature regarding the state of the food system; in order to find out broader societal concern for such issues, a large-scale survey tapping into both common people and experts would be necessary.

Secondly, the legal framework within which the Food Mash was nested is complex and would require extensive research. Due to the degree to which agricultural and food related issues are both horizontally and vertically nested in various levels of government and regulations, e.g. relevant to both a municipality's water and health departments, as well as the appropriate authorities at the local, regional, national and EU level, effective research on this matter would be extensive. However, some Food Mash members did provide insight as to how their undertakings are affected by these factors. A previously mentioned, restaurant and café owners face health, quality and provenance restrictions when sourcing their food. According to a few of them, although their sources are more sustainable than the alternatives, e.g. raw local organic milk vs. homogenized pasteurized milk from a large dairy farm, they are prohibited from serving this by law. The same restrictions apply to a number of a food oriented undertakings and have implications for both these small business owners and other practitioners of food sustainability, e.g. small organic farmers that cannot afford certification; summed up succinctly paraphrased from a few interviews, they think the law makes it harder for them to do the right thing. This is just one of the reasons that the literature has shown it to be important to have legal support and government actors present in FPCs, as it can help other members navigate complicated legal frameworks.

Lastly, our attention turns to general local culture and attitudes towards food systems issues. Again, as with the perception of potential crises, a large-scale survey would need to be undertaken in order to actually find out what the general public thinks about food system sustainability issues and the implications thereof for FPCs. However, we can once again scratch the surface with some insight gained from the interviews carried out. Two interviewed members of the Food Mash, one an educator and cook, the other a cook and consultant were expatriates in the Netherlands. They mentioned that since their arrival – five and three years ago, respectively - they have noticed a growing "good food culture", in which more restaurants sourcing more sustainable ingredients are opening, and more events are being held regarding food issues.

Furthermore, two members of the municipality who are responsible for a similar, nascent government-led FPC mentioned that in recent years, Amsterdam citizens are

becoming more aware of where their food comes from and want transparency (H. de Vries & R. van Heusden, personal communication, 25 March 2014). All respondents made mention of the recent horsemeat in ground beef and other such scandals. Nonetheless, the information gained hinted that the tides might be turning and that the public could be taking more interest in where food comes from, what the effects of it are and how a difference can be made.

5.1.5 Food Mash General Analysis

Below, Table 10 shows the aggregated scores of each of the factor groups analyzed above and the overall score of the Food Mash when measured against the analytical framework used in this research. A quick scan of this table shows that only two factor groups (Network Factors Formation Phase and Project Development Phase) were given over fifty percent of the points that could have been earned.

In essence, the Food Mash seems to have provided little more than a short-lived event series in which few meaningful connections were made amongst actors in the Amsterdam food system. Despite trying to cluster around common problem definitions and goals, few network members have followed up on connections they made during the platform's existence. Similar to an FPC's goal, the Food Mash had the rough purpose of trying to make Amsterdam's food system more sustainable through connecting initiatives and helping them to upscale their efforts – this did not take place by and large due to the various reasons laid out in the preceding sections. That it was a failure corroborates the framework to a certain degree, or rather, the framework may have helped to give insights into why the Food Mash cannot be expect to contribute to urban food systems governance in a meaningful manner. However, we have to look a bit more closely at specific elements from the framework that may have proven to be more impactful regarding this outcome, and conversely, those that may not have been as important.

Table 10: Amsterdam Food Mash – Combined Factor Scores

Factor Group Name	Value(s)
Network Factors - Formation Phase	13/15
Network Factors - Problem Identification/Goal Setting Phase	6/12
Network Factors - Project Development Phase	2/3

Institutional/Process Factors – Formation Phase	9/21
Institutional/Process Factors – Problem Identification/Goal Setting Phase	2/6
Institutional/Process Factors – Project Development Phase	2/6
FPC Assets Factors – All Phases	1/6
Amsterdam Food Mash Exogenous Factors – All Phases	N/A
Overall Score	30/69 (43.5%)

Given that the Food Mash did not plan to develop and implement any of its own projects, nor did it plan to finance those of members from its network, aspects from the framework that regard this, namely *financial assets* and *legal authority/support,* could potentially be taken out of consideration as a sign of its overall potential to be effective; nonetheless, having either of these assets could have contributed to the Food Mash's ability to have an impact on the local food system. The Food Mash differs slightly from the typical FPC model in that although an FPC rarely undertakes its own projects, it often does pave the way using legal authority and financing/subsidies to promote the efforts of its members that regard its own goals - the Food Mash did neither of these.

Similarly, regarding the lack of any initiatives or projects pertaining specifically to it, the Food Mash's poor performance in the *Project Development* phase could also be considered less relevant. Given that FPCs and similar organizations attempt to move food systems towards sustainability, they should still be evaluated for their potential to do this, i.e. in part, based on the projects and programs they possess to address food system problems. In this respect, the Food Mash still performed poorly as few full-fledged projects existed amongst its membership; nearly all were in an incubatory phases, many without significant prospects of being realized.

From the data collected, what appear to be the most relevant factors in determining the Food Mash's performance are those found in the earlier phases from the framework, e.g. *formation* and *problem identification/goal setting*, especially regarding the institutional/process factors. Several interviewees mentioned that due to the lack of a clear purpose, and thus a specific value that it was supposed to add, the Food Mash had difficulty in obtaining and maintaining a membership with the adequate interest, skills and resources. Therefore, there was a lack of a common problem or goals around which a group could form and solidify. Additionally, a lack of time due to the commitments of

an entrepreneurial membership also proved to be a barrier to consistent attendance at Food mash events.

Moreover, the international nature of the sustainable food community in Amsterdam leads to a type of schism when trying to bring such an array of actors together; to quote one respondent "If you speak English you lose the Dutch and if you speak Dutch you lose the internationals" (J. Groen, personal communication, 11 April 2014). Similarly, the most consistent attendants of the Food Mash were small businesses that were relatively new and looking to expand. There was a distinct lack of both larger and more established and successful actors, as well as a complete lack of the academic community, which may have proven to be a valuable resource to the Food Mash's membership.

After applying the conceptual framework to the Food Mash, I became aware that not all elements of the framework are relevant for every FPC. Not only are some different in nature, e.g. a bottom-up organization that more closely resembles a networking platform versus a top-down organization that does more to actively facilitate its members' goals, certain factors are most likely more important than others. For example, it does not matter if an FPC meets consistently if its members do not see a point in coming, i.e. a goal. Therefore, an adjustment and/or weighting of the factors from the conceptual framework based on a solid familiarity with the case at hand could provide more valuable insights. This process will be repeated with Rotterdam in the following section and more conclusions can be drawn about the validity of the framework and its various elements.

5.2 Rotterdam Food Council

5.2.1 Case Specifics

The Rotterdam Food Council (RFC) is technically an unofficial advisory body to the aldermen of the Rotterdam City Council. For nearly two years now, this diverse set of actors has met to receive pitches for food system oriented projects, develop work programs and promote projects that work to improve the local food system from a primarily economic standpoint. The impression I got from interview respondents was that due to its unofficial nature, its livelihood is always a bit tenuous. However, they also

claim that its strength relies in not needing government funding or mandates to achieve what it sets out to do. Nonetheless, with a growing work program and membership, it appears that the RFC is in good condition and will continue into the near future, standing in contrast to the Food Mash in Amsterdam.

Fewer respondents could be reached for the data collection for the RFC: This was due to a few factors. Firstly, I was myself not a part of the organization, which made contacting respondents more difficult. Secondly, many of the RFC's members are sector leaders or higher level, albeit local, government officials. However, the RFC had very detailed documents keeping track of their membership, attendance, work program and nearly all content relevant for this research. In fact, the four interviews conducted served mostly to bolster conclusions derived from document analysis[25] (see interviewee list – Appendix 6). Some data was collected for the later processes of monitoring, evaluation and reaction, albeit not enough for in depth analysis. Moreover, this could not have been compared with the Food Mash since such data was not available for this case. Therefore, the choice to exclude this from the analysis was made.

The same scoring and notation system used for the Food Mash will be used to apply the framework to the RFC for consistency and comparability. An important distinction to make is between the attendance patterns, relevant for the APES analysis. As Table 14 shows, the entire Rotterdam food council meets at regular intervals three to four times a year, with the thematic groups meeting every six weeks and the executive board (Petit Comité) meeting monthly. This does not mean that the RFC and Food Mash cannot be compared; in fact, this different attendance pattern can help to shed light on the way in which stakeholders can best be included in each phase of the FPC process, and what the implications thereof are for network-based outcomes of interest, e.g. the potential for knowledge and resource exchange.

5.2.2 Rotterdam Food Council: Network Factors

Network Factors – Formation Phase

[25] I did not receive clearance to attach the RFC's documents as an appendix. Thus, for confidentiality reasons, I only refer to the information gained from these sources when possible/relevant. I am nonetheless aware of the implications of this on the transparency of my data sources.

Again, we begin with the network factors hypothesized to be relevant for the *formation* phase of the FPC process. A quick scan of Table 11 (below) shows that the RFC performs much better than the former case, the Food Mash. The working documents of the RFC lay out a clear leadership, with a chairperson as well as thematic leaders for the work program coming from different backgrounds, assigned to those which are relevant to their experience. Moreover, the leadership of each of the pillars is shared amongst a few actors, so as to spread responsibility. This not only serves to lighten the workload of these members (as the RFC is not their primary occupation), it also assures that some redundancy is present in the case that one should leave the organization. Interviews confirmed that the RFC leadership is aware of overreliance on one or a few central figures, especially those within the government (Alexandra van Huffelen) due to the changing tides of politics. Therefore, care was taken to install a chairperson from outside the government, yet that was respected amongst the RFC membership (Agnes van Ardenne). However, there are many governmental actors present (over a third of RFC membership, see Table 11 and APES figure 6 below), granting access to the "political machinery" of the local food system, a key aspect of being able to address food systems issues effectively via an organization resembling an FPC (McRae 2012).

Table 11: Rotterdam Food Council Network Factors Data - Formation Phase

Factor Name	Information	Value(s)
Actor/Responsibility Redundancy	Chairperson; Multiple thematic Leaders; Government Actors present; Stakeholders; All occupied; no term limits; leadership responsibilities are solely held, while thematic responsibilities are shared. According to two respondents. Members are aware of being over-dependent on one key person, so they actively try to diversify leadership.	3/3
Government Actor Participation	1 Member City Council; 2 Mayors; 4 Government Employees (DRO); 1 Water Board Member; 1 Landscape Manager; 1 Municipal Health Worker (12/32 members)	3/3
Central Leaders	All interviewees point to Agnes van Ardenne (chairperson), Alexandra van Huffelen and Jan Willem van der Schans as being the most central (eigenvector centrality) figures of the RFC; centrality metrics confirm this, for Ardenne and van der Schans, being the most central, along with Christy Kool and Henk Oosterling (4.9), with van Huffelen only slightly less central at (4.6)- Documents also name these actors as having some type of leadership position	3/3
Visionary Leadership	Chairperson described by three respondents as having the proper experience (FAO background) and personality (strong, no-nonsense) to run a large organization such as the RFC in the long term. In the documents, long-term plans exist, with specific programmatic options led by various	2/3

	members of the board with relevant experience.	
Collaborative Leadership	Again, the chairperson was described by several respondents as being capable of bridging the interests of the various groups due to her FAO experience and strong leadership type. However, from the APES analysis, the RFC was not very balanced in stakeholder representation meaning that collaboration amongst different groups is less likely to be an issue.	2/3
Overall Score	5 Factors, 3 potential points each (15 total)	13/15 (86.6%)

Not only are clear, redundant leadership roles assigned within the RFC, APES network data show the actors assigned are the most central in the network (see Figure 8, below), meaning that they are not only leaders in name, but also in their interaction patterns within the network; these actors are namely Agnes van Ardenne, Alexandra van Huffelen, and Jan Willem van der Schans, with two other thematic leaders, Christy Kool (since departed from the RFC) and Henk Oosterling also being highly central. From an NA perspective, this means that these actors are in a position to coordinate actions within the RFC, as well as to help facilitate exchange amongst the membership, especially within their respective thematic areas.

Nonetheless, when the word "leader" came up in interviews, respondents consistently referred to Agnes van Ardenne being *the* leader of the RFC. Due to her experience in both the greenhouse industry, as well as being in a leadership position at the FAO in Rome, she was described as being a strong capable leader not only able to take the big picture and long-term interests of the RFC's membership into account (visionary leadership), but also as being able to bridge the interests and backgrounds of the varied membership of the group (Personal communication, H. Oosterling, 29 April 2014; Personal communication, K. van Oorschot, 11 March 2014).

Network Factors – Problem Identification/Goal Setting Phase

The analysis now moves to the *problem identification/goal setting* phase for the RFC. As shown in Table 12, below, the RFC performs only slightly better than its counterpart the Food Mash according the framework's scoring system (7/12 total points). It does begin on a positive note, including a relatively broad range of stakeholders, not completely dissimilar to the business-oriented Food Mash. However, where the difference between these two organizations lies is in the large presence of governmental actors, which as

previously mentioned, can be crucial for FPCs to be effective due to access to certain power and resources. Yet, as shown in the APES figures 6 and 7, there is a high representation of business interests, with non-profit, civil society groups and individual laypeople having much less if any representation. The implications of this for the RFC are that its problem frames, as well as goals oriented towards solving the identified problems may be highly business-oriented, leaving out other environmental and social concerns that are nevertheless relevant food systems issues to be addressed.

Nonetheless, that the group is relatively diverse means that there is a significant range of skills, knowledge and resources that could potentially be drawn upon to achieve the RFC's goals. The chances that actors will work together on projects, exchange knowledge and resources, and collaborate in other ways are also relatively high, as network data show that approximately 80% of interactions within the RFC are of a cross-boundary nature. Not only is this important for these types of exchanges, it helps members come into contact with other problem frames, perspectives and the like to develop common understandings of issues and empathy with one another's perspective – this is crucial when working within such a diverse group on complex problems.

Table 12: Rotterdam Food Council Factors Data - Problem Identification/Goal Setting Phase

Factor Name	Information	Value(s)
Broad Stakeholder Representation	a) 10 government (31.3%); 4 FOA-NP (12.5%); 10 FOA-FP (31.3%); 1 Niche-FP (3%); 5 Niche-NP (15.6%); 2 Academic Community (6%); all stakeholder groups are present other than individuals not representing a specific organization/project. Representation is slightly lop-sided, with government and FOA-FP actors comprising the majority of the RFC. Nonetheless, a diverse group comprised of both important sector leading actors, as well as nascent projects.	2/3
Diverse Skills, Knowledge and Resources	a) See values above; b) Cross-boundary resource exchange 80%; so far, throughout the RFC process the possibility for exchange with actors of different types has been high, despite the lop-sided membership	2/3
Diverse Problem Frames	Same values as for Diverse skills, knowledge and experience are valid; the implications of them for this means that the problem frames assumed to be present are overwhelmingly from FOA-FP and Government Actors, meaning that those of the other stakeholder groups may be underrepresented.	1/3
Well-Connected Network	a) Network centrality index: 57%; b) Network density 0.45.	2/3
Overall Score	4 factors, 3 potential points each (12 total)	7/12 (58.3)

Lastly, in order to come into contact with said problem frames, as well as exchange resources, knowledge, and the like, a network must be well-connected. It appears that there are a good number of highly central actors in the RFC, with four being most central and several others being moderately central (see Table 12 for network centrality index and Figure 8 for visualization of central actors in the RFC network) In order for such exchanges to take place, it is likely that it (information, resources, etc.) will need to pass through one of the more central actors to get to its destination - think of this person as a hub or mediator in the RFC network. Should one of these central actors disappear, this type of exchange could become more difficult, lowering the chance for actors in the RFC to communicate and collaborate with one another – however a good number of them are present making this not such a great concern. However, there the network density is relatively low, with only 45% of all possible connections between RFC participants existing. The significance of this figure is that a relatively low amount of the total overall exchange of knowledge, resources and interaction that a co-management arrangement like an FPC is supposed to provide actually took place, i.e. fewer connection; conversely, a higher network density would have meant that actors within the RFC would have come into more complete and consistent contact with one another, allowing for the above-mentioned types of exchange to take place.

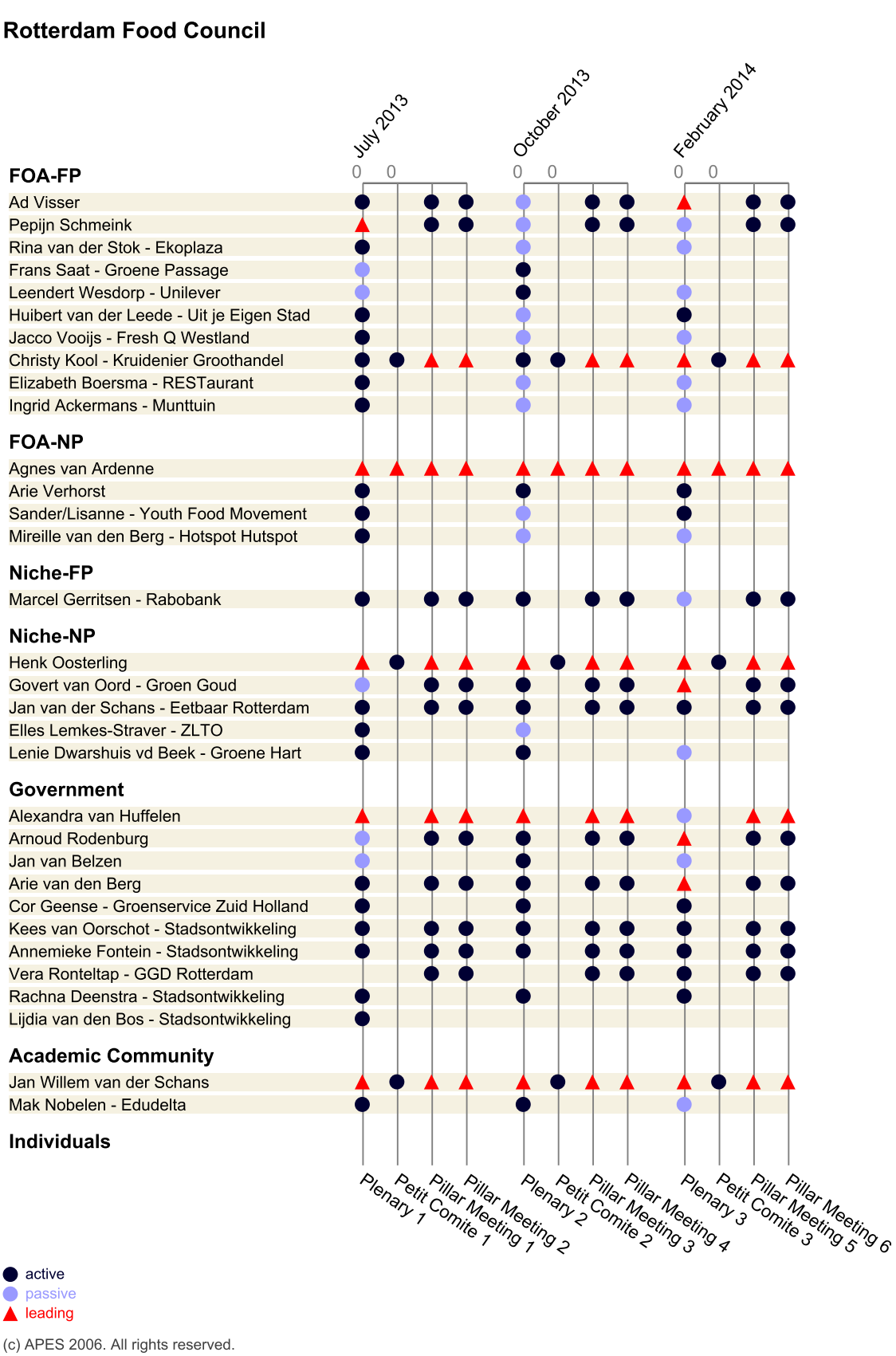

Figure 6: Rotterdam Food Council APES Graph 1

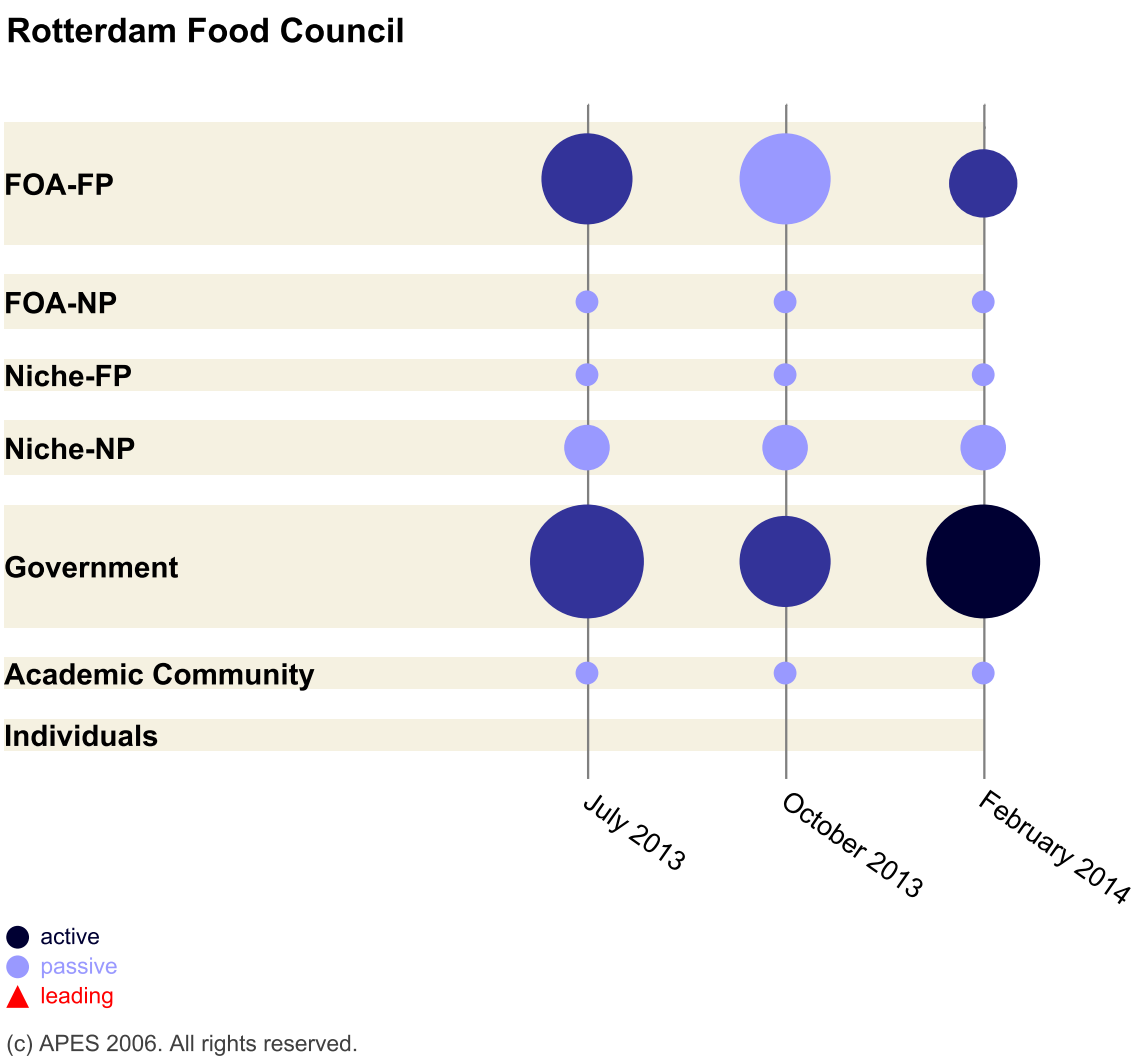

Figure 7: Rotterdam Food Council Attendance – Aggregated Actor Groups

Figure 8: Rotterdam Food Council Standardized Actor Centrality

Network Factors – Project Development Phase

The last set of network factors for which the RFC was evaluated concerns the *project development* phase. Unlike the Food Mash, data could be collected for a second factor, as projects have actually gone into implementation as a part of the RFC's work program. While the RFC does not implement the projects itself, using the various capabilities of its membership, it does its best to facilitate endeavors that help to achieve its ambitions.

Table 13: Rotterdam Food Council Network Factors Data – Project Development Phase

Factor Name	Information	Value(s)
Knowledge and Resource Exchange	80% Cross-boundary resource exchange through the observed FPC process. This is a high value, as over three-quarters of interactions are with groups other than one's own. Yet, there is little input from the academic community, niche for-profit actors and the non-profit community. Government and food business actors are most highly represented.	2/3
Connections with Outside Resources and Expertise	Once the RFC had solidified and developed a work program, participants were invited to pitch projects relevant to the work program. This was done so that the RFC could help facilitate projects that were relevant to its goals. However, documents and attendance records show this happened only once (July 2013) and was not repeated in later iterations.	1/3
Overall Score	2 Factors, 3 potential points each (6 total)	3/6 (50%)

Firstly, and briefly, as it was touched upon in depth above, the potential for knowledge and resource exchange amongst RFC members is quite high due to the highly cross-boundary nature of interactions within it (see Table 13). Members come into frequent contact with actors from varied backgrounds in plenaries, working groups and projects, providing ample opportunities for this type of exchange. An example of such an interaction can be seen by Rabobank's collaboration on a business case study for school cafeterias sourcing local and sustainable ingredients and the benefits thereof for the local economy, carried out with Henk Oosterling from the NGO Vakmanstad; this is just one example of several.

Moreover, as FPCs move into implementation, it is important that actors with the appropriate backgrounds be drawn in to help develop and implement specific projects. The RFC does this by allowing project pitches during its plenary sessions, in which local projects get the opportunity to present themselves and ask for support (albeit non-

financial) from the RFC membership. According to the records obtained, the presentation of pitches has only been carried out once during the RFC's existence. It could benefit from more consistently inviting local initiatives to present themselves as a way to achieve the RFC's goals, especially because it does not specifically implement projects itself, but rather facilitates them – a reflection of the new age of governance in Rotterdam (H. Oosterling, personal communication, 29 April 2014).

5.2.3 Rotterdam Food Council: Institutional/Process Factors

Institutional/Process Factors – Formation Phase

Once again, the focus of the analysis shifts towards the institutional and process factors that I have hypothesized to be important for FPCs to function well. In this regard, the RFC performs quite well. To begin, the RFC has documents laying out clear operating procedures. There are plenary, as well as working group and "petit comité" (executive board) sessions, for which clear tasks and content are described; reflection upon the minutes shows that this was indeed. While there are no explicit rules as such, the operating procedures provide clear guidelines for how the RFC should operate. Moreover, several interview respondents referred to the strong, "no-nonsense" character of the RFC chairperson, Agnes van Ardenne. According to these RFC members, she is firm in keeping proceedings on track and for "not taking a 'no' when a 'yes' is possible" (H. Oosterling, personal communication, 29 April 2014).

Table 14: Amsterdam Food Mash Institutional/Process Factors Data – Formation Phase

Factor Name	Information	Value(s)
Enforced Rules/Norms	There are clear operating procedures for the FPC, however no rules are stated in the documents, e.g. no enforcement. Several respondents refer to the chairperson's "no-nonsense attitude" in running the RFC. Combined with the fact that she is well-respected, it can be safely assumed that commonly held norms exist and are "enforced" to some degree.	2/3
Consistent Meetings	3-4 yearly meetings of the whole FPC; Thematic leaders meeting every 6 weeks; Petit Comité meets 1x per month	3/3
Time	Initial program of two years with a review to follow; the RFC will continue through the next election cycle. As an unofficial advisory board to the government, it does not have a specific time in which it has to be finished.	3/3
Openness to Discussing Uncertainty	Plenary sessions are structured to discuss general issues brought by RFC members, in addition to project and program-oriented subjects. Therefore, uncertainty could be discussed if the topic arose during the allotted time. However, according to two respondents, the only	1/3

	uncertainty typically discussed regards economic concerns, e.g. what will the market for local, sustainable food products in the coming years? Environmental uncertainty and such concerns do not come into play often in documents nor in interviews.	
Accountability Mechanisms to Greater Public	Public officials are present - they have a constituency that can keep them accountable via voting; Plenary sessions with the opportunity for the public to pitch their ideas, although by invitation only; Interest/niche organizations, e.g. agriculture, health, nature are also present to represent the interests of wider society.	2/3
Openness to Public Participation	Mentioned in policy documents is broad participation via plenaries. However, two respondents refer to the fact that membership to the RFC is invitation only, albeit nearly any member can submit a party for admission and the process is relatively open.	1/3
Integration of Sustainable Development Principles	SD principles underlie most thingsthe city does in Rotterdam - thus not an explicit goal of the RFC; sustainability is taken into account as an economic, not ideological factor, i.e. it is only important for the RFC in general when there is a business case for it.	2/3
Overall Score	7 factors, 3 potential points each (21 total)	14/21 (66.6%)

Also outlined in RFC working documents are the intervals at which meetings will be held, giving the members a clear indication; moreover, official support comes from two members of the Stadsontwikkeling Rotterdam, Kees van Oorschot and Annemieke Fontein, who are charged with keeping records of RFC proceedings, as well as keeping members up to date. Also regarding time, the RFC was created with an official time window of two years, with its progress, goals and the like then being reviewed thereafter. While this does not mean that it will end after this two-year period, it does mean that members have some kind of baseline against which they can measure their progress within this timeframe (K. van Oorschot, personal communication, 11 March 2014). Not only is it beneficial for temporal "measuring stick" to be given, a two-year span should help to give actors within the RFC adequate time to build common understandings of problems, goals and trust in order to develop and execute projects together.

Where the RFC falls short is the institutional provision for discussing uncertainty and relevance of environmental concerns like oil shocks and climate change for Rotterdam's food system. When asked why this was the case, one respondent said that Rotterdam does not feel that it has food security issues, with so many greenhouses and regional

farms – quality is more of a matter of concern. Furthermore, another respondent mentioned that although sustainability underlies some of what the RFC does, it is treated as more of a factor relevant for business rather than environmental concern for the sake of the environment. Therefore, it would seem that the RFC would not develop a program that comes to reflect the changing, possibly threatened nature of their food system regarding environmental uncertainty. This could happen during the plenary sessions, in which members are given a chance to address each other and the leadership. However, due to the business-oriented nature of the organization, as well as its membership, this is not likely.

Moving to factors that deal with issues of good governance, the RFC once again performs quite well. As there are many public officials, as well as a few leaders of organizations that represent societal interests, e.g. Youth Food Movement Rotterdam, ZLTO or Het Productschap Tuinbow, one can assume that there are some avenues through which society could hold its representatives in the RFC accountable. For example, if food systems issues come to be less of a societal issue, parties who take up these issues may not be voted into office, meaning that resources (human, namely) would not be committed to running the RFC (A. van Huffelen, personal communication, 25 February 2014; K. van Oorschot, personal communication, 11 March 2014). Non-governmental actors provide another avenue by which the RFC could be held accountable, however their participation requires an invitation. Although this invitation process is relatively open, it is nonetheless necessary to obtain one to participate – it is not the case as with the Food Mash that someone "off the street" could simply join a meeting and express their concerns, opinions and ideas. Moreover, as the RFC's membership is on an invitation-basis, it does not necessarily advertise its undertakings to the greater public. This means that if there could be several local initiatives that could contribute to achieving the RFC's goals, yet they do not know about the organization and it may not know about them.

The last factor from this part of the conceptual framework, which is also an issue of good governance, regards whether the RFC takes sustainable development principles into account in its work. All respondents when asked whether this was the case responded with both "yes" and "no". All pointed to Rotterdam's nature as a harbor city

as requiring it to stay current, and therefore become sustainable as things move in that direction, albeit economically. Two respondents mentioned that sustainability has become so integrated into what Rotterdam as a city (from a governmental perspective) does in recent years that it is no longer explicitly stated, but rather assumed to be an underlying factor of what the city does. And yet, as previously stated, one respondent said that sustainability is not treated for sustainability's sake, but rather as an environmental factor. Nonetheless, elements of sustainability are mentioned in RFC working documents, as well as by all respondents when referring to projects and can be assumed to inform a good deal of what the organization does, especially upon reading the RFC's work program.

Institutional/Process Factors – Problem Identification/Goal Setting Phase

Next we come to the factors relevant to *problem identification/goal setting* phase of the RFC (see Table 15). In order to work well together, it is important for actors in a co-management (or similar type of arrangement) setting to have a clear and common understanding of the problem. Although I could not reach enough members of the RFC to determine if this was in fact the case first hand, I was able to determine from the documents studied, as well as the interviews carried out, whether this was to some degree the case. As the table above shows, the working documents of the RFC give the impression that there is relative consensus around both the problems with the local food system, as well as what might be done to achieve them – programs and projects as means to achieving goals; in comparison, such attempts by the organizers of the Food Mash failed, as goals and common problem understandings failed to develop. Although two respondents claimed that business oriented food issues are the primary focus of the actors involved in the RFC, membership appears to be relatively steady throughout the existence of the RFC so far (see APES Figure 6), which may indicate that most members are more or less in agreement with the organization's direction generally and therefore its description of problems and goals found in the work program.

Table 15: Rotterdam Food Council Institutional/Process Factors Data – Problem Identification/Goal Setting Phase

Factor Name	Information	Value(s)
Clear, Common Understanding of Problems	From the working documents and work program of the RFC it appears that relatively common, albeit broad, conceptions of the problems with the food system exist within the RFC.	2/3

	The documents obtained show that the content regarding problems and goals changed little over the course of the last year; if anything it became more precise. Nonetheless, the vague nature of the problems described and the varied background of the members of the RFC make it difficult to achieve complete consensus regarding problem understanding.	
Clear, Common Goals	There are 3 clearly demarcated thematic areas, each with activities/projects that should be carried out to achieve them: 1) o Improvement of the relationship between the city and surrounding areas; 2) Education, participation, implementation and communication; 3) Circular economy and innovation; however, all respondents referred to the divide between businesses being there for strictly business purposes, whereas other actors are present for ideological/social/environmental reasons. Nonetheless, this does not appear to hinder the RFC's work to a significant degree	2/3
Overall Score	2 factors, 3 potential points each (6 total)	4/6 (66.6%)

Institutional/Process Factors – Project Development Phase

This last group of factors, those regarding the institutional/process elements during the *project development* phase of the RFC are found below in Table 16. Again, the RFC performs quite well, especially when compared with the Food Mash. When examining the RFC's documents, I found that a specific work program with various projects oriented towards each goal exists. Moreover, as previously mentioned, citizens, once invited, are able to come and pitch their ideas for support the RFC, which has the possibility to provide a broader array of "solutions" that should help to improve the local food system. These pitches only started to take place once the RFC had formed and had its first completely open plenary in July 2013. This resembles the specific type of stakeholder inclusion that the co-management literature mentions – bringing in outside actors during specific parts of the process to develop, implement and evaluate projects. Two caveats in this regard are 1) that most projects are of a distinctly economic orientation, which means projects/solutions that more closely regard social and environmental concerns might be less present, and 2) that the pitch process has only happened once, which means that the RFC would need to repeat this at numerous plenary sessions in order to maintain a variety of options for solutions.

Table 16: Rotterdam Food Council Institutional/Process Factors Data – Project Development Phase		
Factor Name	**Information**	**Value(s)**
Diverse Solutions	Each thematic area has several different activities/projects that are geared towards its achievement: 1) 2; 2) 5; 3) 7 - these have varying degrees of preciseness. Moreover, at every meeting of the RFC, pitches from citizen's initiatives are given so that they can receive RFC support provided they speak to the organization's goals. However, most goals have a distinctly economic orientation, leaving out other sustainability concerns at times.	2/3
Project-Based Stakeholder Inclusion	Working document: specific actors from parts of the food system will be connected by the RFC to each other for initatives relevant to the RFC's work program, with the organization, as facilitator; APES analysis and minutes show that initatives were allowed to pitch their ideas to contribute to the work program of the RFC. This has taken place at only one plenary meeting, but the opportunity remains open.	2/3
Overall Score	2 factors, 3 potential points each (6 total)	4/6 (66.6%)

5.2.4 Rotterdam Food Council: FPC Assets

I will now briefly treat a more tangible factor affecting FPC performance – the assets at its disposal. Much like the Food Mash, the RFC does not have funding that it can distribute for its own undertakings, nor for those of its members. As the literature has shown, many initiatives that take place within the FPC setting, or are geared towards making the food system more sustainable often lack funding. FPCs like Toronto have been able to secure some government funds to help give such projects a boost. However, this is not the case in Rotterdam. The only funding allotted for the RFC is set aside for the catering for the meetings and for the chairperson's travel expenses. Two respondents claimed that not only does the city not have the money to fund such projects, but also that such is the face of governance in the Netherlands. Namely, projects are facilitated legally through deregulation efforts and the like, however funding must come from other sources.

Table 17: Rotterdam Food Council FPC Assets Factors Data – All Phases		
Factor Name	**Information**	**Value(s)**
Legal Authority/Support	1 Alderwoman and 2 Mayors are members of RFC; 4 official/government assistants are charged with helping people navigate legal concerns, e.g.permits; the policy document states that the official position of the RFC is to advise the mayor and city council alderman and executive committee of the Greater Rotterdam region on food issues,	2/3

	with a focus on UA (unofficially).	
Financial Resources	Catering paid for by city and meeting place provided by municipalities; budget for chair's travel expenses; no money is given for projects	1/3
Overall Score	2 factors, 3 potential points each (6 total)	3/6 (50%)

Where the RFC performs well concerning assets regards its legal authority/support. Although its official position is an "unofficial advisory body" to the city council, giving it now official mandate, the RFC has several government employees as a part of its membership, including a city alderman (Alexandra van Huffelen) and the mayors of two neighboring towns (Arnoud van Roudenberg and Jan van Belzen). Access to high-ranking officials grants the RFC's membership access to those who have the power to change laws and legislation, as well as the permit procedures that concern projects within the RFC's work program and those of its membership. Moreover, there are several members of the Rotterdam Stadsontwikkeling department (economic and urban planning departments combined) that are charged with helping facilitate members' projects through legal guidance, help with permits and the like for a certain number of hours a week, which are often exceeded (K. van Oorschot, personal communication, 11 March 2014).

5.2.4 Rotterdam Food Council: Exogenous Factors

Again, with this last group of exogenous factors, it was not my intention to examine them in depth, but rather gain a superficial impression of factors external to the FPC process that could have an effect on its performance. Indeed, each factor could be the subject of a separate study, yet it is nonetheless useful to be aware of them

As previously and briefly mentioned, respondents did not seem to detect any type of crisis that could impose a threat to Rotterdam's food system in the near future. Concerns like climate change and resource scarcity do not appear to be a part of the motivating factors for what the RFC does. Therefore, the RFC can most likely not be expected to be preparing itself for drastic shocks to the food system in the near future with the current work that it and its membership are undertaking.

Table 18: Amsterdam Food Mash Exogenous Factors Data – All Phases		
Factor Name	**Information**	**Value(s)**
(Perception of) Impending/Possible Crisis	Food is produced in large quantities around Rotterdam, so scarcity/security is not a concerned; rather, access to good, healthy, affordable food is a focus, also in policy documents	N/A
Higher Level Laws and Regulations	A recently passed law prohibits the RFC from working on a regional level; it must either be state or municipal; Working document: the official position of the RFC is that it advises the mayor and aldermen, as well as the Greater Rotterdam executive board on food related issues; initiatives to move towards a local bio-based economy allow for the inclusion of food-oriented projects into larger initatives. Policy in Rotterdam is eclectic, e.g. not generally focused on sustainability.	N/A
Local Culture and Attitudes	According to three respondents, the average Rotterdam citizen is more considered with the practical effects of the RFC, e.g. will it make my food cheaper? "Does it help my kids eat healthily and free at school? Does it create a job for me?" Sustainability concerns are not thought to be very present.	N/A

One interesting piece of information regarding exogenous factors came up in an interview with an employee of Stadsontwikkeling Rotterdam, Kees van Oorschot. At the beginning, the RFC realized that the area from which the city got its food was comprised of several other towns and villages. Therefore, in order to adequately address the issues with their own food system, the RFC decided to include actors from these other areas, including two mayors from neighboring towns in their work. What seemed like a good approach to the problem was soon made illegal by higher-level (national) legislation that does not allow for cooperation between cities and the region; cooperation must take place either on a municipal or state level. Therefore, it is the case that the legal framework in which the RFC finds itself nested has changed since the beginning of its existence with implications for its cooperation with all of the actors relevant to its food system.

On the other hand, a few respondents mentioned the municipal government's push for a more bio-based economy and its positive implications for the RFC. As a part of this initiative, the local government is trying to stimulate the local food industry as a growth strategy – an undertaking that several RFC members claimed can be positive for their projects if they are framed in the right way. Regardless of the type of effect, it would be valuable for the RFC, and FPC stakeholders generally, to be aware of the legal framework within which they are nested and its implications for their work.

Lastly, for feasibility reasons, I was not able to reach out to average Rotterdam citizens and get their impressions of their local food system and what should be done with it. However, I did ask the interview respondents from the RFC what they felt the average citizen's opinion was towards their work. The general impression gained was that the average "Rotterdamer" would be interested in the more practical aspects of the RFC's undertakings, like if it makes their food cheaper, gets their kids a free meal, etc. Environmental and food security issues were once again not perceived to be real issues. Therefore, it would seem that the RFC is a relatively elite undertaking. However, in order to make any of these claims with certainty, a large-N survey would have to be carried out.

5.2.5 Rotterdam Food Council: General Analysis

At first glance, a comparison of the Food Mash with the RFC shows that the latter's healthy state and successful implementation of several projects can perhaps be attributed to elements captured by the framework. To recap briefly, the Food Mash received a score of 43.5% of the total points possible and has since ceased to exist, whereas the RFC received 66.6% and continues strongly. In the discussion section I will address the removal of irrelevant variables from the framework and weighing of others, the implications thereof for the overall scores given to each FPC and the implications of this for my conceptual framework. Following, I will discuss those elements that appear to have been the most crucial in affecting the RFC's ability to move its food system towards sustainability.

Table 19: Rotterdam Food Council – Combined Factor Scores

Factor Group Name	Value(s)
Network Factors - Formation Phase	13/15
Network Factors - Problem Identification/Goal Setting Phase	7/12
Network Factors - Project Development Phase	3/6
Institutional/Process Factors – Formation Phase	14/21
Institutional/Process Factors – Problem Identification/Goal Setting Phase	4/6
Institutional/Process Factors – Project Development Phase	4/6
FPC Assets Factors – All Phases	3/6
Amsterdam Food Mash Exogenous Factors – All Phases	N/A
Overall Score	48/72 (66.6%)

In general it appears that the RFC has a stronger overall potential for improving the food system in which it is nested. What is most apparent upon comparing it with the Food Mash is the relevance of the institutional factors and closely related network factors. To begin, it seems that elements such as a clear purpose, or set of goals provides a base around which members can group; the RFC has a detailed work program in which identified issues, goals and projects are described and related to one another, i.e. which project should address which food system ill(s). In the case of the RFC, a business-oriented program, "local for local" brought in a group of actors with a specific take on changing the local food system, through their own initiatives (H. Oosterling, personal communication, 29 April 2014). Although there were several NGOs present, they too seemed to agree with this approach to improving Rotterdam's food system, as joint projects have developed between them geared towards achieving the goals set out in the RFC's work program, e.g. the urban farming market study between NGO Vakmanstad and Rabobank.

Relatedly, strong leadership seemed to be crucial, as several interviewees pointed to chairperson Agnes van Ardenne's personality and style as being necessary to manage the diverse group of actors and to make sure that the RFC's actions stay on track. Although there were no official rules or norms as are usually present in a co-management setting, it is likely that having a strong leader provides a type of regulation that sets expectations for how FPC meetings should run. Not only were the meetings run in a professional fashion, they also took place at regular intervals, which were communicated to the RFC membership, and of which minutes were produced and shared amongst the group. The co-management literature teaches us that these simple institutional provisions help to lower transaction costs for participants (who already have primary occupations and thus less time) and can improve consistency and quality of participation.

Although both the FPC literature review and the co-management literature showed that funding was a crucial factor to effective performance, the RFC case may have shown that this depends on the case. Consistent with the new age of governance, the RFC is not only an *unofficial* advisory body that provides *non-binding* advice to the local government, it

also receives no funding. According to both literatures, this should render the RFC very weak. However, it has several projects as parts of its work program that are moving along well due a few factors. This can at least in part be attributed to the high number of government actors involved with the RFC that work to facilitate the undertakings of its members as best as possible through deregulation, permit assistance and the like; they have effectively moved from the state as "the contract giver to the state as the facilitator" (K. van Oorschot, personal communication, 11 March 2014). Nonetheless, the ability to help fund projects and influence legislation in the way that the Toronto Food Policy Council does could increase the overall efficacy of the RFC.

Where the RFC falls short according to the framework can be largely attributed to its relatively narrow stakeholder inclusion. Although most of the identified stakeholder groups are present to some degree in the RFC, they are by and large of a business, or governmental orientation. Not only does this have implications for the RFC's legitimacy, as underrepresented groups may later pose opposition for not having been included, it also means 1) that a narrower range of resources are at its disposal, limiting the breadth of its potential impact on the local food system, and 2) that its work may address certain pillars of sustainability (economic) at the expense of others (social and environmental), reducing the degree to which it actually makes the local food system more sustainable.

6. Discussion

6.1 Framework Considerations

In general, it appears that the novel conceptual framework developed for the purposes of the research project was in fact able to yield some insights into what influences urban food systems governance via food policy councils and similar governance arrangements. The fact that the Food Mash did not continue after its first few iterations, during which no specific projects started or developed, and received a poor score (43.5%) from the conceptual framework serve as an initial proof of its validity. That the Rotterdam Food Council is continuing strongly after nearly two years, with a growing membership and work program, and scored significantly better on the framework (66.6%) provide a

second piece of evidence that this analytical tool identifies *some* of the key elements for urban food systems governance.

This has allowed me to formulate some general recommendations (in the following section), as well as specific ones for the stakeholders of both of these organizations (in an abridged version of this work to be sent to the Food Mash and RFC leadership). Although the Food Mash will not continue, its founders are looking to pass the network on to another initiative, a process for which I am responsible - I hope to use insights from my framework to help guide this process. The Rotterdam Food Council, although continuing strongly, is looking for input for the improvement of their relatively new attempt at creating a healthier food system for the region.

Nonetheless, this first application of the conceptual framework has drawn my attention to the fact that not every factor has the same degree of influence on a governance arrangement's capability for moving an urban food system towards sustainability. Although I was already aware that this would most likely be the case, as it is also so with Gupta et al.'s (2010) Adaptive Capacity Wheel, the weight given to the factors in the framework should be adjusted to the governance arrangement at hand – in other words, it is senseless to try and create a one-size-fits-all model for urban food systems governance. An insightful interview with Henk Oosterling from Vakmanstad in Rotterdam echoed this conclusion when our discussion turned to a comparison between his city and Rotterdam, "one cannot compare apples and oranges". That is to say, even within the same country, in cities of similar sizes, the cosmopolitan nature of Amsterdam compared with the harbor city nature of Rotterdam provide two distinct settings for urban food systems governance, in which different factors will be of differing degrees of importance.

What is more, the framework must also be open to the inclusion of new elements that this first iteration did not account for. For example, during my review of both the theoretical and empirical literature I did come across language barriers as an issue to co-management or FPC performance. And yet, several interviews from the Amsterdam-based Food Mash network showed that in a city with such an international sustainable food scene as this one that language could indeed prove to be an issue.

Thus, in order for the framework to be of further scientific value a few things must be done. Firstly, further applications of it to similar cases can help to further illuminate the most important factors regarding urban food systems governance and refine the weight given to them. Although urban food systems issues do in many aspects resemble by-the-book definitions of co-management problems, they are also distinct in several respects - for example the sheer number and diversity of the stakeholders implicated in them, or the fact that there is not only *one* resource that is the object of interest, but rather several that comprise a large, complex system. Secondly, a familiarity with the governance arrangement - and food system within which it nested – is necessary to assign some weights to the various factors from the framework and yield more valuable insights.

Lastly, the framework is very comprehensive in the sense that it attempts to account for a broad range of factors. For feasibility's sake, as well as that of making general recommendations to stakeholders, I was only able to operationalize many of the factors in a more superficial manner. In actuality many of the factors, or factor groups could in themselves be a subject of further research. For example, the network factors regarding who serves as a leader, which type of leader, how actors within an urban food governance network interact with each other in order to exchange knowledge, resources, and the like, could be the subject of an in-depth network analysis. Similarly, an in-depth institutional analysis could provide richer insights into what the institutional framework for urban food systems governance could look like, or a framing/discourse analysis could help to uncover stakeholder's opinions towards the modern food system and if they perceive any threats due to environmental shocks. In addition to more profound, robust results, such studies could help with the weighting of the framework, by showing to what degree a certain factor or factor group does indeed affect urban food systems governance.

6.2 General Recommendations for Successful Urban Food Systems Governance through FPCs

Although this was first application of my conceptual framework, I feel that I am nonetheless able to make a few general recommendations to actors working in urban

food systems governance through bodies such as FPCs, due to 1) the overlap between the theoretical and empirical literature on what leads such governance arrangements to be effective, 2) the moderate corroboration between the real world status of the two cases examined and their scores on the framework and 3) the depth with which I came to understand the way in which they function through my experience organizing one and researching another.

6.2.1 First-Tier Recommendations

The first group of factors that I describe here can be considered of a *first-tier* nature – that is, based on my research, those elements that I have assumed to be the most important, and thus worthy of more weight in further applications of the framework. They concern primarily the institutional/process aspects of the urban food systems governance arrangement (e.g. an FPC). Without a solid institutional foundation, it is not likely that high-quality exchange and interaction will take place amongst stakeholders, rendering the latter outcome a product of the former.

To begin, while it may be obvious, in international cities such as Amsterdam, or others like it around the world, FPC members have to be able to *communicate effectively* – in this case, speak the same language. It is likely that Amsterdam is not the only city taking action to improve its food system and where language can also pose a barrier to cooperation. And, since a large part of what makes FPCs effective bodies through which to address complex food systems issues is their collaborative nature, effective communication is a must. Similarly, as FPCs normally have a diverse membership with differing interests in the food system, there needs to be 1) *a process* by which they can hear each other's perspectives and develop a common one together, as well as 2) *respected leaders* with the skills and resources to bridge these groups (especially in earlier phases) and lead their efforts in the desired direction. With this as a foundation, the transfer of knowledge, skills and resources is more likely to take place, increasing the FPC's overall potential for 1) understanding the complex system that they are trying to change, and 2) designing and implementing projects and programs that can move their respective food system towards sustainability.

Moreover, nearly all FPC members have a primary occupation – their FPC efforts are an extra time investment. Therefore, in order to assure that they are able to contribute with as little effort as possible, the FPC process must be *well-organized*, with *clearly assigned responsibilities for key tasks* (e.g. leading and administrative roles), *routine meeting intervals*, and *regular updates communicated* to the membership. Additionally, *support from the proper governmental authorities* is needed to help guide stakeholders the complex legal framework that presides over food systems issues, especially in age where the new governance paradigm is the state as a facilitator instead of an implementer; Rotterdam does an excellent job in this regard, with several members of its urban development department dedicated to helping facilitate RFC members' projects.

6.2.2 Second-Tier Recommendations

This second group of recommendations includes those factors that my research has led me to believe play an important, yet more secondary role in successful urban food systems governance. That is, with the first group of recommendations in place, the inclusion of factors that follow should help to improve performance, whereas without the former in place, the latter are assumed to have much less of an effect on urban food systems governance.

Firstly, broad stakeholder *inclusion* is needed in order for an FPC or other type of urban food systems governance arrangement to have the proper skills, knowledge and resources to be effective. However, it is not always relevant for all members to be present at all FPC meetings. Indeed, once a general problem understanding, set of goals and work program have been developed, members can check in with the plenary body at less frequent intervals to lower the work burden for all parties considered. Similarly, FPC members (especially the leadership) can seek to include specific members, as well as external stakeholders, in undertakings that speak to their expertise and interest, giving projects and programs a better chance at success and members a better sense of contributing in a concrete way.

Doubtless, the ethics of good governance (e.g. accountability and integration of sustainable development principles) that lead to higher perceptions of legitimacy,

readiness for environmental shocks (through having back-up plans and multiple solutions) and learning processes (monitoring, evaluation and reaction) can help to increase the effectiveness and longevity of urban food systems governance arrangements. However, the elements described in the first section (first-tier recommendations) should comprise the basis of an urban food systems governance arrangement (e.g. an FPC), and thus be the primary focus in the early stages, while the former can strengthen them as they develop.

In addition to those aspects mentioned the previous section, future research will also be needed to more precisely determine when each of the factors from the framework is relevant, giving in essence a sort of development timeline that stakeholders can follow as the attempt to improve their local urban food system. Moreover, future endeavors should attempt to discern which factors are generally relevant for urban food systems governance, and which are case specific, depending on the system in which the governance arrangement is nested. I have not attempted to give a specific weight to any of the factors here, as I do not feel that I have enough data to make this anything more than a superficial exercise. Rather, I have attempted to separate the factors that I assume to have an effect on urban food systems governance into two categories of differing importance – the elements from the first-tier should be assumed to have more "weight" than the second-tier.

7. Conclusion

The problems with the modern global food system are grave and varied. Not only the system as a whole, but also those at the more local level are characterized by trends that are leading us into an era of price fluctuations, food insecurity, and diminishing access to fresh, healthy food for the most needy. We are becoming ever more dependent on a globalized, fossil-fuel reliant, monoculture-based food system that squeezes maximum profit out of an ever dwindling natural resource base, while exploiting the people it should be feeding and employing along the way. Urban areas are particularly susceptible to these ills by definition, due to a lack of food production, growing populations, amongst a host of other troubles.

However, these problems are not going unaddressed. Urban agriculture undertakings focusing on organic techniques are springing up in cities around the world, in order to reestablish society's connection with their food, green cities and provide some degree of food sovereignty for cities. Meanwhile, NGOs and like-minded groups are undertaking campaigns to help society become aware of the effects of our eating habits on our health and that of the environment. Moreover, actors in the political arena are working to change policy such that it promotes a healthy food system – a stark contrast to the current political framework that subsidizes the destructive nature of the current one.

Yet, such efforts can often be uncoordinated and have a myopic focus. They can miss out on opportunities to work with each other, or worse, contradict one another's efforts. For example, policy makers could advocate for creating a legal framework that promotes instead of hinders urban agriculture, or work to create incentive programs to get fresh, sustainable food products into the schools of underprivileged children. Or, if efforts are not coordinated, it could be that case that one program works on improving the logistics of current delivery routes to reduce CO2 from transit, while another is working to increase the number of small sustainable farms, effectively reducing environmental damage from production, but potentially increasing it via fragmented logistics chains. Thus, it is apparent that some type of coordination amongst these undertakings is necessary. Moreover, the food system that these stakeholders are trying to change is expansive and immensely complex, with supply chains that begin in remote parts of the world somewhere and end up on a plate ten-thousand kilometers away as one ingredient in a dish comprised of thirty. In order to understand such a system more fully, and consequently have a better chance at making a difference, these stakeholders need to collaborate in order to combine their knowledge and share their skills and often-limited resources with one another.

I was not amongst the first to realize that some type of coordinating body could help stakeholders take serious steps towards moving urban food systems in a more sustainable direction. Food policy councils (FPCs) have arisen as a platform of sorts that brings together actors from all parts of society, representing every part of the food chain, from the farm to the waste dump, in order to envision a healthier food system and act on it. This approach shares a strong parallel with the co-management literature,

which is normally geared towards common pool resource (CPR) problems, in which humans and nature are intricately connected in social-ecological systems (Folke et al. 2005). In this approach, stakeholders to whom a problem is relevant are brought together in a manner that encourages collaboration, to take advantage of shared knowledge, skills and resources, and develop legitimacy – a reflection of the modern state of environmental governance.

And yet, in light of this, few efforts to date have tried to uncover what makes FPCs successful at addressing urban food systems problems. Moreover, no research has attempted to conceptualize these issues as a type co-management problem, although humans and natural systems are deeply intertwined when it comes to food systems, especially in urban areas. Therefore, it was my ambition to merge the empirical literature on what has made FPCs successful in cities around the world, with the work that has been done co-management of social-ecological systems, in order to develop a framework of sorts that can help stakeholders design and assess their own attempts to coordinate on changing their local food system. I tested my framework on two cases, one that I was responsible for during an internship in Amsterdam and another on the Rotterdam Food Council. I was able to moderately corroborate the hypotheses of my framework, that both the network and institutional factors used for analysis do indeed have implications for the effectiveness of urban food systems governance; although further and more in-depth research will be needed to assess to what degree each of the numerous factors actually explains this and what the specific interplay between them is. Thus, the framework should not be taken as a blueprint for how create an FPC, or similar urban food systems governance arrangement, but rather as a starting point for designing, running and evaluating them, with special attention given to the particularities of the broader setting in which they are nested. It is my hope that this framework will give stakeholders looking to improve their local food system - from government officials to farmers - a starting point for coordinating with one another and taking action and researchers an impetus to carry this crucial work forward.

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9. Appendices

9.1 Appendix One: Gupta et al.'s (2010) Adaptive Capacity Wheel

Effect of institution on adaptive capacity	Score	Aggregated scores for dimensions and adaptive capacity as a whole
Positive effect	2	1.01 to 2.00
Slightly positive effect	1	0.01 to 1.00
Neutral or no effect	0	0
Slightly negative effect	-1	-0.01 to -1.00
Negative effect	-2	-1.01 to -2.00

9.2 Appendix Two: Criteria from Gupta et al.'s (2010) Adaptive Capacity Wheel

Table: Dimensions and Criteria for Promoting Adaptive Capacity: Adaptive Capacity Wheel (Gupta et al. 2010)
(1) Encourage the involvement of a variety of perspectives, actors and solutions. However, a happy medium must be struck by finding the balance between heterogeneity and homogeneity, e.g. "variety can also paralyze action, imply suffocating consensus, and negotiated nonsense" (p. 463). Variety is necessary because of the complex and often disorganized nature of the type of problems that these types of governance regimes are meant to address - it provides what Gupta et al (2010) call the "social ingenuity" required as a part of adaptive capacity (p. 463). With this in mind, institutions are said to embed variety when they: a) Allow for a variety of problem frames and solutions, b) Allow for a variety of actors (multi-actor), levels (multi-level) and stakeholders (multi sector) during the solution formulation process, c) Promote diversity to reach tailor-made policies, and d) Allow redundancy in the short-term to promote the best long-term solutions;
(2) Enable social actors to continuously learn and improve their institutions to adjust to changing environmental conditions and other such stimuli. Specifically, "learning allows for changed understanding based on experiences (Gunderson and Holling, 2002). It also enhances trust between social actors. Adaptive institutions encourage actors to learn". Learning is necessary because it allows society to question and change "socially embedded ideologies, frames, assumptions, claims, roles and procedures", which is necessary for adaptive capacity (p. 463). Learning capacity is shown by an institution promoting that actors and organizations: a) Trust each other by learning about differently and commonly held beliefs, assumptions, roles, etc., b) Adopt single loop learning (the improvement of routines based on experiences and information), c) Adopt double loop learning (when actors challenge underlying norms and assumptions based on experiences and information), d) Explicitly consider doubts and uncertainties, and e) Stimulate institutional memory", which is the collection of perceptions, facts, experiences and knowledge held by the governance regime as a whole;
(3) Allow and motivate social actors to autonomously adjust their behavior in regards to the goals established and the state of the system being addressed. To do this actors must be able to predict possible changes, plan measures against them, which is dependent on the provision of information. This means that institutions ensure that actors (p. 463): a) Have continuous access to the relevant information, b) Are capable of acting according to the established plan and c) Have the capability to improvise and adapt given the need to deviate from the plan;
(4) Can mobilize the necessary leadership qualities in order to plan for the long term, drive change, give direction and get others to follow. These qualities of such leadership are namely (p. 463): a) Visionary (which includes elements of reformist, intellectual, and sticks and carrots leadership), b) Entrepreneurial (which includes elements of leadership by example, unilateral and directional leadership and includes designing tools to engage the market), and c) Collaborative leadership (which is also referred to as instrumental leadership in

the literature).
(5) Can mobilize resources for implementation of measures to achieve goals, as well as adaptation measures (p. 464): a) Authority (legal and political mandates), b) Human (knowledge, skills and labor), and c) Financial (including access to technological) resources;
(6) And lastly, support principles of fair governance, as this has been linked by the literature to being key for adaptive capacity. More specifically, a balance between effectiveness and efficiency needs to be struck, while taking into account considerations like the need for innovation (and its inherent inefficiency), in addition to the concerns of all stakeholders regarding the policy process, its outcomes and the impacts of actions undertaken. These principles include the following (p. 464): a) Legitimacy, b) Equity, c) Responsiveness and d) Accountability;

9.3 Appendix Three: FPC Member Questionnaire

1. What are the different FPC positions?
    a. Are they all occupied?
    b. Are there term limits?
    c. What are the responsibilities involved?
    d. Are these shared amongst any members?
2. Who are the leaders in the FPC?
    a. Who are the most central actors in the FPC?
3. Who are the leaders in the FPC?
    a. What qualities best describe them?
4. Who are the relevant stakeholder groups for FPCs?
    a. Which groups are present?
5. Which types of stakeholder groups are present in the network?
6. What are the definitions of the problems with the food system according to the different groups present in the FPC?
    a. See proxy measure
7. Which actors participate at discrete phases of the FPC process that are otherwise not members?
8. Which "experts" did FPC leadership bring in?
9. What are the operating procedures for the FPC?
    a. Are there rules?
    b. If so, to what degree are these enforced (e.g. official sanctions vs. social sanctions?
    c. Does the FPC meet regularly?
    d. How often?
10. For how long has the FPC been in existence?
    a. To what degree do leaders find the time they have to be adequate for their programs/goals?
11. To what degree does the FPC encourage the discussion of issues of uncertainty?
    a. To what degree is it open to this?
12. Does the FPC have any accountability mechanisms to the greater public, like open forums, voting, etc.?

    a. Do the participants have any similar accountability mechanisms (especially public officials)?
13. How open is the FPC membership process?
    a. What are the different types of membership?
    b. How accessible are they?
    c. Does the FPC have open forums, etc. other avenues for public input?
14. Are sustainable development principles explicitly a part of FPC work?
    a. Are they implicitly a part of FPC work?
15. Are there clear problems for the FPC in documents?
    a. Do the FPC leaders agree with these and/or their formulation?
    b. How well do they understand them?
16. What are the solutions (programs/projects) that the FPC is undertaking?
    a. Which goals are these oriented to?
    b. Is there more than one solution per goal? How many?
17. Have specific outside experts been involved in discrete FPC projects/phases?
    a. When?
    b. How many times?
18. What are the provisions for keeping up to date on FPC projects/programs, etc.?
    a. How thorough are they?
19. What are the provisions for evaluating FPC projects/programs, etc.?
    a. How thorough are they?
20. What is done with the information gained from the monitoring and evaluation of FPC projects and programs?
21. Is there a mandate (or something similar) for the FPC?
    a. Are there politicians who support the FPC explicitly?
    b. Are there government actors present in the FPC?
22. Does this FPC have a budget?
    a. To what degree to FPC leaders say it is adequate?
23. What do FPC leaders say about crises informing/motivating the FPCs direction and activities?
24. Do the FPCs undertakings fit within any higher-level laws, regulations, and initiatives?

a. Do higher-level laws, regulations and initiatives contradict anything the FPC wants to do?

25. What is the local culture's position towards FPC goals?
    a. Problem definitions?

9.4 Appendix Four: Document Analysis Question List

Question List for Document Analysis

1. What are the different FPC positions?
    a. Are they all occupied?
    b. Are there term limits?
    c. What are the responsibilities involved?
    d. Are these shared amongst any members?
2. Are there government actors present?
    a. How many are there?
    b. Which departments do they represent?
3. Who are the leaders in the FPC?
    a. Who are the most central actors in the FPC?
4. Who are the relevant stakeholder groups for FPCs?
    a. Which groups are present?
    b. How heterogeneous is the network?
5. Which types of stakeholder groups are present in the network?
6. What are the definitions of the problems with the food system according to the different groups present in the FPC?
    a. See proxy measure
7. What is the heterogeneity of network relationships of FPC participants during the different phases?
8. Which actors participate at discrete phases of the FPC process that are otherwise not members?
9. Regarding network measures for "well-connectedness"
    a. What is the overall network centrality?
    b. What is the network density?
    c. What is the level of network closure?
10. What are the operating procedures for the FPC?
    a. Are there rules?
    b. If so, to what degree are these enforced (e.g. official sanctions vs. social sanctions?
    c. Does the FPC meet regularly?
    d. How often?

11. For how long has the FPC been in existence?
12. To what degree does the FPC encourage the discussion of issues of uncertainty?
    a. To what degree is it open to this?
13. Does the FPC have any accountability mechanisms to the greater public, like open forums, voting, etc.?
    a. Do the participants have any similar accountability mechanisms (especially public officials)?
14. How open is the FPC membership process?
    a. What are the different types of membership?
    b. How accessible are they?
    c. Does the FPC have open forums, etc. other avenues for public input?
15. Are sustainable development principles explicitly a part of FPC work?
    a. Are they implicitly a part of FPC work?
16. Are there clear problems for the FPC in documents?
    a. Do the FPC leaders agree with these and/or their formulation?
    b. How well do they understand them?
17. What are the solutions (programs/projects) that the FPC is undertaking?
    a. Which goals are these oriented to?
    b. Is there more than one solution per goal? How many?
18. Have specific outside experts been involved in discrete FPC projects/phases?
    a. When?
    b. How many times?
19. What are the provisions for keeping up to date on FPC projects/programs, etc.?
    a. How thorough are they?
20. What are the provisions for evaluating FPC projects/programs, etc.?
    a. How thorough are they?
21. What is done with the information gained from the monitoring and evaluation of FPC projects and programs?
22. Is there a mandate (or something similar) for the FPC?
    a. Are there politicians who support the FPC explicitly?
    b. Are there government actors present in the FPC?
23. Does this FPC have a budget?
    a. To what degree to FPC leaders say it is adequate?

24. Do FPC documents mention any crises as a motivation for what they do?
25. Do the FPCs undertakings fit within any higher-level laws, regulations, and initiatives?
    a. Do higher-level laws, regulations and initiatives contradict anything the FPC wants to do?
26. What is the local culture's position towards FPC goals?
    a. Problem definitions?

9.5 Appendix Five: Food Mash Interviewee List

Interviewee	Organizational Affiliation	FPC Membership Type
Chris Monaghan	Metabolic - Environmental Consulting Firm	Leader
Jonas Grön	BiteMe - Conceptual Food Laboratory	Leader
Joyce Bergsma	EatLoveFood - Healthy Food Options to Order	Member
Joost van Cornelis	Van Boer tot Bord - Logistics/Marketing Operator for Local/Sustainable Products	Member
Monica B. Velasco	Urban Designer/Urban Agriculture Advocate	Member
Anke de Vrieze[26]	Farming the City - Urban Agriculture Research Organization	Member
Francesca Miazzo	CITIES the Magazine - Publication Focusing on Sustainable Initiatives in Cities	Member/Co-Founder
Fabian Gort	FabFactory - Developer of Sustainable Food Application	Member
Ron van Heusden	Dienst Ruimtelijke Ordening - Current Food Vision Project Leader	External
Harry de Vries	Dienst Ruimtelijke Ordening - Former Food Vision Project Leader	External

[26] Communicated with this interviewee twice.

9.6 Appendix Six: Rotterdam Food Policy Council Interviewee List

Interviewee	Organizational Affiliation	FPC Membership Type
Alexandra van Huffelen	Rotterdam Municipal Government - D66 Representative	Leader
Kees van Oorschot[27]	Rotterdam Stadsontwikkeling - Civil Servant	Member
Henk Oosterling	Vakmanstad Rotterdam - NGO for Tradesmanship Skill-Building	Leader
Rianne Andeweg	Rotterdamse Oogst - Local, Seasonal/Sustainable Farmer's Market	Member

[27] Communicated with this interviewee 3 times

9.7 Appendix Seven: Food Mash Network Information

These documents are part of the outcome of my internship work at Metabolic in trying to construct a network platform for food sustainability in the Amsterdam region.

GOALS:

Knowledge, understanding, & interaction with food

- Producers & Farmers
- Interest Organziations
- Government & Academia
- Restaurants, markets, point-of-sale

Find a communal space with like minded allies where we can grow, cook and educate

Ann Doherty (City Plot)

Learning about building with recycled materials

Lucas (Zwamlokaal)

Sharing knowledge about mushroom growing and food production

Lucas (Zwamlokaal)

Developing knowledge of people's interaction with and understanding of food

Jonas (BiteMe)

Learning about different stages of food chain

M.Velasco

Get people to realize/feel the difference of eating really good food and buy/ invest in it

Use food as a tool to restore emotional/spiritual connect with the land, soil, nature

Gaining knowledge (and participating) in urban agriculture

Eline (Marqt)

GOALS:

Marketing, networking, reaching audiences, funding

- Producers & Farmers
- Interest Organziations
- Government & Academia
- Restaurants, markets, point-of-sale

Get social investor for €70,000 to bridge 1st startup

Mijn Stadstuin

Explore possible cooking/growing workshops w/ Bite Me

Ann Doherty (City Plot)

Funding for urban community gardening projects

Lisa G. (Prinzessininnengarten)

Find conscious consumers that want to be active in producing their food

Robin van Alphen (Mijn Stadstuin)

Develop a knowledge exchange

Reaching people with the resources we need to expand what we do

Get funding, reach consumers and producers for app for finding local products

Promoting sustainability niche groups in food system by helping them to use social media effectively

People trained in social networking/online advocacy for a better food system

Promoting transition and ecological values in society

Market myself and keep costs down

Joyce Bergsma

Engage people to support my education project on urban agriculture in Bolivia in Sept. 2004

M.Velasco

GOALS:
Urban agriculture, logistics, land/farms, point-of-sale

- Producers & Farmers
- Interest Organziations
- Government & Academia
- Restaurants, markets, point-of-sale

Get own mushroom production going with help from Meat the Mushroom

Ann Doherty (City Plot)

Efficient logistics (combined) from producers to restaurants

Peter Oei

Optimally match our offerings to peoples needs

Demand/Supply Problem-Correcting Left Stock

Balance production to a scale where the community space can be managed at the same time

Lisa G. (Prinzessininnengarten)

Creating a consumer producer community

Improve cost efficiency on a small scale

Moes

Initiating online sustainable super-market chain platform for Marqt where demand meets supply, & vice-versa with local

Eline (Marqt)

Documentation of current examples of urban agriculture food production

M.Velasco

Build an urban agriculture showcase (SAM)

Metabolic

Land for food production garden

Suzanne (City Plot)

Get my products on the shelves

Joyce Bergsma

Looking for local producers and educators

Meeting local producers

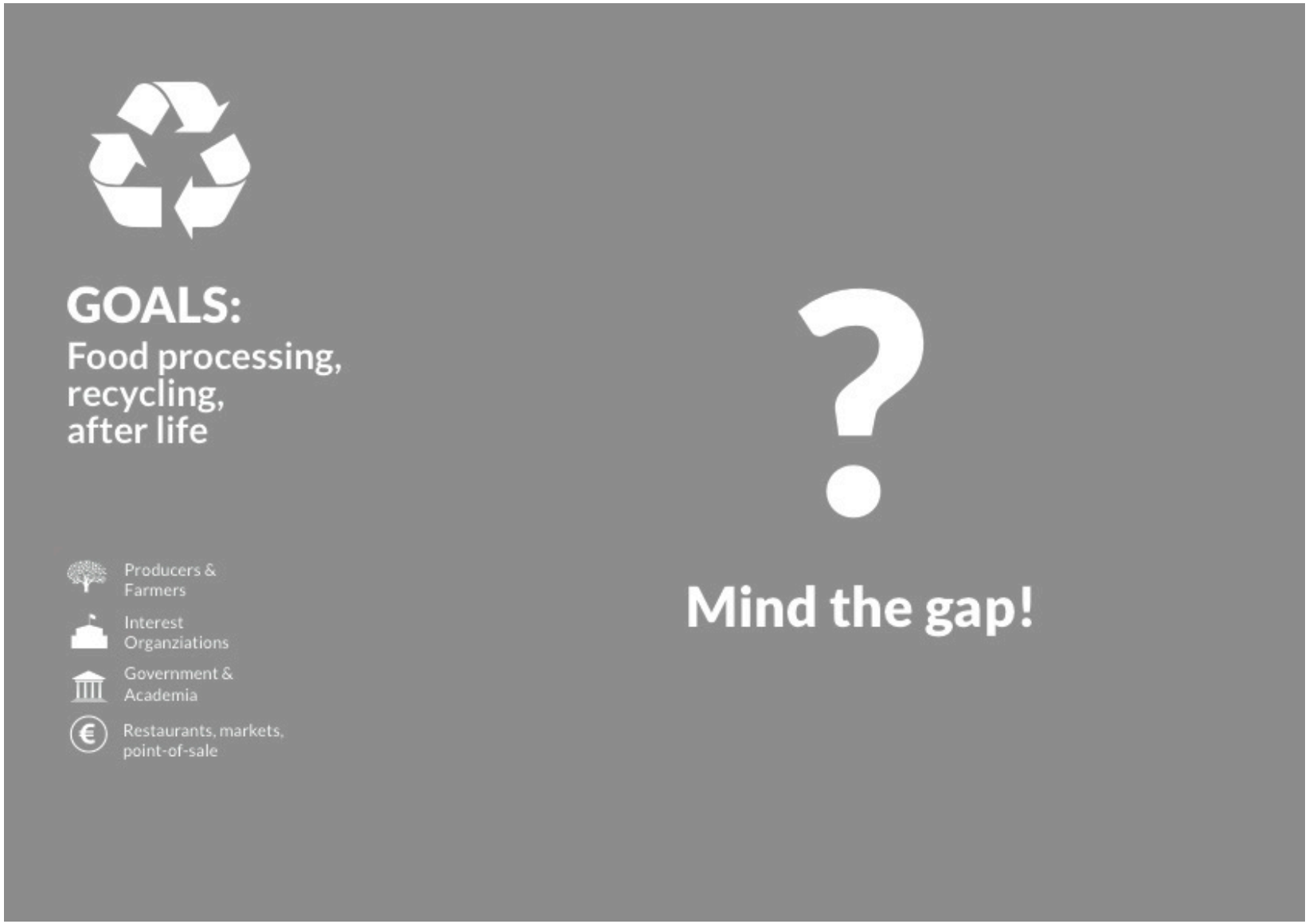
Marius (BiteMe)

Getting in touch w/ more local suppliers and starting partnerships

Eline (Marqt)

Own vegetables from the area, know where they come from

Moes


GOALS:
Food processing,
recycling,
after life
Producers &
Farmers
Interest
Organziations
Government &
Academia
Restaurants, markets,
point-of-sale
?
Mind the gap!

CONTACT INFO

Restaurants, Markets, Point-of-Sale

MOES
restaurant focus on local & sustainable products
Contact:
Mark and Vijay
www.totmoes.nl

Biet en Boon/De Kas
restaurant inside an old green house using its own produce
Contact:
Antoine Miltenburg
www.bietenboon.nl

Soep met Ballen
Sustainable soup and meatballs in Amsterdam
Contact:
Matthijs Tukker
www.iens.nl

Anna Haen
A shop/restaurant chain specializing in local organic goods
Contact:
Martijn Steinebach
www.annahaen.nl

Geef Café
A donation-based restaurant in Amster-
Contact:
Laura Schon
www.geefcafe.nl

Wanaka Goods
Sustainable goods, healthy food
Contact:
Colette Nickerson
wanakagoods.com/

Amsterdam Food Coop
An Amsterdam-based food coop with a focus on local, fresh food
Contact:
Fiona
foodcoopamsterdam.nl/

Scandinavian Café
An upscale café with Scandinavian cuisine and directly-traded coffee
Contact:
Rikard Andersson
www.scandavianembassy.nl

Zuidermarkt
Biodynamic Farmer's Market Organizer
Contact:
Sarriel Taus
www.zuidermrkt.nl

Marqt
Marketer and an organic supermarket chain
Contact:
Eline Veninga
www.marqt.com/

Voldaan
A local sustainable food shop
Contact:
Nicole Gigatti
https://nl-nl.facebook.com/voldaan.amsterdam

Van Boer tot Bord
A company that sells, markets and handles logistics for local products
Contact:
Joost Cornelis
www.vanboertotbord.nl

Producers & Farmers

Mijn Stadstuin
A company that rents spaces for UA and helps people care for them

Organic Farmer/Floriade
A biodynamic farmer and cook with an interest in highlighting food issues
Contact:
Rens Spanjaard
www.rensspanjaard.nl

Eat Love Food
A woman giving workshops, making homemade healthy salads and crackers
Contact:
Joyce Bergsma
http://www.eatlivelovefood.com/

Biodynamic Farming
Biodynamic farmer
Contact:
Sjoukje Postma
becomingafarmer.com/sjoukje-postma/

Meat the Mushroom
A company growing gourmet mushrooms and developing a meat substitute
Contact:
Wouter Hassing
www.meatthemushroom.nl

Zonnehoeve
Owner of a self-sufficient biodynamic farm
Contact:
Piet Ijzendoorn
www.zonnehoeve.net/

Food Producer
Small scale farmer
Contact:
Jules Marshall
nl.linkedin.com/in/julesmarshall

Prinzessinnengarten Berlin
Urban farmer in Berlin
Contact:
Lisa Gutermuth
prinzessinnengarten.net/

Zwamlokall
Organic mushroom grower
Contact:
Lukas van der Zee

Interest Organizations

Youth Food Movement
A youth-oriented offshoot of the Slow Food Movement; NL wide
Contact:
Felicia Alberding
youthfoodmovement.nl

Cities the Magazine
A magazine that holds events and reports on sustainability issues in cities
Contact:
Francesca Miazzo
www.citiesthemagazine.com

De Stuurlui
Urban design firm with a focus on urban agriculture
Contact:
Marijke Bruinsma
www.destuurlui.nl

De Culinaire Werkplaats
A restaurant with a social orientation, building skills for youth, unemployed
Contact:
www.deculinairewerkplaats.nl

Platform Eetbaar Amsterdam
A platform advocating for a more healthy A'dam food system through UA
Contact:
Tanja den Broeder
eetbaaramsterdam.wordpress.com

Dutchie Amsterdam
A platform to discover unique Dutch food, produce, creative eating, people
Contact:
Tiago Vitorino

Food Guerrilla
An organization that builds campaigns and buzz for orgs doing food sustainability
Contact:
Lotte Sluiter www.foodguerilla.nl

Cityplot
An organization giving UA education through workshops in their gardens
Contact:
Ann Doherty, Suzanne Oommen
www.cityplot.org

Fab Factory
Designer of a sustainble food app
Contact:
Fabian Gort
www.fabfactory.eu

Impact Hub
A "hub" that is part incubator, part platform, and resources for creative people
Contact:
Rianne Hordijk
www.impacthub.net

Stadsboeren Amsterdam
Amsterdam urban farmers organization
Contact:
Martijn Schreuder, Diederik Verhey
www.stadsboeren.org/

Rouzer Agency
Social media advocate for agroecology
Contact:
Barz Rouzer

Innovatie Netwerk
An organization doing research, especially on sustainability innovations
Contact:
Peter Oei
www.innovatienetwerk.org/nl/

A Greener City
Sustainabiity Blog
Contact:
Shoshannah Hausman

Food Coop
An organization that helps Dutch food coops get starting
Contact:
Cor-jan
www.foodcoop.nl

BiteMe
A conceptual food lab; food consulating
Contact:
Jonas Groen
www.biteme.co.nl

Community Garden for Children
Community gardener

City Food Route
A business that designs tours of "good" food in Amsterdam
Contact:
Floske Kusse
www.cityfoodroute.nl

Anke de Vrieze
UA platform member and CITIES member
Contact:
Anke de Vrieze
nl.linkedin.com/in/ankedevrieze

Metabolic
A small sustainability consulting, design and action firm
Contact: Chris Monaghan, Peter Duran, Gerard Roemers
www.metabolic.nl

Amped
Chain innovator
Contact:
Marc van Woudenberg
Amped.nl

Wetailer
A company trying to help home "makers" upscale their production
Contact:
Chiel Murling

Government and Academia

Knowmads
An organization training people in entreprenuerial skills
Contact:
Ugne
www.knowmads.nl