COMPLEX-CITY:

An Urban Centred Appraoch to Local Food Governance in Denmark.

Masters Thesis
MSc. in Engineering, Sustianable Design

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ABSTRACT

The purpose of this study is to render local food systems in Denmark governable. Local food is a highly complex and unorganised phenomena which is composed of multiple fragmented framings across and within governance. In order to coordinate governance arrangements and strengthen governance networks a local food system model is created, based on the theoretical framework *"Governance on the inside"* The participatory design approach is used throughout, firstly to define the model with governance actors from three different cities in Denmark, Copenhagen, Aarhus, Ronne, and secondly, to co-design two accounting device concepts that can cultivate commitment of governance actors into a new local food system representation, making local food visible and therefore governable.

CONTENTS

1. INTRODUCTION

In the globalised world of today, it is seldom that the food in our plate is produced, processed, distributed and consumed in the same region, and it is more likely that it has travelled miles across countries or even continents. The last years, consumers have become more and more curious to know what is on their table, and more sensitive to information regarding their food.

In the spatial context that local food is embedded, there are actors who argue that there are multiple values exchanged between the rural and the urban areas: it is more environmental friendly; it boosts local economies; it strengthens the relations within local communities. Therefore, localisation of food is becoming increasingly interesting. At the same time, policy makers and urban planners are trying to design cities, having to face problems like climate change, resource depletion and urbanisation. Resilience, sustainability and liveability are the main axes upon which they build the cities of tomorrow.

The current food system in Denmark is conventional and well established, yet in terms of sustainability, somewhat problematic. There are inefficiencies with regards to food miles and the global market (often where we see the import and export of the same foods) in addition to social and economic issues such as health, food education, and employment within the food sector. This thesis proposes that shifting the focus to locally produced foods can help to tackle these inefficiencies and transition towards a more sustainable approach to food governance. There is no established '*local food system'* in Denmark at this time. There are a number of relevant initiatives and activities taking place that are working towards the development of this system (examples) but at this time these efforts are fragmented. The policy makers involved with food development are often working across many departments of the municipality, and therefore have different framings of what a locally focused food system should look like. These multiple framings constitute a scattered local food system representation and for this reason they result in an unorganised and weak governance network around food localisation. Therefore, we must find a way to consolidate these framings creating a shared understanding for what is a good local food representation so the governance network can be based on.

In this respect, and as it will be fully analysed later, the problem of the scattered image and the lack of an adequate representation of the values local food carries as a system, can be solved with the design of an accounting device. The role of the accounting device is to render the system visible, and as an epistemic process, to reorganise and restructure existing framings and create new knowledge and ways to frame local food that are attractive for the relevant actors.

For this reason, in the following sections we will attempt to identify and conceptualize the value exchanges between urban and rural regarding local food production and consumption relations in cities of Denmark, in order to create an accounting device that will render local food visible as a system that can be effectively governed.

1.1 Research Question

1.1.1 Primary Research Question

How can we coordinate and strengthen governance arrangements pertaining to local food in Denmark by developing a stronger unified framing of value producing urban-rural exchange, thus rendering local food visible and transforming it into a well defined object?

1.1.2 Secondary Research Question

How can we visualise and communicate local food in an attractive and engaging way in order to cultivate commitment with Danish policy makers?

1.2 Delimitations

It is important to note that, this project is not striving to make a fully functioning local food accounting device but rather a conceptualisation of a local food systems model and how it pertains to the construction of an accounting device - by outlining the processes involved, defining the boundaries, and pointing out the challenges in making them measurable and operable.

1.3 Structure of the Thesis

In chapter two, we will present the theoretical framework of the project and give examples from literature on how governance arrangements have been affected by the introduction of accounting devices in the past. Then the reader will be introduced to the theoretical model, that we constructed based on the theory to align with the goals of the project. The model is composed by three phases: Multiple framings, Appraisal, Commitment and they constitute the basis of the structure throughout the report.

In chapter three, the design approach and empirical research methods are presented. Firstly, we justify the use of the participatory design approach throughout the project, secondly the selection of the three investigated cities and the participants within these cities is explained. Finally, the methods used during each of the three phases of the project (multiple framings, appraisal, commitment) are described, organised and reflected upon.

In chapter four, we present the multiple framings of local food that were found through literature and empirical research during the investigation phase of the project, these framings show the complexity and diversity of the local food system.

Chapter five outlines the process of Appraisal and the creation of a local food model, where a common representation of local food system is defined based on the value creating relations and infrastructure requirements identified throughout research and participatory design. The chapter concludes with the presentation of the local food model.

In chapter six, we address the secondary research question where we begin to explore the process of cultivating actor commitment through the conceptualisation of two representations of the local food model; City League Tables, and the Knowledge Sharing Platform. Here we discuss the rationale, functions, interface, and design of each concept in addition to the ways in which they can be used as

accounting devices that help to strengthen governance networks and render local food visible as a value producing socio-technical system.

A comprehensive discussion is carried out in chapter seven, where the topics of reducing complexity, improving governability, and sustainability in relation to local food are debated.

Finally, in chapter eight, we will present our overall conclusions and reflect upon our the processes, methods, and results in relation to our theoretical approach. Additionally, we will address the outcome of the research questions and explore the potential of future work that could be carried out in this field.

2. THEORETICAL FRAMEWORK

2.1 Introduction

Currently, established institutions in Denmark (municipalities, agricultural organizations etc) view urban centres (cities) as one entity and rural areas (farmlands and food processing facilities etc) as another. We argue that this separation results in a lack of visibility of the value exchange opportunities between these two worlds. We hypothesise that if we can find a way to encourage policy makers to view urban and rural spaces as one network, it can open up the phenomena of *'food localisation',* as an attractive and governable object, which is currently systemically invisible due to a lack of shared understanding between actors of what being local actually means.

With the goal of strengthening and coordinate local food governance arrangements, it is necessary to render food localization visible, as a well defined and attractive socio-technical system. We cannot govern what we cannot see, it is important to get into the mindset of thinking about, and describing things in new ways. Language, and the various meaning associated with it has been constructed by us as humans. Richard Rorty explains in the 1989 publication *"'Contingency, irony, and solidarity' that " The world does not speak. Only we [humans] do. The world can, once we have programmed ourselves with a language, cause us to hold beliefs."* (Rorty, 1989) this book argues that point that *"truth is made rather than found."* in that there is no universal truth out there waiting to be discovered, and in this case, we as designers must construct it.

Another critical point for the framework of this project, is based on Foucauldian governmentality scholars. *Governmentality* is relevant for this project since it highlights how epistemic work is central in making phenomena governable. According to Miller and Rose (1990) in their article *'Governing economic life'*, which is based on Foucault's concept, governmentality emphasizes the *"diversity of powers and knowledge entailed in rendering fields practicable and amenable to intervention"* (Miller & Rose 1990). Power is the ability to create strong representation and knowledge is the information that can be produced by an epistemic device. The governmentality literature highlights the connection

between governance networks as components of system representation. Without a strong shared representation of the local food system, without an object that is clearly defined, strong governance arrangements cannot exist. A loose metaphor of local food results in disorganised governance networks. *"Knowing an object in such way that it can be governed is more than a purely speculative activity: It requires an invention of procedures of notation, ways of collecting and presenting statistics the transportation of these to the centers where calculations and judgements can be made and so forth"* (Miller & Rose 1990)

We need to develop a way to account for the various activities and value exchanges taking place between urban and rural spaces in order to render a food localisation system visible and therefore governable. There are many factors involved in the design of such a device such as, the development of a new language in order to think about and describe things in a new way and the question of how we can be make different framings of a system comparable.

In the following sections we present some concrete examples of how systems can be rendered governable through accounting devices. We will discuss how these accounting devices are constructed and how they then influence policy making.

We will then introduce the theoretical model that has been developed from a combination of the theories of *Governance on the Inside* (Smith & Sterling, 2006) and Actor Network Theory (Callon, 1986). *Governance on the Inside* takes a reflexive approach in understanding that different actors employ different strategies and tools, to render a socio-technical system visible in diverse ways *"by different actors, and their inter-subjective negotiation in governance arenas, effectively involves those arenas in the (social) (re)construction of the socio-technical 'system' itself.'"* (Smith and Stirling, 2006).

Once the reader has been introduced to the justification of our theory choice, we will breakdown the processes of multiple system framings, appraisal, commitment, and translation employed in the model and outline how they will be used for the development of a political tool for alternative governance strategies. Finally the limitations to the theoretical framework will be discussed.

2.2 Success Stories

How do epistemic instruments contribute to develop, organise, and strengthen governance arrangements? The three cases that are introduced: Cycling in Copenhagen, Climate change, and finally the IMO case on piracy are examples of success stories of creating new ways of understanding socio-technical phenomena. In these cases, accounting devices were implemented as epistemic practices, and they succeeded in managing to develop strong governance networks by making effective system representations, rendering their respective socio-technical systems visible in different ways.

2.3.1 Cycling in Copenhagen

The first case is studied in the article *'Reinventing the bicycle: how calculative practices shape urban environmental governance'* (Jensen et al, 2017) and it is about urban cycling in Copenhagen and how three different calculative devices resulted in strengthening governance networks, corresponding to three different representations of the system. The three accounting devices and their framings are the following: Police reports contributed in making cycling visible as *"traffic safety risk"*, the bicycle account, resulted in making cycling visible as an *"urban experience"*, and finally the socio-economic analysis of cycle investments rendered cycling visible as a *"health producing mode of mobility"*. (Jensen et al, 2017)

Cycling as a Traffic Safety Risk:

Epistemic practices for rendering cycling visible as an object of traffic safety risk was based on traffic accidents recorded in police reports. The primal goal of aggregating such data was the safety of cyclists and traffic safety management. By collecting and analysing the data, policy makers decided to take action by having urban planners and designers to use designs in order to prevent accident prone behaviors. *"Urban planners and the police thus intervened, for example, by introducing designs that prevented cyclists from crossing streets without dismounting from their bicycle or otherwise coming to a halt"*. (Jensen et al 2017) Moreover, the strong governance network built around this representation resulted in safety education programs for children and behavioural campaigns for cyclists.

The Cycling Experience:

The epistemic visibility of the bicycle as an urban experience derived from an accounting device developed by designers '*the bicycle account'* "*The bicycle account, therefore, quantifed components of cycling infrastructure and journey characteristics seen to be central to a positive cycling experience: for example, the total length of cycle paths, average cycle speed and the number of parking facilities for bicycles. Cyclists' subjective perceptions of their cycling experiences were also collected through telephone interviews."* (Jensen et al 2017)

Another value that occurred after recognising cycling as experiential was the fact that it contributed in city's vitality. Such parameters, that quantified the contribution of cycling to the urban environment, was also implemented into the accounting device of *'the bicycle account'*. Governance started being orchestrated around this visibility of livability, that cycling is part of the urban culture of Copenhagen and how this experience can be enhanced, taking into consideration different indicators that could describe urban cycling experience. *"the new field of visibility contributed to signifcant changes in the governance of cycling"* (Jensen et al 2017)

This change resulted in constructing a strong governance network that increased the budget for cycling, constructed new infrastructures that aimed in optimising the experience of urban cycling. For example, *"New cycle- and pedestrian-only bridges were built across the harbour"*, *"Urban planners introduced a system of so-called green waves, which optimised the cycling experience by ensuring cyclists traveling at 20 km per hour on defined routes would be met with a flow of green traffic signals."* (Jensen et al 2017). However, the most important outcome was the establishment of a formal organ within the municipality of Copenhagen, the Cycling Secretary (CS).

Cycling as a Health Producing Mode of Mobility:

With the establishment of CS within the municipality there was a need to co-ordinate the different small projects that were taking place in the area of cycling and normalise cycling as part of the broader transport planning. In that respect, a socio-economic analysis was conducted regarding cycling investments as a calculative means which has also been used before for national railway planning.

Among the different variables, that were taken into consideration in the socio-economic analysis, health gains was the most important one. *"The single most important new variable, however, was the health gains of cycling because they were, then, calculated to be more than 5 Danish Kroner per kilometre cycled."* (Jensen et al, 2017)

The socio-economic analysis made cycling visible in new ways for the ministry of transport, as till that moment the lack of such a calculative description of cycling prevented the ministry from considering cycling in the national planning. Moreover, the health production value was of great importance to municipalities outside from Copenhagen. These two facts resulted in the establishment of a *'Cycle Superhighway'* project, a cycle network that connects the capital region of Denmark with twenty two other municipalities. (Jensen et al, 2017)

In all the three epistemic practices of framing cycling as of a certain value, it is clear that governance arrangements take place only when strong representations are rendered visible through a calculative form so that governance actors can align. Moreover, the more strong governance arrangements become, the more is the need for calculative devices that describe the system resulting in more visibilities rendered known.

2.3.2 The Individual Carbon Footprint

The next case that is introduced, is taken from the paper *'Making climate change governable: accounting for carbon as sinks, credits and personal budgets'* (Lövbrand & Stripple 2011) and is the accounting device of individual carbon footprint that is used for rendering phenomena visible as governable objects as part of climate mitigation and climate change strategy. So far, reduction of greenhouse gases (GHG) emissions has been framed as a responsibility of firms or states, but recently, there has been a shift of interest also in how to quantify and calculate the individual footprint of CO2 emissions. (Lövbrand & Stripple 2011) *" The imagination of a 'personal carbon budget' rests on a similar calculative capability that assumes that one can account for the carbon footprints of individuals in relation to a totality of a country, a region, or the world."* (Lövbrand & Stripple 2011)

The epistemic practice of accounting for one's own carbon footprint with for instance, *"online carbon calculators and voluntary carbon dieting schemes"* suggest that individuals can govern their own emissions in multiple ways *"– as counters, displacers, dieters, communitarians, or citizens"*. (Lövbrand & Stripple 2011) Such a calculative method has two different aspects at the same time. On one hand, social practices and overall GHG emissions are aggregated, on the other hand, it is individualised, suggesting individuals can manage' actively their greenhouse gases practices. (Lövbrand & Stripple 2011) Another practice that is used to individualise carbon footprint is by aggregating a state's GHG emissions and divide it by the population. The interesting part of this method is that carbon metrics of the state are "internalised by the individuals. *"When individuals internalize the carbon metrics of the state, and 'base their actions on these metrics, they become part of a network of self-regulating actors"* (Rutland and Aylett 2008)

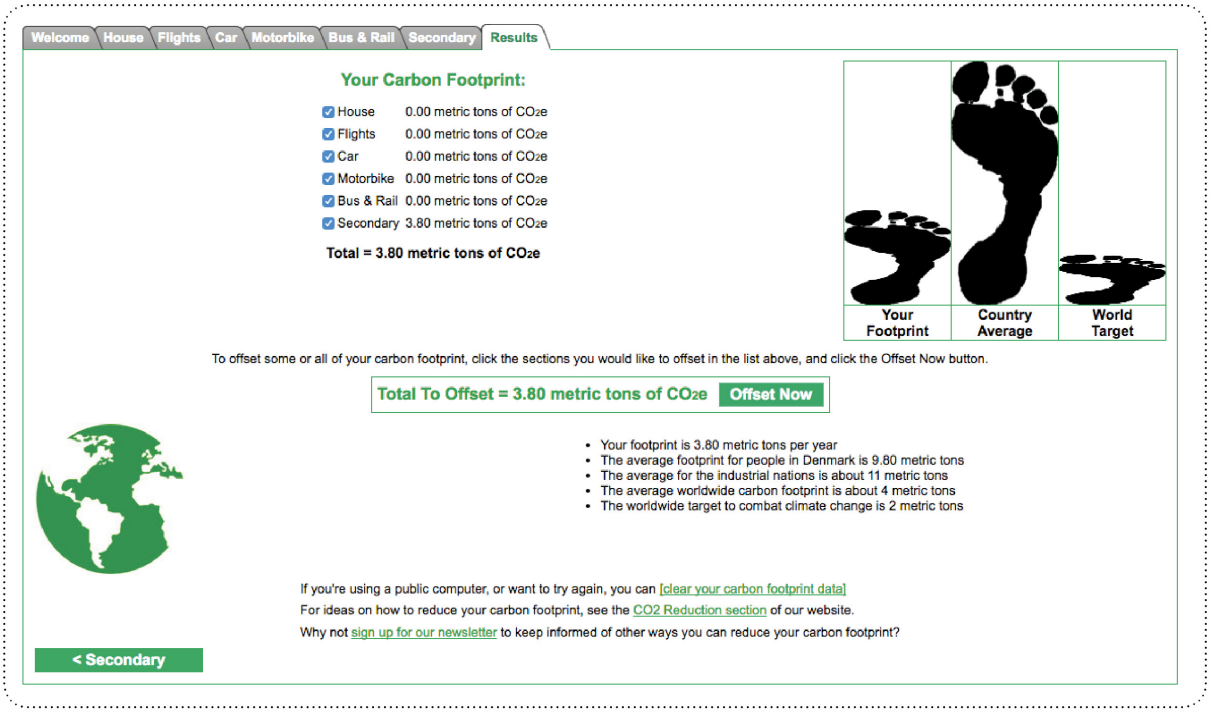

Figure 1: E Example of an online footprint calculator (www.carbonfootprint.com)

The interesting point of this case is how governance actors manage to pass responsibility and create awareness on individuals through epistemic practices and how individuals become part of the"governance network" in the sense that they manage to govern their own emissions. (An example of an online footprint calculator can be seen in figure 1).

2.3.3 Piracy, the United Nations (UN) and the International Maritime Organisation (IMO)

The last case is the case of piracy case and the way the UN and IMO used epistemic practices in order to describe the phenomenon of piracy. accounting devices that UNSC uses to create knowledge on piracy. Bueger (2015) in his article *'Making Things Known: Epistemic Practices, the United Nations, and the Translation of Piracy'* studied certain epistemic practices used by UNSC to create knowledge about piracy in order to find out how knowledge is produced and how it is representative.

One of the three epistemic practices that Bueger studied in his article is the reports that International Maritime Organization produces in order to quantify piracy. IMO collects incident reports and every month, quarter, and year publishes data compilations. In that way, IMO becomes the center of calculation as they translate piracy to numbers. Quantification plays a constructive role since it enables the creation of new things or the transformation of old ones. Afteralongprocess, piracy could be reduced and codified in a less complex manner.*" Through the tabulated format, the complexity of an incident is codiifed in nine categories and short pieces of information which then, in turn, can be stored. "* (Bueger 2015) The benefits of quantification in this case are prominent; it produces a general sense of certainty and denounce personal judgements. Most importantly for the pirate case, numbers and other representations like maps and graphs are important devices to generate consensus *"across distance"*. This one document can be easily circulated across interested parts like UNSC. (Bueger 2015)

All these three cases exemplify, in completely different ways how complexity can be reduced and knowledge can be framed according to the desirable framing. It also suggests that epistemic practices, that in all these three cases were accounting devices, play a major role in coordinating and organising governance networks by creating certain representations of their respective systems.

N°	Ship Name Type of Ship Flag Gross Tonnage IMO Number	Date Time	Position of the incident*	Details of the incident	Consequences for crew, ship, cargo	Action taken by the master and the crew	Was the incident reported to the coastal authority? Which one?	Reporting State or international organization	Coastal State Action Taken
1	2	3	4	5	6	7	8	9	10
IN INTERNATIONAL WATERS									
2	VECTIS OSPREY General cargo ship Isle of Man (United Kingdom) 6190 9594315	17/08/2016 13:27 LT	WEST AFRICA Approx. 28nm South of Bonny Nigeria 03° 54.50' N 007° 09.30' E	Pirates armed with guns boarded the vessel underway. The alarm was raised, SSAS activated and crew retreated to the citadel. Pirates left when Nigerian Navy intercepted and boarded the vessel. Vessel was escorted to Bonny River Anchorage for investigation. Incident reported to Nigerian Navy	Ship's equipment damaged. Crew belonging, cash and ship's cash stolen.	Master implemented Anti-Piracy Procedures. SSAS activated. Crew retreated to the citadel. Established communication with CSO	No	ICC-IMB Piracy Reporting Centre Kuala Lumpur	Nigerian Navy intercepted and boarded the vessel after received the reported made by the vessel.
IN TERRITORIAL WATERS									
1	ATLANTICA Bulk carrier Malta 28693 9216509	07/08/2016 00:05 LT	SOUTH CHINA SEA Cai-Mep, Vung Tau Viet Nam 10° 15.50' N 107° 01.26' E	Three robbers in a small boat approached and boarded the anchored ship. Duty crew on routine rounds spotted the robbers and raised the alarm. All crew mustered on the main deck. Upon hearing the alarm and seeing the crew alertness, the robbers fled in their boat with six cans of 20-litres paint. Port Control informed.	Six cans of 20-litres paint stolen.	Duty crew raised the alarm and crew mustered	Yes Port Control	ReCAAP ISC via ReCAAP Focal Point (Vietnam), ICC-IMB Piracy Reporting Centre Kuala Lumpur	-
2	AISHA SARWAR Bulk carrier Bangladesh 26612 9200433	24/08/2016 01:10 LT	WEST AFRICA Approx. 5.5nm South of Conakry Guinea 09° 24.50' N 013° 43.30' W	Seven robbers armed with guns and knives boarded the anchored bulk carrier. Two crew members were taken hostage and beaten on board. The robbers fled with crew cash and property. Incident reported to the local agent.	Crew cash and property stolen	-	No	ICC-IMB Piracy Reporting Centre Kuala Lumpur	-
IN PORT AREA									
1	HARLEY Product tanker Marshall Islands 29083 9133082	05/08/2016 02:00 LT	WEST AFRICA Folawiyo Nispan Jetty, Apapa, Lagos Nigeria 06° 14.00' N 003° 23.00' E	Four robbers armed with long knives boarded the berthed tanker at the forecastle. The duty pumpman on routine rounds was taken hostage and threatened him with long knives. The robbers submerged two hoses into the forward tank dome and commenced stealing the cargo. Once their boat was filled into their boat, the robbers released the pumpman, and fled. The alarm was raised and a search was carried out.	Robbers took hostage the duty pumpman and threatened him with long knives. They stole some cargo	Alarm raised and a search was carried out	Yes Local Port Authority at Apapa, Lagos	Marshall Islands ICC-IMB Piracy Reporting Centre Kuala Lumpur	External security guards were sent onboard provided by port facility
2	KING BEANS Bulk carrier Panama 17018 9550151	07/08/2016 00:30 LT	WEST AFRICA Pointe Noire Outer Anchorage Congo 04° 44.90' S 011° 46.30' E	Four robbers in a small motor boat approached the anchored ship. Two robbers boarded the ship and broke into the boatswain store, which triggered an alarm on the bridge. Duty officer raised the alarm and alerted the piracy watch crew members who started making their way towards the forward. Upon seeing the alerted crew, the two robbers fled with their accomplices waiting in the boat. A search was conducted, following which it was determined that nothing had been stolen.	-	Duty officer raised the alarm and alerted the piracy watch crew members who started making their way towards the forward	No	ICC-IMB Piracy Reporting Centre Kuala Lumpur	-

Figure 2: Part of IMO monthly report on piracy for August 2016

2.3 Introduction to the Model

As outlined in the three cases above, accounting devices play a constitutive role in rendering an object visible as a governable phenomena (which is necessary to develop strong governance networks). In order to emulate this epistemic practice we introduce a theoretic model has formulated by combining the theories of *Governance on the Inside* (Smith and Stirling, 2006) and the *'four moments of translation'* from *Actor Network Theory* (Callon, 1986) to serve as the theoretical framework for the

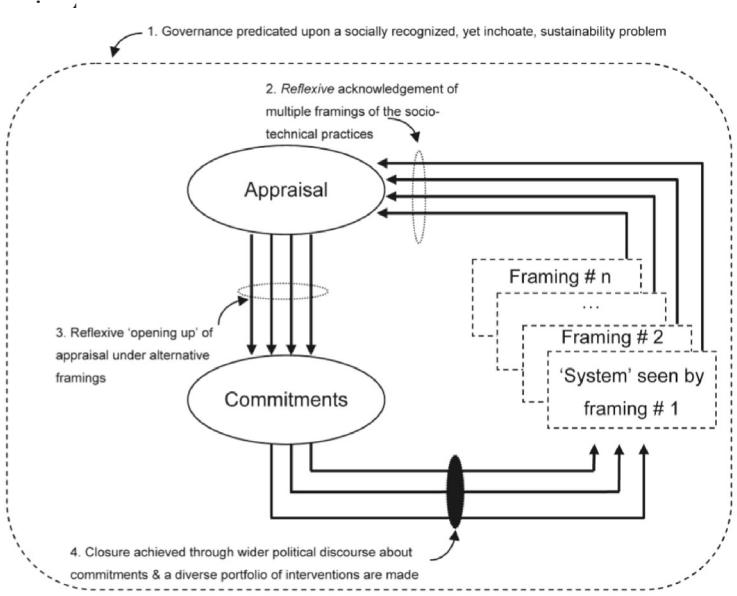

Figure 3: Governance on the Inside model (Smith and Stirling, 2006)

Governance on the Inside was selected due to the political approach of the theory, in that it recognises that a socio-technical system is *"embedded within broader socio-political and economic networks' "*(Smith and Stirling, 2006). Systems are not pre-existing and in order for them to be governed they have to be actively rendered known through a common understanding. In the case of local food in Denmark, there are multiple framings of local food from various actors in a broader governance network, each of which are valid, but must be aligned in order for a comprehensive system to be established. Likewise, the process of aligning actors into a new governance network (in this case, local food), with which all do not necessarily agree, is a political process. Therefore, Callon's four moments of translation from *Actor Network Theory*; *problematisation, interessement, enrolment and mobilisation* (Callon, 1986) are used to configure this new local food governance network. Successful socio-technical development emerges through complex networks of actors, artefacts and institutions, therefore governance will need to engage across many of the points and processes within those networks (Smith et al., 2005).

Our model is organised in three phases. The first shows that there can be multiple framings of a sociotechnical system meaning that different actors have varying understandings of reality.

These different interpretations of reality, do not allow governance actors to align into one strong governance network which leads into a fragmented system representation. The next is appraisal, the starting point of the model is that socio-technical system does not exist as pre-existing objects, but they are made into objects though appraisal processes. Considering the fact that new ideas are often rejected, commitment, the third phase will ensure that the key actors are being enrolled into the network of the new system at an early stage.

In order to make the model more comprehensible, we will initially present the model in these phases - (1) Multiple Framings of the Food Localisation System, (2) System Appraisal, and (3) Cultivating Commitment. The model will then be presented as a whole showing how the three phases function in context with one another.

2.3.1 Multiple Framings of Food Localisation

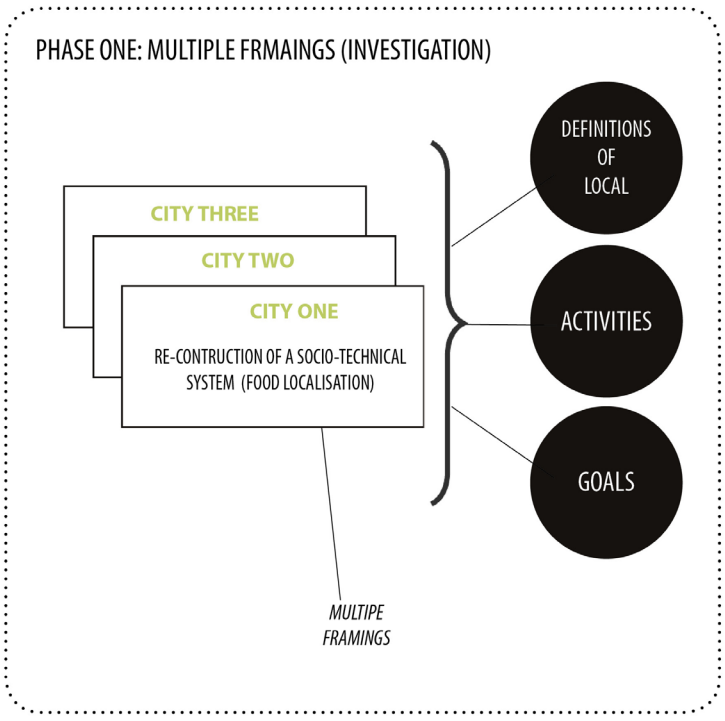

Figure 4: Multiple Framings section of the model

This phase of the model in concerned with uncovering the multiple ways local food is framed by actors between and within three Danish cities. This includes a broad spectrum of framings from the most marginalised to the most popular among the actors. If we consider local food, as a socio-technical and economic phenomenon is a *"socially constructed concept, [which] has become a highly complex and ambiguous entity in both literature and society"* (Edwards-Jones, 2010; Hinrichs, 2003), this phase is a process of *'opening up'* (Smith and Stirling, 2006) where all actor perspectives and considerations are taken into account.

2.3.2 System Appraisal

The appraisal phase is both an epistemic and design process where we will try to explore new understandings of, and construct alternative knowledge about food localisation *"knowledge is constructed, imbued with meaning and subject to social learning"* (Nowotny et al., 2001; Webler et al, 1995; Wynne, 1995). In the model appraisal is linked with the problematisation (epistemic) and interessement (design) translation processes of ANT. Appraisal is conducted through a combination of participatory design with key actors and a literature review of the field.

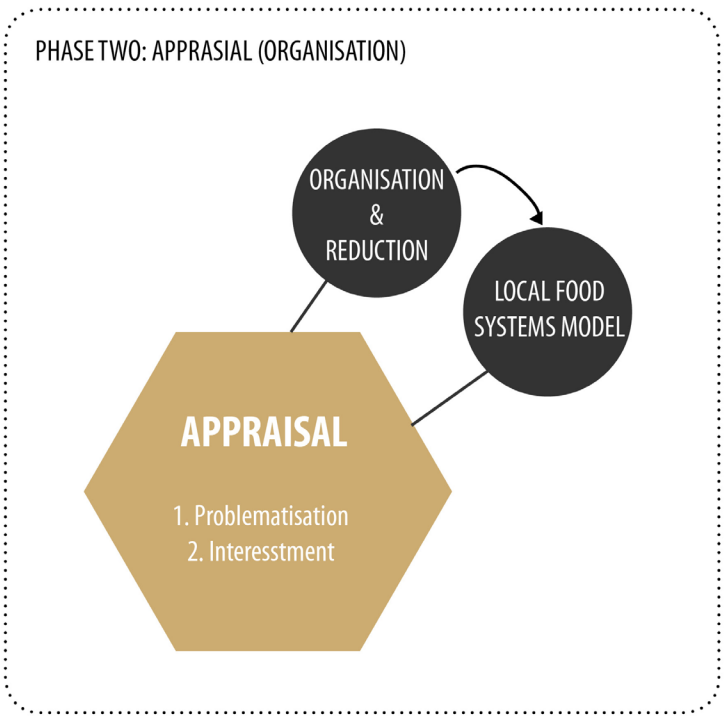

Figure 5: Appraisal section of the model

Here we use the first translation moment of problematisation to re-problematise actors to take an integrated systems perspective towards local food by defining the system and creating *"substantive understandings, social learning and cultural meanings [...]"* (Smith and Stirling, 2006). Interessement, the second moment translation, is achieved through the creation of a coordinated framing and the design of an accounting device where we the system is rendered visible and relevant to governance actors.

2.3.3 Cultivating Commitment

Once the accounting device is created, rendering the system visible, commitment is about action - this is the process in which we strengthen and coordinate governance arrangement, by offering actors a common understanding of what they are doing. As a result of this; *"value appropriation is created, relationships are formed, tangible resources produced and deployed and concrete governance interventions can be undertaken."* (Smith and Stirling, 2006) Where appraisal is concerned with 'ways of knowing' social commitment is about showing the relations between the concepts and *'ways of being'* in relation the to socio-technical system.

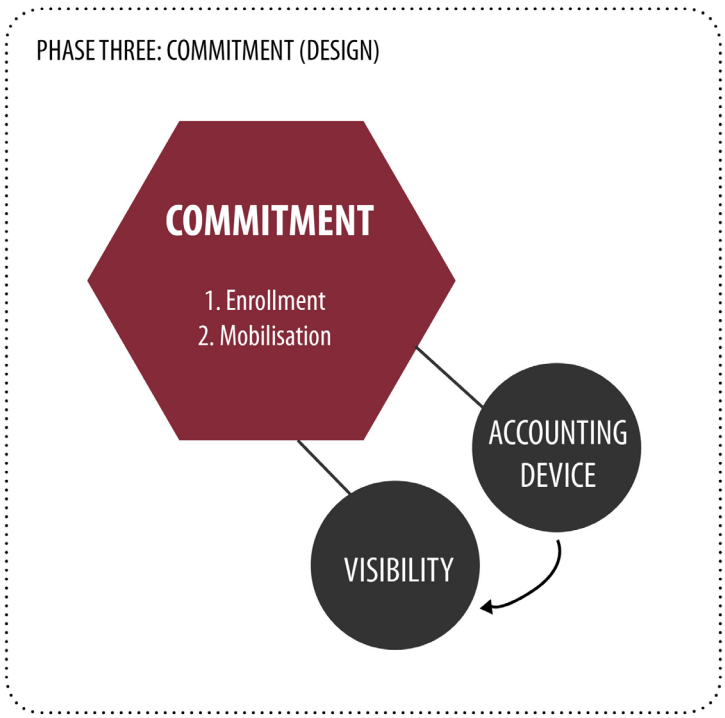

Figure 6: The commitment section of the model

The third translation moment of enrollment is concerned with enrolling actors into the strengthened and newly coordinated governance network. This is reliant on the success of the problematisation and interestment from the appraisal phase i.e has the system been successfully defined and coordinated in alignment with actor framings.

The fourth translation moment of mobilisation is where the newly connected network handles the agenda which is established in the problematization phase i.e. how can we convince policy makers to actually take action in terms of local food governance. In order to cultivate commitment, we require qualification from the actors during the design of the accounting device, this means that the appraisal and commitment phases must be iterative and reflexive.

2.4 Model Overview

In this section we present an overview of the model. What may not be evident from the individual explanations of the three phases is that the model is in fact designed to be both iterative and reflexive as a governance process. The multiple framings of the local food system are treated as the input to the appraisal phase that are organised and reduced in order to create a defined system representation in the form of an accounting device. The accounting device is a knowledge creating device that quantifies local food, the purpose of which is to render the local food system visible and governable. In order for a strong governance network to be established actors must be committed to the newly constructed socio-technical system.

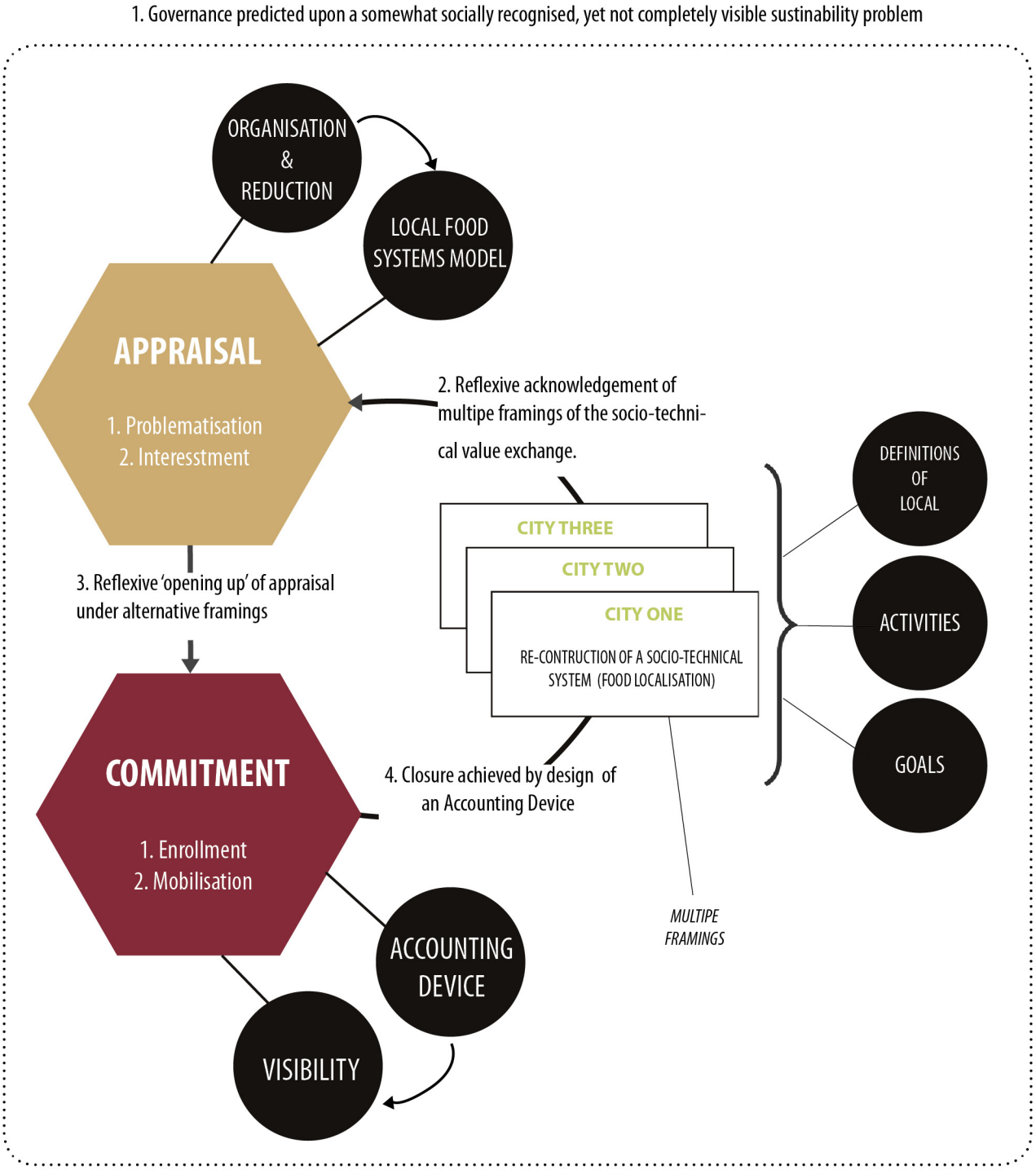

Figure 7: Overview of the Thoretical Model

How can we cultivate commitment to our newly defined object?

1. Linking to Broader City Agendas

The challenge here lies within the idea that *"social actors can be 'committed' to a socio-technical system [representation] in a number of overlapping and related senses."* (Smith and Stirling, 2006) we must be intentional in our design so that we can frame the system to satisfy some particular need,

for example, resilience or employment, that will in turn prove to our target audience (policy makers) that the food localisation system is worth investigating and developing. Participatory design is one way to cultivate commitment and validate the design of the device, (the choice/use of this design method is discussed in more detail in the next chapter). Participatory design should enable us to bypass our assumptions and uncover the real issues in relation to current political agendas.

2. City Branding

The reputation of cities and/or regions are rather like the brand images of companies - it is important how we cities and the positive and negative attributes associated with them, therefore governments are very much in the business of brand management. In the Anholt 2007 book *'Competitive identity: the brand management for nations, cities and regions'*, he argues that there are 6 components of city branding:

(1) The Presence: The city's international status and standing in relation to what cities are known for and any notable contributions in the last 30 years to science, culture, or governance.
(2) The Place: The perceptions of physical aspects of the city both pleasant and unpleasant for example; weather conditions or travel experience.
(3) The Potential: economic and educational opportunities for visitors businesses and immigrants.
(4) The Pulse: The appeal of its urban lifestyle, interesting activities, exciting city to live.
(5) The People: Whether inhabitants are warm and friendly towards outsiders, how easy it is to fit into the community in terms of language and culture, and how safe people feel there.
(6) The Prerequisites: How people perceive the basic qualities of the city: accommodation, what they think it would be like to be there, living standards: hospitals schools etc.
(Anholt, 2007)

3. Competition (Making Cities Comparable)

If we are successful, through the accounting device, in making the cities comparable we have the opportunity to create a competitive space that can be used as a political tool for transition to more sustainable practices in food localisation. Competition and/or ranking through city tables creates discourse which shapes our interpretation of cities, creates and boundary object to communicate urban/rural reality, and acts as the political tool to incubate transition to more sustainable practices.

When we visualise the competitive field, we attempt to make the intangible tangible by creating association and metrics from which actions either successful or failed can be measured, league tables create a hierarchical order. For this project we need to explore the intricacies of social construction, for example - market structures only exist because managers believe they exist. "*[..] a competitive field has to be rendered visible before any one of its players can start crafting a strategy. A competitive field is not something that is found "out there", nor is it naturally occurring; rather, it is something that is socially constructed"* (Kornberger and Carter, 2010).

As mentioned above this model is both iterative and reflexive. This illustrated in the model in four points;

(1) The first, simply states that the model is based upon a sustainability problem that generally is socially recognised but not completely visible which has been explained succinctly in the previous paragraphs.

(2) The second is concerned with reflexive acknowledgement of multiple framings of the socio-technical value exchange. This means that the framings can be subject to change at any time during the governance activities whether this is a change in importance or popularity or perhaps framings can be reduced or expanded upon depending on circumstances.

(3) It can also be argued that the development of local food system is a long term transition therefore, it is likely that goals and priorities could change which would mean that the engagement with the three phases would take place in an iterative or circular manner. This would result in what is addressed in the third point; a reflexing opening up of appraisal under alternative framings as a circular relationship between cause and effect.

(4) Closure affected by design of the political tool: it is recognised that the cultivation of commitment requires closure. In order for closure to be achieved we need a design of a shared representation in the form of a political tool that is also flexible and adaptable to accommodate long term transitional goals. *"internal governance recognizes the importance of strategies for 'closure' that build in qualities of flexibility, diversity, resilience and robustness. In other words, the closure that still takes place is as much ontological (embodied in commitments) as it is epistemic (embedded more exclusively in appraisal"* (Smith and Stirling, 2006)

2.5 Conclusion

The theoretical model presented above is used throughout the project working towards the design of an accounting device to strengthen and coordinate local food governance arrangements. Through the examples, we have demonstrated the benefits of creating new visibilities within governance, and how this is achieved by the use of an accounting device. In the following chapters, keeping with the model structure of, multiple framings, appraisal, and commitment, we construct new visibilities within local food governance in Denmark. Firstly, by generating a local food system model and secondly, through the conceptualisation of an accounting device.

3. DESIGN APPROACH AND EMPIRICAL RESEARCH METHODS

3.1 Introduction

Four months is a relatively limited time period to carry out an informed and effective design project, therefore a lean approach to task and time management was essential. Daily and weekly agendas were used to keep track of progress and to have a level of control over the ownership and completion of tasks between the design team (Kathleen and Evanthia). Additionally, an adaptive monthly agenda was used as both a communication and motivation tool with our thesis supervisor. This helped to communicate our expectations for the project and ensured that meetings and workshops were organised in a timely fashion. The project tasks were organised into three phases (1) Investigation (Multiple Framings), (2) Organisation (Appraisal), and (3) Design (Commitment). A summary of the activities carried out during each phase is illustrated in the figure below, and discussed in detail in the subsequent sections. Additionally, we will justify the rationale behind the use of the participatory design approach, which was implemented throughout each phase.

With many interested and beneficiary parties involved in the project a stakeholder analysis was used to map the stakeholders involved, and their interests and influence in the project. (Jepsen & Eskerod, 2009) This process was helpful at the early stages of the project to have a simplified but clear view of who benefits from the project and who have the power to make changes. The stakeholder analyses additionally became the starting point from which the Actor network was mapped. Worksheets were used to keep data visualised during all the stages of the project. Google Docs was fundamental for facilitating CSCW (Computer Supported Cooperative Work) between us and with our project supervisor to increase accessibility and coordination of all the documents.

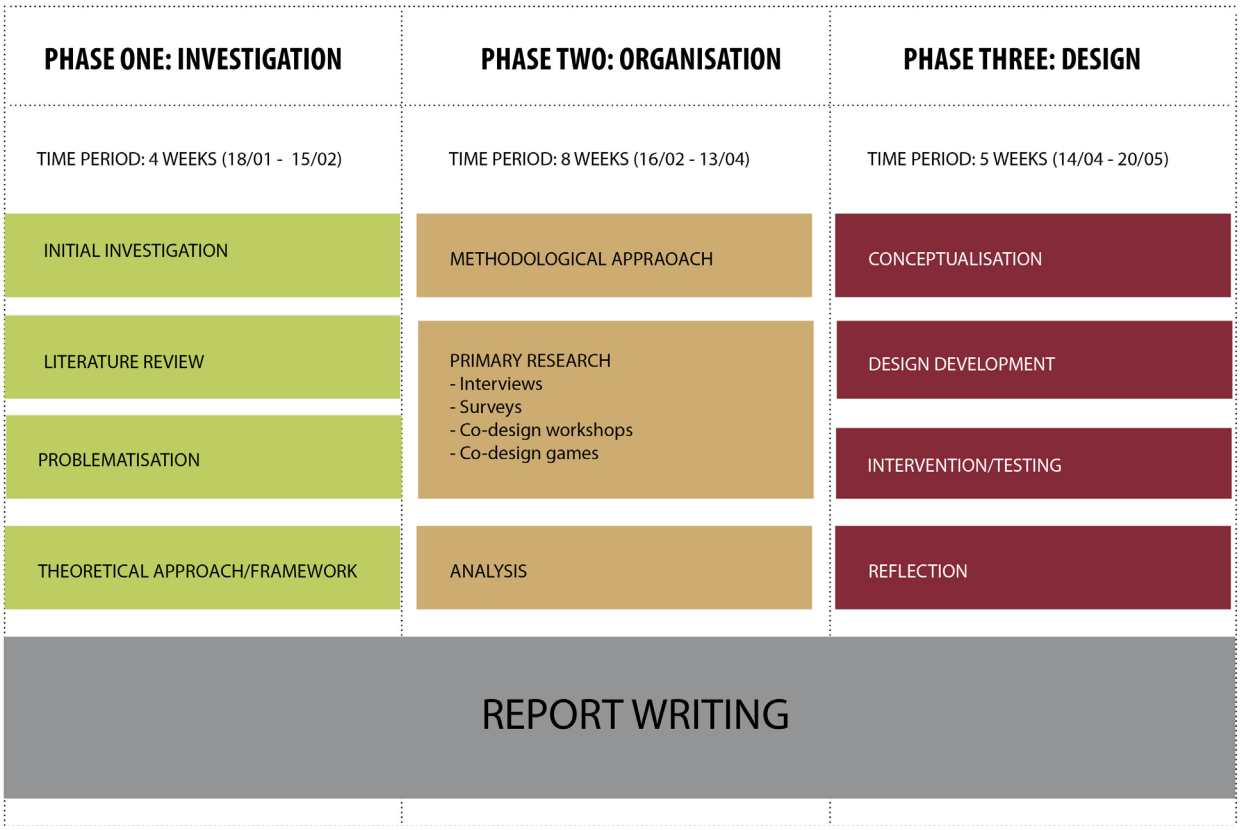

Figure 8: Project Timeline

3.2 The Participatory Design Approach

Participatory design (also referred to as co-design) is an innovative design outlook and approach that *"supports and facilitates the democratic involvement of people in addressing social challenges."* (Szebeko and Tan, 2010). We selected this framework as the success of this project in very much reliant on the ability to align and mobilise a wide variety of actors coming from a range of different disciplines and perspectives i.e Policy makers, municipalities, food and agriculture organisations, producers, and consumers. Participatory design, as the name implies is an approach that facilitates designing with users rather than for users as with the user centered design approach for example.

We want to change the way the actors view food and food systems, but this is a complex task. This design approach can be a powerful change management tool by *"encouraging the collaboration of people within organisations and among local communities"* (Szebeko and Tan,2010). The participatory design approach was also chosen for this project as it *"includes all stakeholders of an issue not just*

t*he users, throughout the entire process from research to implementation"* (Szebeko and Tan, 2010) and therefore complements our design problem of creating a representation of a rich and complex system representation. The approach has been employed throughout each phase of the design process; investigation (multiple framings), organisation (appraisal), and design (commitment). We have engaged with multiple actor groups through interviews and workshops in order to gain insight into both the current configuration and the future goals of the Danish food system.

3.3 Selection of Cities

Three cities in three regions were selected for investigation for this project; Aarhus (Jutland), Copenhagen (Zealand), and Rønne (referred to as Bornholm in the remainder of the text due to how actors frame the region as a closed system), they were selected on the grounds of their current efforts and interests in developing a locally based food system and in terms of size and population density. Initially, Svendborg (Fyn) was also included in the investigation phase of this project, but was later excluded due to lack of interest from governmental actors.

3.3.1 Copenhagen (Zealand)

Copenhagen was selected as it is the capital city of Denmark with the greatest population density (municipal population 601,448). There are many current efforts towards the development of a local food system, and due to the recent successful transition towards organic public kitchens, possible scope for similar efforts regarding local products.

3.3.2 Aarhus (Jutland)

Aarhus was selected as it is the second largest city in Denmark (municipal population is 335,684) and due to their keen efforts towards establishing a local food system. Additionally, Aarhus is a European Region of Gastronomy and the European Capital of Culture for 2017.

3.3.3 Bornholm

Bornholm in an interesting case for many reasons; it has a small population (municipal population is 39,664), it functions as a somewhat closed system, it is politically Danish but closer geographically to

Sweden which is significant when we consider how local food can be defined, and it is widely known as Denmark's food island.

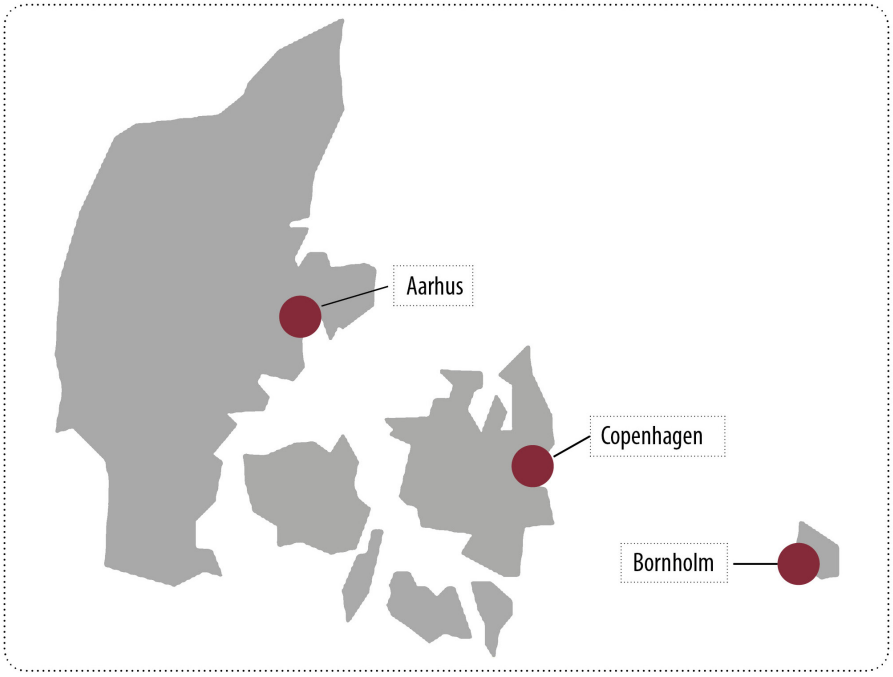

Figure 9: Map of Denmark showing locations of selected cities

3.4 Selection of Participants

There are two sets of participants with whom we engaged in participatory design during the project. The first group consists of representatives from local food organisations in each region (Kulinarisk Sydfyn, Gourmet Bornholm, Mad Aarhus, and Copenhagen Food Space). We engaged with these participants during the investigation phase (multiple framings) as having researched the organisations online, they appeared to be involved with many local food activities in their respective cities, for example, supporting local producers, establishing food education programs, and coordinating with retailers.

The second set of participants with whom we engaged were food policy makers working for the municipalities of each of the final selected cities (Copenhagen, Aarhus, and Bornholm). These participants were involved during the organisation (appraisal) and design (commitment) phases and were indispensable to the project as they are they target audience and users of the design. These participants, however, were challenging to find and connect with as they span across a variety departments (Finance, Development, and Health, respectively).

3.5 Investigation Phase (Multiple Framings)

3.5.1 Literature Review

3.5.1.1 Sources and Topics

Studying the field through literature review (scientific articles, books, conference papers) was a method that was used throughout the project, however, the majority of this was carried out during the initial investigation when researching the manys in which local food is/can be framed. Google scholar and the AAU library database were used to search for relevant material on the topics of; *Local food, food governance, urban-rural connections, embeddedness, constructing visibility, and accounting devices.*

3.5.1.3 Organisation of Findings

The findings of this method are outlined in the analysis chapter as the first set of local food framings established for the project. These framings acted as the foundation for the first participatory design workshop where we explored their validity and also where the later empirical food framings were uncovered.

3.5.1.4 Reflections

Literature review can often be a somewhat tedious and overwhelming task due to the large quantities of research and data available. However, in this case relevant material was vast, giving us interesting and varied insights and opinions on the topic of local food. Having began this project with limited knowledge on the topic, this method helped to open up our considerations and challenge our assumptions of the topic, for example, learning of the critiques of local food systems.

3.5.2 Participatory Design Workshops

In the investigation phase (multiple framings), a participatory design workshop was developed and carried out with the three key individual actors involved with the local food organisations in each region (as outlined above). The goals, and activities carried out were the same for continuity purposes.

3.5.2.1 Goals of the Workshop

The main goal of this workshop was to explore and understand the multiple framings of local food within and across each region by discussing the various definitions of local, and by discussing current and future urban rural value exchanges, and food networks. Additionally, through this workshop we aimed to explore current/future local food activities taking place in each region.

3.5.2.2 Workshop Activities

This workshop employed a combination of semi structured interviews and design games were we engaged in conversation with the participant with the aid of visual activities. The first activity (see figure 10a) we asked participants to *'tell us their story'* where we engaged in deep conversation allowing us to gain knowledge of the values and goals of the organisation while also mapping the local food actor network as we spoke. This approach established a two-way communication that felt like a conversation rather than an interview which encouraged the participants to bring up new topics and ask questions.

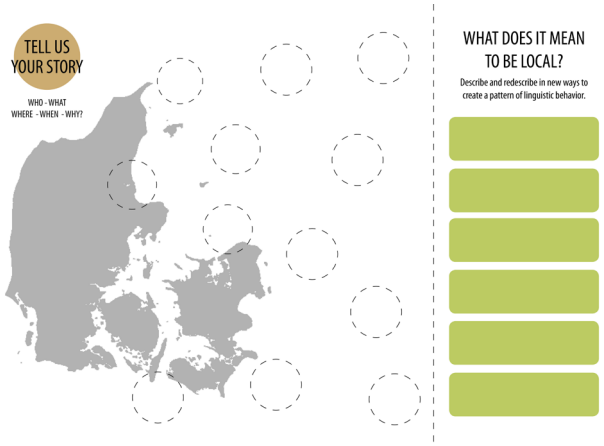

Figure 10a: Workshop Activities One & Two

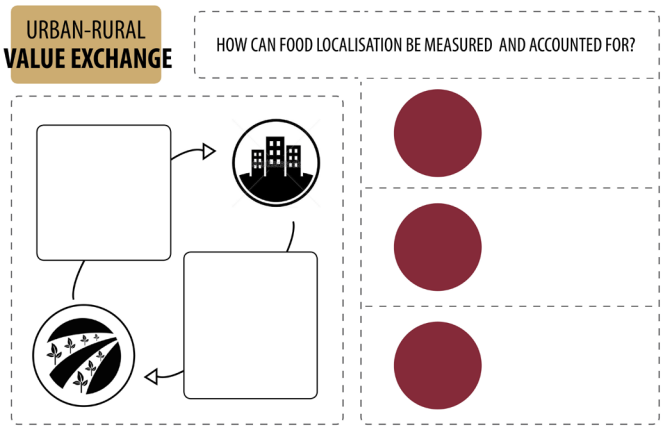

Figure 10b: Workshop Activity Three

The second activity (see figure 10a), we a sked the participant to describe what is *'local'* means with as many different adjectives as possible. In the third and final activity (see figure 10b), we asked the participants to map what they believed were the values exchanged between urban centers and rural areas.

3.5.2.3 Participants (About, Date, and Location)

Workshop One

Location: Kulinarisk Sydfyn office, Svendborg, Sydfyn.

Date: 22nd of February 2017

Duration: 1.5 hours

About the Participant + Organisation: The first workshop was held with Mikkel Friis Holm, president of the local food organisation Kulinarisk Sydfyn. The idea of Kulinarisk Sydfyn has as point of departure the *'experience economy'* frame, when Mikkel, a former chef, visited Italy. The main activity of Kulinarisk Sydfyn is the food market, happening every end of June, where local producers from Sydfyn can showcase their products and people can taste and learn about the local food of Fyn. Throughout the years the organisation evolved and the goal of the organisation became to play the role of the incubator for local producers. Currently, it supports producers with educational programs in collaboration with Danish Universities in activities like branding and marketing. Kulinarisk Sydfyn also promotes local food by educating young students and foraging activities.

Workshop Two

Location: Copenhagen Airport, Copenhagen, Zealand.

Date: 2nd of March 2017

Duration: 1.5 hours

About the Participant + Organisation: The second workshop was held with Mikkel Bach-Jensen who is head of the farm - Bornholm madkulturhus and the secretary at Gourmet Bornholm-Gaarden: Gaarden is the first Food and Culture house in Denmark. It is located in Ronne, Bornholm and it has become the house of Bornholms local producers exploring the old and new food culture of the area. The Food and Culture house of Bornholm consists of 3 main actors: the municipality of Bornholm, the museum of Bornholm, the agricultural organisation and Gourmet Bornholm. Gourmet Bornholm is the private organisation representing more than 60 local food producers. It provides not only with

the physical space where local products are showcased, but also with the role of the facilitator of events and activities like marketing, product development and product innovation seminars for food producers and innovators.

Workshop Three

Location: Copenhagen Food Space, Copenhagen, Zealand.

Date: 18th of April 2017

Duration: 1.5 hours

About the Participant + Organisation: The third workshop was held with Torsten Jakobsen who is the CEO at Copenhagen Food Space; a cooperative of small companies associated with food either directly or in areas crossing over into food (architecture, arts, culture, for instance).The organisation started 6 years ago working as consultants for producers and bigger companies, but currently they work mainly with small companies and startups. The philosophy of Copenhagen food Space is to incorporate slow food values to current food systems and help small companies and startups with activities like networking, business development, policy making.events and activities like marketing, product development and product innovation seminars for food producers and innovators.

3.5.2.4 Organisation of Results

Once all three of the workshops the results were analysed are organised by comparing the definitions of local and urban rural value exchanges from each participant and making connections and comparisons between their individual framings of local food. The complete list of framings can be seen in the multiple framings section of the analysis chapter.

3.5.2.5 Reflections

The combination of interview and design games was a useful method during the investigation and research phase of the project as they allowed us as designers to *"obtain deep insight into individuals' knowledge, needs and experiences"* (Moellebaek Larsen and Flensborg, 2011) exploring the way food localisation is framed in different Danish cities. The network mapping activity proved to be successful

in uncovering actors and connections that we may have missed had we taking the traditional approach of mapping the network based off an interview transcript. The local definition and value exchange activities were straightforward and worked as expected, while also bringing to light some interesting new perspectives which are outlined in the analysis.

3.6 Organisation Phase (Appraisal)

3.6.1 Participatory Design Workshops

Three workshops were carried out throughout the organisation phase of the project and conducted with the three food policy makers. Reflective of the real world barriers to collaboration encountered within the Danish municipalities, we found that it was difficult to bring actors together to collaborate in workshops. The discovery of this challenge however, was validating to our design goals wherein the device we are designing will act as a kind of boundary object for policy makers who rarely interact. Therefore the workshops were carried out just between us and the individual actors. This enabled us to make minor adjustments to the workshops with the policy makers, in accordance to the participant in order to make it relevant to each framing, and to motivate them and cultivate commitment.

3.6.1.2 Workshop One

Goals of the Workshop:

The goal of this workshop was to begin constructing, developing, and designing a system representation with policy makers to make local food governable. This involved uncovering city agendas/ goals/ initiatives, and discussing specific local products in relation to their contribution towards sustainable development.

Workshop Activities

Three activities were carried out as part of the workshop. Firstly, we asked the participant to describe and map what he thought a locally based sood system should look like both form a personal perspective

and form the regional perspective of Bornholm. The second activity was place specific where we presented the participant with images of products perceived as local to Bornholm and began a discussing and mapping the values and qualities of these products, for example, what makes them local or not local, what they bring to the community or surrounding communities, and challenges faced by the producers etc. Following on from this activity in an attempt to anchor the workshop in terms of sustainability, we asked the participant to place the products vis-a-vis their association to the three pillars of sustainability; people, planet, profit.

Participant (About, Date, and Location)

Location: Regional Municipality of Bornholm, Rønne, Bornholm. Date: 4th of April 2017

Duration: 1.5 hours

Nikolaj Løngreen is a food and meal consultant at the municipality of Bornholm in the Health Department. He is a former chef who ran his own restaurant before selling it and taking a job managing a public kitchen at a kindergarten, from there his interest in food policy grew and he became a champion for both local and organic food. He has held the position at the municipality for six years now and claims that his key focus is on developing the producing of high quality and health everyday food products that can contribute to improved health for the residents of Bornholm.

Figure 11: Photograph of the Workshop Activities in Bornholm

Organisation of Results

The results of this workshop were organised through analysis and the generation of the first draft of system parameters or building blocks, the details of which are outlined in the appraisal section of the analysis chapter. These parameters form the foundation of the accounting device which is developed further in the following two workshops.

Reflections

The first activity was successful in terms of opening up the discussion and encouraging design thinking as we spoke about current initiatives but also collaboratively brainstormed new ideas. It was very interesting to analyse local food on a product to product basis as it validated our idea that local food is value laden in terms of urban-rural exchange.

3.6.1.3 Workshops Two and Three

Goals of the Workshop

In the later design phase (involving both appraisal + commitment) a workshop was developed and carried out with the remaining two policy makers (in Copenhagen, and Aarhus) and evolved as the project progressed and new developments, and design considerations arose. The main goal was to build upon the design of how local food can be measured and accounted for, uncover the most important building blocks for local food systems in denmark, alignment between the design of the accounting device and current city agendas.

Workshop Activities

Activities: In the fifth and sixth workshops, as with all previous, we asked the participants how they would define local food, and to explore the urban-rural value exchange in order to have a full set of the multiple framings of local food. However, the key activity in these workshops was a design game where the participants were presented with the preliminary set of parameters/building blocks on a set of cards (one parameter on each, see figure 12). These parameters were developed based on the outcome of both the literary and empirical data collected up until this point. Also included were a

set of blank cards so that the participants could add to the deck if needed. The participants were first asked to interpret the meanings of each and then to organise (add/remove/expand) and rank them. Finally, we had a short discussion/brainstorm with the participants about how this accounting device could be used as a tool for local food governance.

Figure 12: Photograph of the Workshop in Copenhagen

Participants (About, Date, and Location)

Workshop Two

Location: Copenhagen City Hall, Copenhagen, Zealand.

Date: 3rd of May 2017

Duration: 1 hour

About the Participant: The second workshop was held with Ida Bigum food policy maker in the municipality of Copenhagen. According to the participant *"In the municipality of Copenhagen there are 7 different departments all of which have distinct authorities and weigh equally in terms of hierarchy*" . Ida is working in the finance department and is coordinating the departments of the municipality working with food. A big issue for the municipality is the budget. Budget is negotiated every year after summer vacations and it is situated in each department. Budget for food related

activities is coming from all the different departments. The department that the participant is occupied in is the Office of Business and policies. The main goal of the department is the development of green businesses.

Workshop Three

Location: Norrebro, Copenhagen, Zealand (Conducted via Skype) Date: 16th of May 2017

Duration: 1.25 hours

About the Participant: Peter Astrup is a development consultant in the regional development department (food) in the Mid-Jutland municipality servicing Aarhus. Peter states that the main focus in this department for local food is the support and development of small to medium sized enterprises, such as local producers and locally focused restaurants. Aarhus is currently a European Region of Gastronomy in addition to the European Capital of Culture this year and Peter believes that this is having a positive effect of the development of local food infrastructure in the region.

Organisation of Results

The results of these two workshops were organised as the design and structure local food system model.

Reflections

Both workshops were greatly beneficial and insightful for the local food systems model. The participants elaborated a lot on each of the parameters with success and failure stories from their respective cities. Additionally, it was interesting to see how the parameters could be interpreted differently. These workshops were indispensable for discovering the individual city agendas and exploring how they could be aligned through the use of the accounting device.

3.7 Design (Commitment)

In the design (commitment) phase with first used literature review to learn about the best practices for incorporating competitiveness, branding, market creation into the design and representation of the accounting device developed through co-design in the previous phases. Following this, we used brainstorming and sketching to conceptualise the design of two concepts to represent the accounting device; (1) city league tables, and (2) a knowledge sharing platform (detailed in the design chapter). Finally, we reconnected with one of the participants from the appraisal phase where we used the participatory approach once again to test and adapt the designs in addition to beginning to cultivate actor commitment to the political tool.

3.7.1 Literature Review

3.7.1.1 Sources and Topics

In this phase of the project we read literature on the topics of competitiveness, branding, data collection, and organisational learning in order to influence understand the required features and functions for each of the two political tool concepts.

3.7.1.2 Organisation of Findings

The findings from this literature review are outlined in the design chapter in relation to how the knowledge influenced and inspired the concepts, both in general terms, in specific features of the design concepts, and for the cultivation of commitment.

3.7.2 Design Feedback and Testing

3.7.2.1 Goals

The goal of this method was to continue the participatory design process with the users to test and explore possible changes or adaptations to the two concepts mockups, that were created on the basis of the co-design workshops carries out during the appraisal phase.

3.7.2.2 Discussion

The participant were presented with high fidelity mock-ups of both design concepts where they were asked to interpret and discuss them. The first point of discussion focused on first impressions of each concept, how they were interpreted and the clarity of the purpose and function. Secondly, we discussed the relevance and likelihood that the tools would useful for governance actors in terms of aiding with interpreting and developing local food systems. Thirdly, the participant shared their preferences for one concept over the other and gave reasons why. Fourthly, the question of data collection and frequency of that collection was debated. Finally, the gaps and limitations of the concepts were discussed.

3.7.2.3 Participant (About, Date, Location)

Participant: Peter Astrup (Aarhus) Location: Norrebro, Copenhagen, Zealand

Date: 29th of May 2017

Duration: 1 hour

3.7.3.4 Organisation of Results

The results are analysed and summarised in the design chapter under the testing and feedback section wherein we reflect on considerations and changes for future iterations of the designs.

3.7.3.5 Reflections

User participation is highly valuable to any design process and for this project it is essential when we consider the process of commitment cultivation. Using the participatory approach at this phase of the project helped to explore additional features and data collection considerations in addition to beginning of subsequent concept development.

4. MULTIPLE FRAMINGS

4.1 Introduction

What is local food, and how can it be framed and defined as a phenomenon that can be strategically governed? At present there is no one concise or regulated framing or definition of local food within or between the Danish cities in this study. The chapter is divided in two parts, in accordance with the model presented in the theoretical framework. In the first part, we will present the multiple framings that have been identified in the literature, and the interviews and workshops, respectively. Following this, we will present the appraisal phase where we will formulate food localisation as a defined object in three steps: the co-creation process of one unified framing, the definition of local food systems, and finally the parameters/building blocks that form the accounting device.

4.2 Exploring Multiple Framings (Investigation)

As it has been mentioned in the theoretical framework of this project, local food is a socially constructed concept that is comprised of many different framings. In the following section we describe both the various framings of local food that were found through literature analysis and the various framings of local food that were found through empirical research. The purpose of this process is twofold, firstly to illustrate that there is no concise or regulated framing/definition of local food within or between the Danish cities, and secondly to show that this multiplicity of framings make local food difficult to govern.)

4.2.1 What is Local Food? Framings Identified in Literature

Can academic literature give us a definition of what local food is? Through literature analysis several local food framings, both favourable and critical, were identified showing that local food has been a rather controversial topic for scholars throughout the last years. These framings are as follows;

4.2.1.1 Experience Economy Framing

The *experience economy* framing argues that the concept of local food can be *"constructed through experiences provided to the consumers by producers or other experience creators via general marketing, communication (for example mass communication through the media) and at specific events."* (Sundbo, 2013). This approach questions that without the surrounding narrative creating value to local food would consumers even know the difference? This is interesting when we consider branding. Branding, is a means by which value can be constructed and assigned. Is it possible to frame local food as an eating experience that is locally oriented (Fisker & Olsen, 2008) in the sense of being based on food and meal traditions and innovations from a certain local community or area? Additionally, we can consider the idea of *'terroir'* which explores how the physical conditions of the single place, the soil, the climate, method of cultivation, etc. are expressed in the taste of the products from this specific place (Barham 2003).

4.2.1.2 The Elitist Framing

The *elitist framing* has emerged in the Danish debate on local food, particularly inspired by the appearance of the New Nordic Cuisine, which was created in Denmark in 2004 (Jacobsen 2008). It could be argued that New Nordic Cuisine is the idealised version of the goals we have outlined in the discussion of the experience economy theory i.e the value relationship between Danes and their food. This cuisine is a movement which is *"often based on food products from the Nordic countries, but more importantly on principles for food provision and preparation from the Nordic countries"* (Sundbo, 2013) This concept is indeed a positive step towards valuing local food and food production methods and has undoubtedly been successful from a branding perspective, however a common critique of this new cuisine is that it is only accessible to the elite of society and for *"disqualifying modern food production"* (Sundbo, 2013). This is an interesting argument, and unfortunately not only relevant to this particular brand of fine dining. Take for example, the organic food movement which has also become somewhat of a luxury for societies high earners. The utility criteria of local food are then found in accessibility and affordability for all socioeconomic classes. (Sundbo, 2013)

4.2.1.3 The Integrated System Framing

The *integrated systems framing* generally focuses on sustainability paying particular emphasis on environmental concerns. Many authors within this theoretical field see *"local food as a solution to resource problems, for example as alternative networks of production, distribution, and consumption"* (Sundbo, 2013) Therefore, this framing tends to be critical towards the social and environmental consequences of the traditional industrial food and the globalised food market. It is argued in *' Local food: the social construction of a concept'* (Sundbo, 2013) local food is defined by the *"perceptions of providers and consumers indeed connected to environmentally and socially positive associations and expectations such as healthy food, animal welfare and minimisation of additives".*

4.2.1.4 The Transparency Framing

The transparency framing is based on the fact that food can be used as a lens through which we can view and shape the world and it has been conceptualised by Carolyn Steel in her 2012 book: *'Sitopia. Harnessing the power of food.'* As she claims, *"our landscapes and cities were shaped by food. Our daily routines revolve around it, our politics and economies are driven by it, our identities are inseparable from it, our survival depends on it"* It is very important that food is considered at every level of governance. However, it is often the case that these activities are taking place behinds the scenes in a non visible way to the majority of the population who live in urban centres. In the past the journey of food from farm to plate i.e. the relationship between urban centres and rural areas, was transparent, which is often not the case today. Steel argues that *"connecting producers to consumers is where all food-based power lies"* (Steel, 2012).

4.2.1.5 The Social Framing

The *social framing* lays within the social context and it includes *" social ties, trust, relations of regard, social networks, farmer markets, direct marketing, and fair trade."* (Penker, 2006). The social framing of local food systems is based on the *"crucial insight that economic activities are constructed by their social-institutional environment and not "naturally" given"* (Penker, 2006). Social ties affect economic interactions in the local food system. (Hinrichs, 2000) The way that local food infrastructure is structured, for example farmers' markets and its activities for example direct

marketing *"illustrate the significance of trust and regard"* but also moral and environmental discussions. (Sage, 2003) Murdoch and Miele (1999) argue that when it comes to the food sector there is more factors to consider than price. There are values such as health,or fair trade that tend to shape not only production but also consumption patterns. *"The general argument is that actors are increasingly willing to "offset purely personal financial incentives against social criteria involving collective, community or environmental benefits"* (Sage, 2003)

4.2.1.6 The Spatial Framing

The *spatial framing* is concerned with "*including local, territorial, spatial embeddedness, local food systems, short food chains, and labels of origin ."* (Penker, 2006) In terms of space and distance, the localisation of food networks is an effort to oppose to the current norm of globalisation, and they are translated as embedding and disembedding processes respectively. The spatial framing offers the political, social, economical and ecological context where food networks develop and function. "*Nonetheless, agriculture, food processing and consumption are embedded in the territorially specific context of social and ecological systems, which constrain and shape economic activities".* (Penker, 2006)

4.2.1.7.The Ecological Framing

The *ecological framing* is "t*hat of nature, including issues and linkages surrounding organic food, environmentally friendly production, and eco-labels."* (Penker, 2006) This framing focuses on how, why and to what extent natural environment influences development and shapes relationships between agents within food networks. In other words how localisation of food networks affects the perception of food products in terms of their extend of environmental sustainability. (Penker, 2006) Moreover, research based on the sustainability paradigm is mainly focused on the sustainability of agricultural practices and thus also fails to keep a more *'systemic'* view and generally neglects the food dimension. (Penker, 2006)

4.2.1.8 The Sustainability Framing

The s*ustainability framing* is critical of local food as a solution, there are scholars that contest the built-in sustainability that is co-notated by *'localization'* discourse. Hinrichs 2003 suggests that even though *'food miles'*, energy use, and greenhouse emissions through transportation reinforces the environmental character of local food systems, it is necessary to have a full life cycle assessment before safe conclusions are made.

Apart from the GHG emission impacts that he suggests that can and should be reduced from a more localized food network, the assumption that there is a-priori environmental benefit through food localization should be contested. Murdoch et al (2000) note that *"quality has come to be seen as intrinsically linked to the supposed 'localness' of production"*. Developing a theory of how food supply chains are embedded in natural relations, there is *" the possibility that the link between local embeddedness and more "natural" or environmentally benign outcomes may be, in at least some cases, as much perception as reality"* (Henricks 2000)

Small-scale local farmers are not necessarily more accustomed to pro-environment practices. Even though there are some small scale farmers that prefer to improve their own management to more sustainable practices rather than increase in scale or capital investment, there are also farmers that lack the awareness due to financial pressure, age, or lack of means of practice. Hendricks argues that it is the social relations and customer demand that push the limits for more sustainable products and not the discourse of sustainability in local products. *"Pursuing local direct market opportunities would seem to encourage attention to environmental management practices by farmers who anticipate surveillance by concerned customers. Such farmers might then manage nutrient flows, soils, and pests in more environmentally sound ways, but it is the social relation, rather than the spatial location, per se, that accounts for this outcome."* (Henricks 2000)

4.2.1.9 Conclusion

The learnings from the investigation of the local food framings in literature were threefold; Firstly. it validated our initial assumption that there is no clear on shared definition of local food among scholars

resulting in multiple framings. Secondly, the scholars are of course coming from a broad spectrum of backgrounds researching local food systems, with diverse ideas, which opened up for us unknown perspectives of local food systems. Thirdly, these diverse ideas were both from a standpoint of support as well as from a point of critique.

By studying the field, we began to see patterns that moved across a certain axis. For instance, the integrated systems framing highlighted alternative networks of production distribution and consumption, which is mirrored in the social framing, where it is argued that direct connections between producers and consumers (i.e. farmers markets) create a sense of trust and transparency. However, still no unified definition of local food was found, additionally although some of the texts were from a Danish context, we did not have a clear idea of how local food in framed in Denmark specifically.

4.2.2 What is Local Food? Framings Identified through Empirical Research

In this section we will present the results of the empirical research in order to highlight the most discussed framings identified in three local food systems in Denmark. In order to make comparisons of the arguments, we categorised the framings into themes. As it has been discussed in the methods section, the participants in this research are people involved with local food either from a business development perspective (local food organisation) or from a governance perspective (municipality and regional governance). In order to show san overview of the differences between the framings of the actors in an explicit manner, in the following figure shows the various responses to the question *"What does it mean to be local?"* as an example of the different meanings and connotations that local food is linked to according to the participants (see figure 13).

The twelve framings that were identified during the interviews and workshops (quality, transparency, tradition, narrative, biodiversity, education, health, tourism, independency, social inclusion, infrastructure, and economy & growth) are presented and described below.

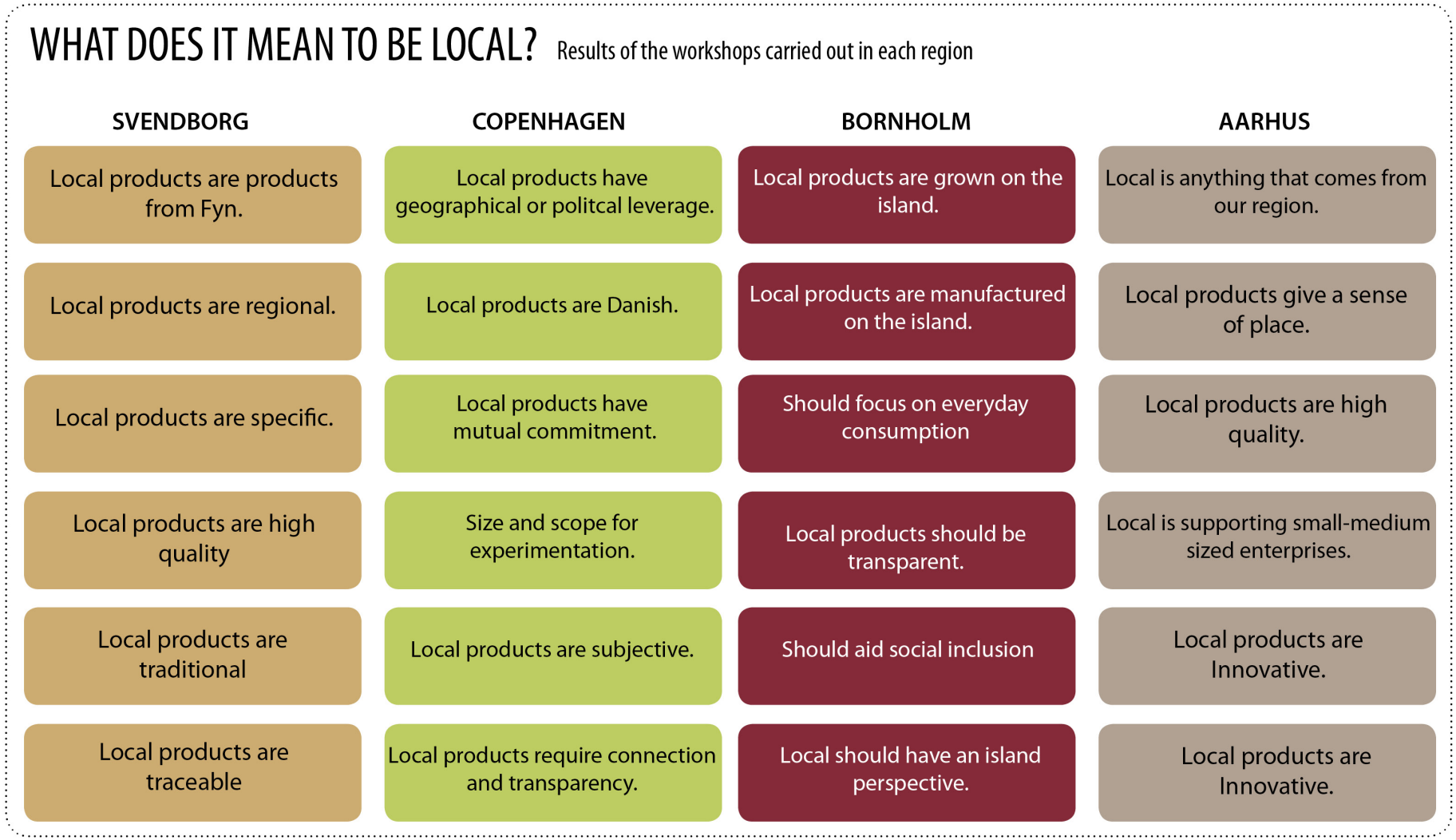

Figure 13: Results of the Workshops carried out during Multiple Framings

4.2.2.1 The Quality framing

Quality has been mostly connected with narrative, but also connected with health and social equality. Quality is an essential selling point to justify the higher price compared to intensive agriculture and large companies.As the informant from Aarhus stated: *"For a product, if you want a local small scale production you need high quality" "If you are a small scale producer you need to differentiate from large corporations."* For Svendborg, quality also serves as a motivation for people around Denmark and especially from Copenhagen visit Sydfyn and Svenborg: *"It has to be a very very special product, so they will come back and buy it"*

4.2.2.2 The Transparency Framing

The *framing of transparency* and traceability was one point where everyone seemed to agree. There is the perception that local food and transparency of products, their producers and the processing procedures is essential to developing a local food system. This can be linked to health, ethical, environmental and social reasons.

4.2.2.3 The Tradition Framing

One of the most common framings of local food is the one that connects it with tradition. Tradition came up many times throughout the interviews, in a broader concept of reconnection with the earth and nature, practices and skills. Tradition created a story around a product; for example, the smokeries and the smoked herrings is a trademark for Bornholm. It creates images and brings to the products values from another era. The revival of older, sometimes almost lost practices or products, was a key characteristic to the local narrative.

On the other hand, underneath this narrative, things are not always as they seem. A really nice example is about a traditional smokery in Bornholm. The practice is traditional but *"Herrings are not from Bornholm anymore"* A really interesting insight about tradition was given by Ida from the Municipality of Copenhagen: *"...if you are not from a danish cultural background it makes no sense, you don't have any associations, pictures. You need to be able to include the diversity of people living in the city as well"*

4.2.2.4 The Narrative/Experience Framing

Narrative had different interpretations, mostly associated with quality and tradition as it has been presented, but not exclusively. Narrative demonstrates the overall story of the product. For some of the participants, producers can play a key role in telling the story creating a more immediate connection between consumers and producers, which according to their opinion, it is the weak point of launching such a product in a supermarket. Narrative also contributes to the feeling of transparency answering the questions of who where how.

As the Copenhagen municipality representative put it: *"It is not only about availability"* which is a major issue but also *"how to utilise this availability in order to say this is actually a better quality product and that is why is more expensive... This is something that actually happens in the public kitchens of Copenhagen, but what about other food actors? "*

4.2.2.5 The Biodiversity Framing

In addition, another framing that came up many times during the processes of qualitative research and co-creation was *'Biodiversity'*. All actors were critical to the monoculture of agriculture, where a debate is evolving around how to broaden the variety of edible goods regionally, each from a different standpoint. Actors from governance seemed to worry about food security in terms of Climate Change. Resilience is one of the most important factors for policy makers for building the future cities, and the food system's robustness is doubtful to be able to handle a climate change crisis.

The participant from Sydfyn had a different framing: There are many seeds that have been genetically modified, that are used extensively in intensive agriculture, that has resulted in other endemic species to be gradually lost from production and many traditional dishes to extinct. Finally, another perspective connected with monoculture was the independence of local food systems that is being discussed in following section in this chapter.

4.2.2.6 The Education Framing

The first linkage between food and education is the meals provided in schools. This is part of procurement, where Copenhagen has been a frontrunner in this area for transitioning the public kitchens to organic. Lately, there are considerations of including local organic products as well but this is challenging the state of the art in procurement. Apart from healthy meals in schools though there are other activities that aim in food literacy of students.

The informants from all areas of Aarhus, Bornholm Copenhagen and Svenborg pointed out several activities within schools arranged by municipalities in collaboration with organisations aiming to educate students like healthy food seminars, meeting with local producers, summer food camps etc. One great example of a forthcoming project is the development of a food camp in Bornholm Island, where students from other regions of Denmark will visit the area in order to have a hands on experience in local food production and meet in person the local producers.

Education is also framed as a way to share knowledge within the producers. There is a significant role played by the organisations in this respect, since they organise several events and seminars in collaboration with institutions and universities in an attempt to inform producers about management, innovation, business development, and marketing.

Finally, education was framed from the informants of Bornholm Gourmet and Aarhus as a means of acquiring well educated workforce that will cover the needs of the market in the following years in terms of food in the fields of innovation, marketing, management.

4.2.2.7 The Health Framing

Local food was often framed from the perspective of health during both the interviews and workshops. The policy maker from the municipality of Bornholm spoke of how the island has major health issues stating that *"the population of Bornholm has the highest rates of diabetes and other diseases associated with diet"*, which is contradictory to the branding and identity of Bornholm as a *'food island'* . The perspective of local food being inherently healthy is common therefore local food is

often framed as healthy food, but during the workshop in Bornholm it was discussed that this is not always the case.

Similarly in Aarhus food and health was framed in relation to 95% development budgetary spending in hospitals. They see an opportunity to *"enhance collaboration with local producers to create food as medicine" using hospitals as a development arena while "engaging with small producers in innovation through food and nutrition systems"*

In the workshop held with the policy maker from the municipality of Copenhagen local food and health was framed in a different way - in relation to fair distribution, and that local food has the ability to become only accessible for certain socio-economic groups. *"It is a growing awareness how we distribute it it is not given vulnerable citizens are the least deprived because they will not have enough money to buy the needed and this will cause further problems in terms of health"* this can also be linked with the framing of social inclusion. The framing of food and health came up a second time during this workshop in relation to city regulations and governance. The need of *"setting rules and standards for quality support a healthy lifestyle in restaurants street food"* was a major concern for the participant in terms of developing a local food system with a focus on health.

4.2.2.8 The Tourism Framing

In Bornholm local food is an identity that brings high volumes of tourists to the island. This although positive in terms of the local economy, and spreading the message of local food is counter productive when we consider the sustainability factor. In the smaller cities of Bornholm and Svendborg the local foods mainly consist of what we call specialty products i.e artisanal luxury products (e.g. sweets, alcohol) that are often purchased by tourists rather than everyday foods (meat, dairy, vegetables) Mikkel from Gourmet Bornholm stated that in fact *"only five percent of the food produced on Bornholm is actually consumed on Bornholm"* with the remainder being sold to the wider Danish and global market. *"To increase this percentage you need to convince the people from Bornholm to spend a little more money to buy the products, tourists are more willing to pay that amount 1 billion DKK per year in food industry half of those come from tourism but only 5% is local food self supply"*

In Copenhagen from the perspective of the food organisation there is a similar challenge when we consider the trend of *'new nordic cuisine'* which is although a positive step towards the goal of popularising local food consumption, is often seen as exclusive and exclusionary. From the municipality of Copenhagen however, tourism is framed *"as part of the economy goal"*. Food tourism is seen as a way to boost the local economy and support green business development.

The framing of local food in relation to tourism in Aarhus is strongly linked to their position as European Region of Gastronomy. They believe that local food can provide visitors with a *"sense of space, a sense of place, and an authentic experience"* and have initiatives in the region in order to make local food accessible in restaurants. Additionally. they state that there is a crossover between culture, tourism, and food.

4.2.2.9 The Independency Framing

A framing of local food that came along several times during the Bornholm workshop is independency, in terms of creating a self sufficient landscape that would provide with a wide range of products. In that respect, the actor from Bornholm gave a great example of what self sufficient food system mean for him and it is Bornholm cheese. The area is proud of their dairy production and Bornholm cheese is a sizeable success of an export in the US which makes it extremely profitable. As a result there is the danger of ending up with no milk production in the region because it is used for the production of this particular cheese. *"And I know that in the kindergartens or in the elderly homes they are really concerned about the milk that is from Bornholm and it is organic and local."*

In Copenhagen Independency is framed not so much as self sufficient production but as something that is balanced and creates local jobs. Similarly, in Aarhus municipality independency is not framed as self sufficient production but rather with a focus on individual local producers keeping their independence as a business/organisation but also *"forming a network between one another to satisfy retail demands"*

4.2.2.10 The Social Inclusion Framing

Local food was framed as an aid to social inclusion in three cities. In the municipality of Bornholm it was discussed that *"apart from the obvious benefits in lowering the unemployment rates, there are other activities and actions of local food in the area that create extra value to the community"* . A great example was of one producer of juice, which works with mentally and physically disabled people.

In Copenhagen the concern was on the importance of public food investment in terms of social inclusion and food culture in street food restaurants, food markets, farmers market etc. It is important that develop projects don't simply focus on the elite and that the municipality do not deem such projects to be relevant in their agenda. "*In the neighbourhood of Norrebro the diversity of people is big"* this cannot be ignored.

Aarhus municipality have linked social inclusion with economic incentives where they have offered financial support to small sized local producers who are innovative in creating and producing products that are specifically *"aimed towards the ageing population of Denmark"*

14.2.2.11 The Infrastructure Framing

At present the local food organisations, who participated in this study, claim that the connection between local producers and customers is week wherein local products must be framed and marketed in a different way to their conventional counterparts. This is often due to the price point and perceived value of the products that is heavily reliant on the product narrative and the notion of the experience economy which is discussed in greater detail below. Additionally, the product yield with local products is not always predictable which results in current transport and distribution methods being unsuitable. This is especially relevant when we consider the possibility of introducing predominantly local produce to public kitchens (inspired by the success of the transition to organic) as they require a standardised flow of products.

In Svendborg meeting certain regulations and filling out paperwork was off putting for small local producers. This is one of the reasons that many local food producers continue to have a small supply that is not fitting with current distribution infrastructure. Another of the reasons production remains

small is the lack of financial security for producers, where many are simply cultivating local products as a hobby alongside their full time employment. Although the food organisations do received grants from the municipalities to support local producers these practices are not changing.

Aarhus have made considerable efforts in terms of trying to fit local products into current retail infrastructures. "*It is difficult for small high quality producers to even set a meeting with retailers"* they try to act as a matchmaker between producers and retailers, using the framework of the Aarhus food festival. As with Svendborg initially there was a conflict of supply and demand between the two parties but as discussed in the workshop, this is starting to change. The Bilka innovation project (in association with the organisation, Danish Food Cluster) invited small innovative producers from Denmark to *"set up shops within shops"* this project although successful in terms of knowledge sharing between the products and the retailers failed to sustain in any major due to Bilka's systems inability to handle the accounting of the small producers. However, today there has been a success with 5 local producers currently retailing their products in Bilka stores in the region.

4.2.2.12 The Economy & Growth Framing

In Aarhus municipality they state that their key goal or framing of local food is concerned with the development and growth of small to medium sized food enterprises that employ from 1-250 people, for them that is the definition of local - supporting the local economy and employment. They are dedicated to supporting these local producers so that they can continue their efforts of supplying high quality local products while also earning a living for themselves. The goal of scaling up is also on the agenda, they encourage the producers to grow their businesses buy offering incentives and support such as connected them to the retail network (as described above).

The framing was similar in Svendborg where again emphasis was put on supporting local producers to produce full time, although this region did not have the opinion that it is necessary for each producer to grow and expand, *"this [growth] is the goal of many of our local producers, but also many just want to remain small and sell to their regular customers"*

Copenhagen municipality spoke of local food in terms of economic development and growth also, but had a different framing that focused on the development of green businesses in general rather than specifically food producers. This was also the case with the local food organization, Copenhagen Food Space. Copenhagen supports media companies, bloggers, street food businesses and restaurants etc also.

4.2.3 The Impact of Multiple Framings in Governance

The multiple framings outlined above highlight the complexity surrounding local food and a lack of shared goals, because of this there is no clear system representation around which governance networks can be established and coordinated. However, we have to accept this pluralistic reality, as within it there are the values the activities that will later on help to design a successful local food system model.

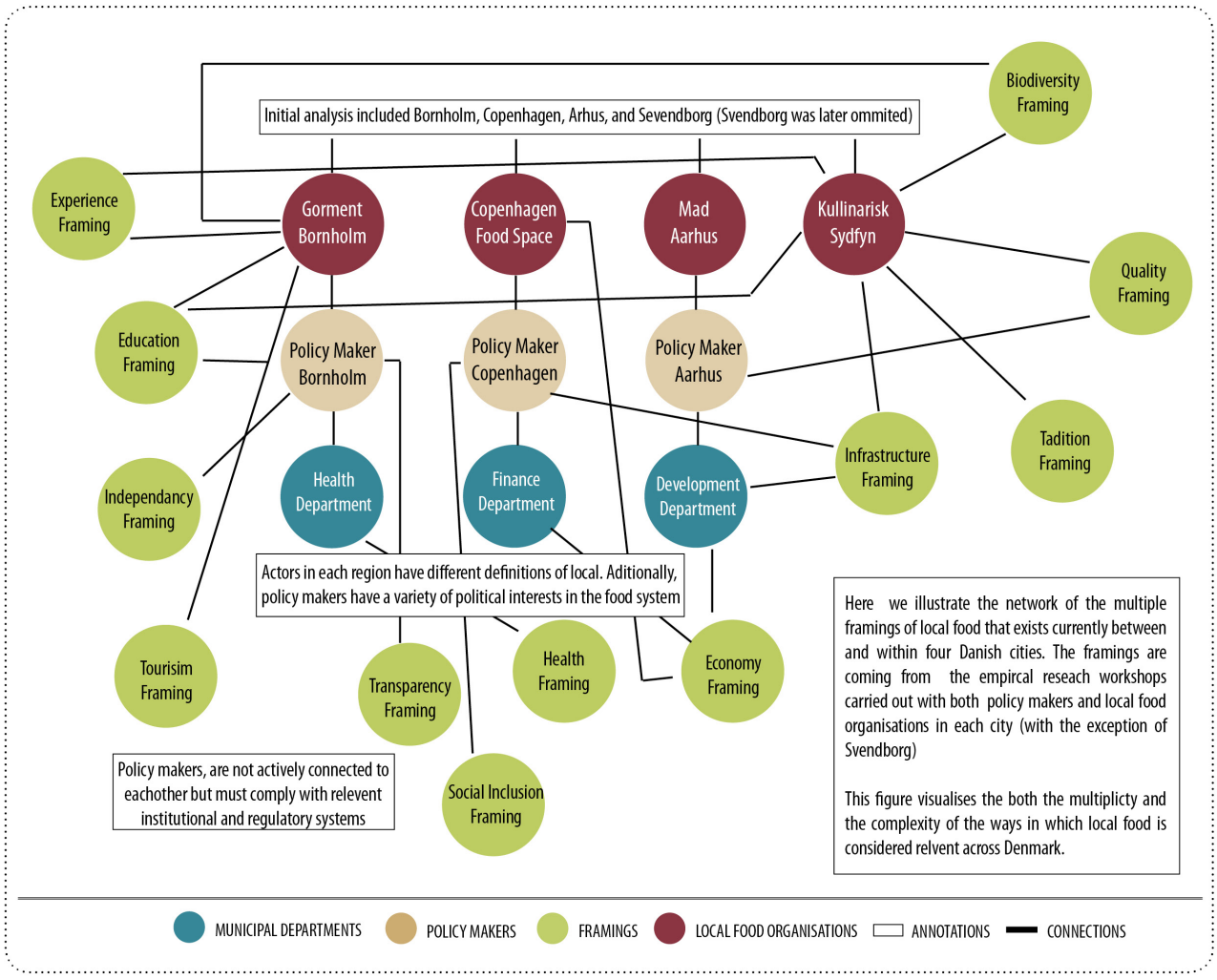

Figure 14: The Network Multiple Framings

In figure 14 we have mapped the relevant actors in four Danish cities (both from governance and from the local food organisations) showing the connections between them and the established framings the purpose of this is to show that the multiplicity exists not only between cities but also within. As illustrated in the figure, there are existing connections between the local food organisations and the municipalities in each city with the exception of Svendborg. (This led to Svendborg being excluded from the network in the subsequent phases of the project due to lack of accessibility to governmental actors and the time and resource limitations of the project) It is interesting to note that the persons working in food policy are connected to various different departments of their respective municipalities. This tells us two things; (1) that policy makers within food will have different definitions of local, political interests, and goals with regards to the development of a local food system, and (2) that it is likely that these policy makers are not interacting with one another on a regular basis or perhaps at all, hence validated the need into a local food system representation/epistemic platform.

It is also important to note that each city has particularities in terms of size, variety of produce, cultural diversities etc, which form their identities, therefore making them difficult to compare. Moreover, we need to consider that the representatives from each city (particularly those from the municipalities) are coming from both different backgrounds and governmental departments which is often reflected in their perspective.

An interesting finding of the empirical research is that food is not highly prioritised in the municipality's agenda. However, lately it has become more and more clear for the policy makers, that *" Food is a driver for change"* . "*There is a great amount of money and a massive industry involved which is integrated in other industries."* (Ida Bigum) Accordingly, we can conclude that since food is part of different departments with different agendas within municipalities, integrating a more holistic approach to the way local food is managed by policy makers, is clearly a difficult task, that needs coordination. As Ida Bigum put it:

> ***"When you have seven different departments: one that works with environment, one that works with kids, and other that works with health... Food would not be the first priority... food is down the line. If we did a change and intervention to the food systems, we would add value, but it is difficult to move all departments at the same direction at the same time"***

The lack of organisation and structure in local food is also highlighted by our own experience in contacting *'the right person'* within the governmental level of arrangements, something that did not happen with food organisations. For this reason, an object, which can reduce complexity and define the blur landscape of local food, and organise and structure governability is something that raises interest among the involved parts and eventually, something that is needed.

4.2.4 Conclusion

Therefore, we must accept that these three cities currently have no existing agreed upon framing of a what a locally focused food system should look like. Each city has varying networks of actors with different perspectives, goals, and interessement in the local food culture, simply put, the local food system is not visible.

Essentially, the term local food has different meanings for different people, the values and attributes associated with the term are vast. Organisations and communities have free reign on how and why they present themselves as a part of the local food movement. The question we need to ask what factors or characteristics amount to the term local? The approach of this project is not to search for some pre-existing *'truth'* but rather to construct a definition and description that will motivate and mobilise actors.

5. APPRAISAL (ORGANISATION)

5.1 Introduction

In accordance with the theoretical framework, appraisal is the epistemic process where local food is perceived in new ways, creating visibilities and trying to develop new kinds of knowledge with the purpose of strengthening governance networks. The goal of the appraisal process is to develop a system model of *'local food'*. This is done in three steps; (1) through reduction and co-creation processes a local food system is defined, (2) the value creation of the local food system is conceptualised and measured, and (3) we outline the infrastructures that are necessary for the system to function.

5.2 Defining Local Food Systems by an Urban Centre Approach

The approach we have taken in order to define the system responds to a specific distribution of roles as one of the rural areas being the producers and the urban areas/city centers being the consumers. This is because all producers target their production to an urban center. The values and infrastructure described have as point of departure the urban center, but are inclusive and take into consideration the welfare and prosperity of the rural areas, as well. In this point, it is important to discuss the spatial and political leverage as a framework in this project.

5.2.1. Spatial and Political leverage

The first instinct of the interviewees seems to be to define local by the use of geographical boundaries. However these geographical boundaries also varied with actor in each region. In the smaller cities of Sydfyn and Bornholm only food from their respective islands were considered local, which was also seen as an advantage from the locals as *"closed systems"* are easier to manage. In the larger, more urban region of Copenhagen any food produced in Denmark was considered local. The informant from Aarhus considered local as *"...anything that comes from our region and that includes a span from one side of central Jutland to the other, so that could be local products and that could encompass Arla, as well."*

However, some actors claimed that there is was a distinction between geographical and political localism. The informant from municipality of Bornholm expressed his interest in Bornholm exporting local products to Sweden. For the island of Bornholm Sweden is closer than Denmark and they produce their goods in a place further north of Sweden.

> *"In a world of territorially organized politics, issues must be territorially anchored to be manageable" (Lidskog, Uggla, & Soneryd 2011)*

It makes more sense that they import goods from Bornholm. The informant from municipality of Copenhagen though had a different perspective. In her opinion there are two different lines for local, either geographical or political. Copenhagen, being the capital of Denmark,concentrates the political authorities.There might be a spatial proximity between Sweden and Bornholm, but on the other hand Bornholm *"has no say"* in what is happening in Sweden.

> *"Accordingly, through shaping the spatial identity of a problem, a particular environmental issue can be handled as a matter of international priority, the sole responsibility of domestic politics, or a local problem for municipalities. Actors vie to bind issues to specific spatial identities, thereby creating incentives for certain types of political action or inaction, placing expectations regarding accountability on certain actors." (Lidskog, Uggla, & Soneryd 2011)*

In conclusion, the choice to view food localisation through the lens of urban centres has both advantages and challenges;

Taking into account the ambition of to bringing local food to the mainstream, it should reach the widest audience possible. Considering the fact that the majority of the population live in urban centres, it makes sense to organise markets and infrastructures in a way that makes local products easily accessible to consumers. However, as discovered through the empirical research, one cannot simply transplant local products into conventional distributions models due to conflicts of scale i.e. local producers typically operate on a small scale and therefore cannot meet the unit demands expected by supermarkets that are systemically organised around large scale conventional production.

Much of the value appropriation of local food is embedded in the concept of experience economy (see

literature framings) this needs to be taken into consideration when taking an urban centered approach, for example how can the values of tradition, quality, and transparency commonly associated with rural framings be maintained while being translated into an urban context?

5.3. Reduction and Construction of Boundaries

Defining the system of local food was an ongoing process that took place throughout this project. It started with our own thoughts and assumptions of what a local food system would look like and what kinds of activities, actors and entities, which was in the workshops. *"What a system looks like, how it can be broken down, and what its boundaries and other qualities might be, depends on the perspectives of its observers"* (Kooiman, 2008)

"Complexity invites examination of societal structures, interdependencies and interrelations and is a condition for combining interdependencies. The difficulty is how to reduce it in an effective and responsible manner." (Kooiman 2008) According to Jessop (2013), In order to reduce, structure and organise the complexity in governability there are several actions that are needed to be taken into consideration:

Firstly, it involves *"simplifying models and practices which reduce the complexity of the world and which are congruent with real world processes as well as relevant to the objectives of the actors concerned;"*

Secondly, *"developing the capacity for dynamic social learning about various causal processes and forms of interdependence, attributions of responsibility and capacity for actions, and possibilities of coordination in a complex, turbulent environment;"*

Thirdly, *"building methods for coordinating actions across different social forces with different identities, interests, and meaning systems, over different spatio-temporal horizons, and over different domains of action;"*

And Finally, *"establishing both a common world view for individual action and a system of metagovernance to stabilize key players' orientations, expectations, and rules of conduct."* (Jessop, 2013)

The aforementioned actions were integrated in the workshops, in order to validate and develop the system further by including, excluding and prioritising variables and activities.

Each of those parameters were weighted differently from the actors, depending on the department and the municipality's agenda. As a result, the prioritisation and the structure of the activities that were necessary to achieve goals were constantly changing. Some of the actions that were taken in order to organise the system in a simplified and measurable object were the following: During the workshop the actor from Copenhagen Municipality identified 4 parameters that were seen as top priority goals: Resilience, Economy, Health, Livability, whereas the remainder of the parameters presented in the workshops were seen as means to achieve these goals. In addition, there were parameters that we had not considered, that came up in the workshops that were key for policy makers; that is business development and innovation. On the other hand, there were some parameters that we had considered relevant, but did not seem to be of great importance for policy makers; some of which were excluded completely (urban gardening, foraging) and others which needed to be combined in order to create a comprehensive category (quality, transparency, tradition and narrative merged creating the 'Experience' parameter. Also independence and biodiversity were merged to form the parameter of 'Ecosystem Services') The complete reduction process is shown in the figure below.

Figure 15: The Reduction Process Model

5.3.1 Co-Creating a Coordinated Framing

In order to design a comprehensive socio-technical system representation for local food in Denmark we established the following criteria in collaboration with the governance actors;
The defined system should...

(1) Align with current and future city agendas.

(2) Construct comparison through design - creating measurable relationships

(3) Be able to be used as a tool to enable cities to interpret themselves

(4) Be able to function as a motivational object that communicates the urban/rural value exchange in an attractive and interesting way

(5) Foster competition through city branding and identity, and success stories.

Legitimacy and regulation of information is a critical concern - will people question or challenge where information is coming from? Also, how do we as designers decide which information is legitimate when constructing competition metrics? What are the requirements and/or motives for our target audience made up of policy makers? Essentially, we are talking about manipulating information and framing information in a way that will motivate as many actors as possible, the challenge being that these actors belong to a variety of communities, public, private, governmental organisation, social classes etc, the idea of cities within cities - a city is as multifaceted as it is diverse, how to provoke different communities and user groups, and location specific sustainability - how can we compare activities or progress of the particular issue when needs or methods required are different? Here we have achieved this through our empirical research of creating a coordinated system framing and using the participatory design approach.

5.4 Value Creating Relations

This section is dedicated to the value creation relations that are embedded in the local food systems model defined in this project. Undoubtedly, workshops as a co-design process has served as a platform, where we in collaboration with the participants from the municipalities tried to coordinate a unified, shared framing of a local food system. The first step in the reduction process was to translate the

framings into an initial set of measurable thematic parameters. A set of shared goals (value creation relations), means to obtain the goals (building blocks), and quantitative metrics have been co-created with governance actors during the appraisal process to: create *'consensus across distances'* (Bueger, 2015) and render the food localisation system visible and therefore governable.

The value creation relations that are presented here are; Livability, Resilience, Economy and Health. Each of these have been identified as goals on the political agendas in urban governance by policy makers during the participatory design workshops. Additionally, within each of the value creation relations is a set of building blocks, to put it simply if we see the values creation relation as goals, the building blocks are the means to obtain the goals.

The local food system model that has been constructed with the idea in mind that *"food is a driver for change"* (Ida Bingum) and is representative of the ways in which, the values creations are interrelated and affect each other since food, and consequently local food, is part of many aspects of governance. Below we present a brief explanation of each value creation relation, how it pertains to local food, the building blocks required, and suggestions on how efforts or lack thereof can be measured and accounted for.

5.4.1 Livability

Livability is highly prioritised in city agendas as it reflects the life quality of the citizens in it. It is an umbrella under which all the rest of the goals are included. In order to describe livability in terms of local food, we chose the framings of experience and social inclusion.

Experience, as described earlier, includes the framings narrative, tradition, quality and it is the view of local food as an eating experience. It is important not only for the residents of the city but also for the travellers and the overall branding.In Copenhagen Ida Bingum reported the efforts of the municipality to integrate local food into a range of non-directly related events such as sporting events, for example the red bull diving competition on 2016. Similar efforts have been made in Aarhus where competitions have been held between restaurants to produce the best dish from local ingredients to

promote local produce to both residents and visitors. Additionally, Aarhus have utilised the opportunity promote local food through aligning the agenda with their title of European Capital of Culture.

In a second level, livability can be associated with accessibility of local food for everyone. can be linked to community, inclusion, and social equality. The social ties between producers and consumers can reduce food insecurity. Furthermore.accessibility to local food can be affected by income. In the framings presented earlier the representative from Copenhagen was interested in social inclusion of ethnic minorities and lower income neighbourhoods like Norrebro, so that, accessibility to fresh healthy food should not become a luxury only for a portion of the citizens of a city.

Experience can be measured by the amounts of events promoting local food happening in the city, the overall consumption of local food produce in percentage, and the amount of farmer's markets that are taking place.

5.4.2 Economy

Another value creating relation of local food is associated with the goal of Economy. It is common knowledge how important is economy in the political agendas since economic metrics is the reference point for most activities and actions within governance networks. Economists are often considered to have epistemic authority due to the strong metrics.

Supporting local food chains will result in raising income of the local businesses thus in a growth to employment rates regionally and to the local labour market. In addition, purchasing local food results in import substitution, which also creates an additional economic impact since local businesses and workers potentially use their extra income regionally or on production inputs in the area and potential for business development (Martinez, 2010). It is also important to consider that development of smaller businesses can also positively affect larger corporations. As it has been claimed in the qualitative research, large companies often look for innovation among smaller businesses following the exploitation-model of innovation. Innovation can also be cultivated into local food organisations as it has been presented earlier in the multiple framings chapter.

In that respect, suggested ways to measure economy is the Gross Domestic Profit created by local food products (that have not been exported), the amount of new businesses that started in a specific period within local food sector, the percentage of innovative products within local food sector and the amount of organisations/incubators that facilitate innovation and educational programs for professionals within the local food domain.

5.4.3 Health

Health is another major goal of governance, since it is a fundamental component of welfare state, not only because constituents must be protected from sickness but also because being sick costs money to the state. A significant advantage of local food is the health and nutrition benefits. The example of Bornholm, where the percentage of diet related diseases was the highest in Denmark shows the significance of two aspects local food: that fresh and healthy food has to be accessible and that consumers have to learn to make different dietary choices.

Local food is claimed to be healthier, fresher, less processed and containing more nutrients, because of the shorter food chain, thus the shorter travel distances. There are not facts that support that there is a relation between health outcomes and the characteristics of *'local'* (Martinez, 2010). On the other hand, traceability of local food products can validate their origin and their quality and accessibility of fresh healthy local food can encourage consumers make better dietary choices. This can also be supported from the governance level by procurement and public kitchens in schools hospitals etc. It is a fact that Danish public kitchens have been transitioning towards organic food.

Transitioning to a more local food oriented diet would mean greater tradeoffs in terms of dietary habits (for instance less meat) that are healthier but citizens find difficult to accept. Education can play a great role in cultivating these habits.Educational programs in schools connect students to producers and the practices of food production (fishing, agriculture, farming) making them be aware of the importance of the origin and quality of the food they consume not only for the environment but most importantly for their health as well . The food camp that is currently being built in Bornholm is a great example of an infrastructure that educate students from an early age and promotes food literacy.

For this reason health is represented to be promoted, in terms of local food by procurement and education. A way to measure procurement in terms of local food can be the percentage of local food produce in public kitchen like schools, hospitals etc. In addition, education can be measured by the educational programs in schools that aim in promoting local food and cultivate healthier eating habits.

5.4.4 Resilience

Regarding Resilience local food system is linked with food security. Global food markets have been criticised for not being able to create robust food systems that are able to handle the effects of climate change, severe weather conditions and failures in production due to pests. Expanding the range of local food products is a major factor to manage the monoculture of agriculture that has been mentioned in the interviews many times by the actors.Finally, another important value for developing a local food system that is connected with resilience is the environmental aspect.

Food localisation conotates sustainability and pro-environmental discourse. It is a fact that comparing two supply chains that are in all aspects identical apart from their length, the one that is more environmental friendly is the shortest one. It is argued though that distribution and transportation takes up a rather small percentage of energy consumption and GHG emissions (Martinez, 2010). On the other hand, one could argue that supporting local food systems and their transparency, it is a way to pressure for more sustainable practices in food production (agriculture, farming).

In that respect, ways to measure resilience is the percentage of local food products that are organic and-or sustainable. Another factor to measure is the range of different local food items that are produced in terms of the different kinds of plants and animals. Finally, it would be useful to measure what percentage of produce is seasonal as a more environmental friendly practice of agriculture.

5.5 Infrastructures

The next element of local food system that is discussed in this sector is the infrastructures that need to be included in the local food system model in order to make it work. These infrastructures and activities are: Farmer’s markets and Direct marketing, Supermarkets, Local Food organisations, Public Kitchens, and existing infrastructures that need to be transformed.

5.5.1 Farmers' Markets and Direct Marketing

Farmers markets is the most common infrastructure of direct marketing of local food products. *"Local food system practices such as farmers' markets are directly tied to place and time as well as social, economical, ethical and physical systems within which they are located. The impacts of these practices cannot be distanced and externalized in the same manner that they often are in the long-distance, industrial food system."* (Link and Ling, 2007) Interestingly, such infrastructure is missing from urban centers like Copenhagen even though it is of great importance for all actors that we contacted. Apart from constituting local food products available to urban centers, it is also a means of making a range of products available to a greater audience, the population of the cities with their social and financial diversities.

5.5.2 Supermarkets

Supermarkets are the most common place of purchasing food items in urban centers. Even though there are attempts from large food organisations to include local food products in the supermarkets many times there are implications in terms of scale.

5.5.3 Transforming Existing Distribution Infrastructures

Apart from direct marketing and the alternative strategies of distributing local food that have been discussed it should be considered to transition the existing food infrastructure to a more local oriented. In the 2010 paper *'Moving local food through conventional food system infrastructure: Value chain framework comparisons and insights'* it is claimed that in order to create local food systems that are able to fulfill the demand in a larger scale value chains is an interesting concept to consider. *"Value chains offer one model for restructuring regional food systems that operate at a larger scale than direct marketing while deliberately embedding mechanisms to ensure social, environmental and economic benefits for supply chain participants."* (Bloom and Hinricks, 2010)

They suggest that in order to differentiate from a traditional supply chain, value chains should include *" differentiating value-added products, committing to the welfare of all participants, creating strategic partnerships and the role of trust and shared governance "* (Bloom and Hinricks, 2010) Local food organisations play a significant role for the producers and the governance actors. They act as

incubators for producers arranging events and seminars and many times they constitute the link between the governance actors, food companies like supermarkets and the producers.

Processing infrastructures can also play a great role in promoting local food in public institutions like hospitals, schools and prisons where usually there is a limited processing capability and a reliance on pre processed food items. *" locally owned processors could create economic opportunities for producers to add value to local produce, as well as increase the ability of local buyers to purchase it. "* (Bloom and Hinricks 2010)

Co-operatives, agricultural and farming organisations, local food organisations could invest in such infrastructures enhancing more shared economy models in local food infrastructure.

5.5.4 Procurement Infrastructure

A major factor to transitioning to a more local food system in Denmark is public kitchens, as shown from the organic transition example. The organic transition of public kitchens in Copenhagen has gained great publicity throughout Europe and it is an example of best practice that local food transition can learn a lot from. Including such an infrastructure into the accounting device is a driver for opening up the legislation of procurement to make it easier for local producers to participate more actively in public kitchens. Public kitchens enhance accessibility of local food to all and can also act as a means of creating awareness of diet habits in Denmark.

5.5 Food System Model

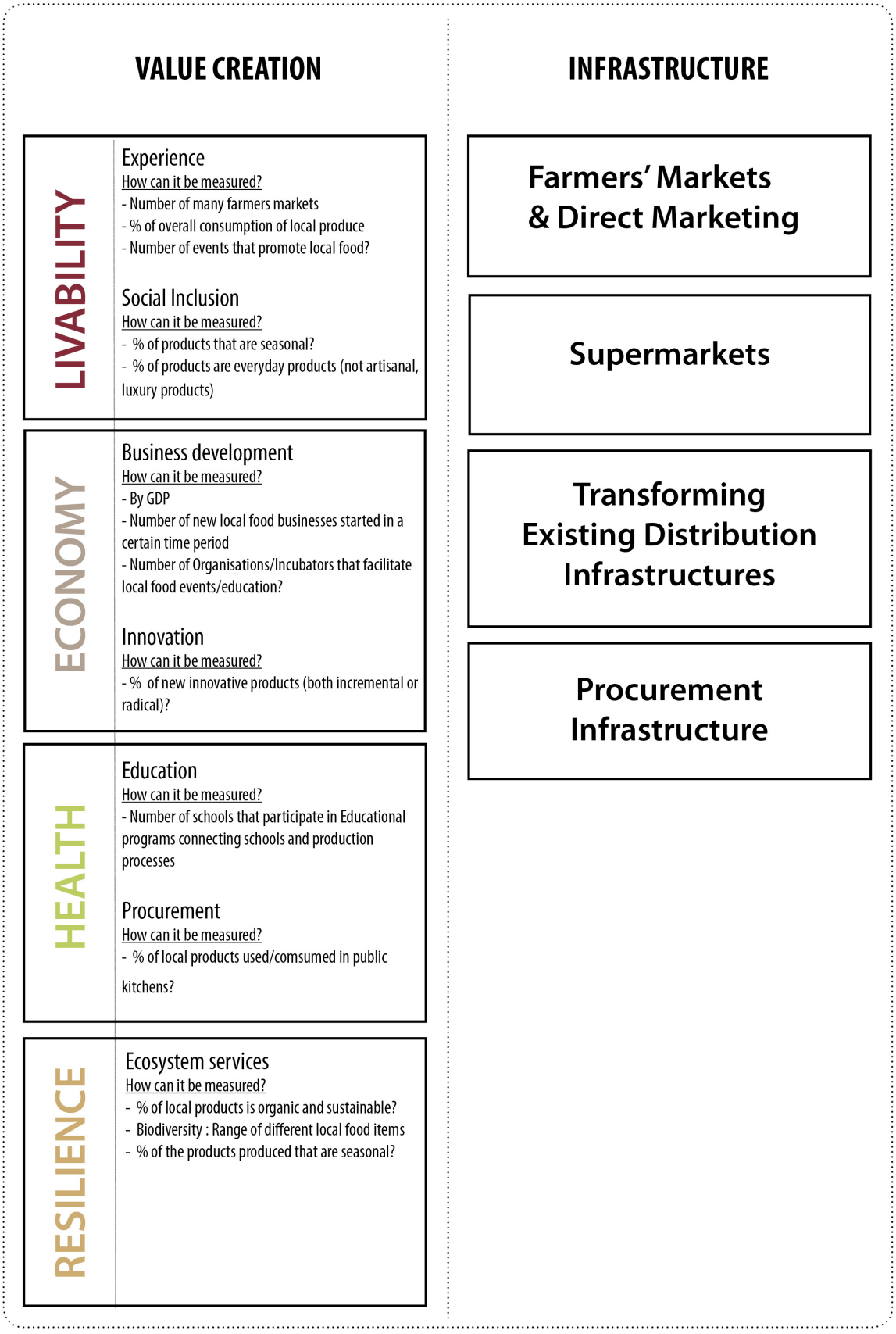

Figure 16: The Local Food Systems Model

5.6 Conclusion

In conclusion to this chapter, we argue that each of the above, value creation relations, and infrastructures, are necessary for a successful the local food system model to function. This argument is formed on the basis of interrelations across and between the value creation relations. A number of the building blocks could be seen are relevant in more than one value creation, for example as mentioned above each parameter of the model could be considered relevant for livability due to the ambiguity of it as a term, however it is necessary to construct boundaries between them in order to both, make the values manageable as goals for governance networks and for the generation of roles and assignment of accountability between various departments of the municipalities. The challenge here would be to cultivate the correct balance between responsibility and collaboration i.e. someone must be in charge, but not to the extent that collaboration is discouraged.

6. COMMITMENT (DESIGN)

6.1 Introduction

The local food systems model that has been defined and presented throughout the appraisal phase is the foundation from which we have developed a shared system representation to create new, and strengthen current, governance networks. In the first section of this chapter, design concepts for two accounting devices are presented in terms of target audience, function, interface, visual design, and most importantly how the device can cultivate actor commitment to the new system representation. The purpose of the accounting device is to produce shared information about a local food system thus making it governable, with this is mind the key challenge at this stage is the generation and collection of data. Therefore, the second section of this chapter will address the topic of data collection, and interpretation as both a technical challenge, as well as, a testament to actor commitment to the device. As frequently iterated throughout this report, participatory design workshops can be a powerful change management tool, consequently this approach was integrated into the testing of both concepts. In the final section of this chapter we discuss the feedback and considerations of the actors with whom we revisited to discuss the designs we had explored together during the appraisal phase.

6.2 Conceptualisation

The local food systems model has determined the key information that should be presented in both designs therefore during the conceptualisation stage the basis had already been formed. Data must been included for the four value creation relations (1) Livability, (2) Economy, (3) Health, and (4) Resilience in order to align with current and future city agendas. However, throughout the design process we discovered that the way this data is framed/presented can vary. We explored two different approaches to achieve the goal of creating an accounting devie that can;

1. Construct a comparison of local food systems through design and create measurable relationships
2. Be used as a tool to enable cities to interpret themselves
3. Function as a motivational object that communicates the urban/rural value exchange in an attractive and interesting way.

Methods used during this process were brainstorming, sketching, and card sorting both independently and with participants during participatory design workshops. The concepts are as follows;

6.2.1 City League Tables

The first concept of city league tables was derived from both user insight and literature on the topic of city branding and competitiveness which argued the relationship between strategy and competition. If we consider the importance of strategy in creating long term change, we must also consider the role of competition - in order for strategy to be developed, competition through city tables must be established. " *In the context of cities, they are the a priori of competition as they put cities in context with each other and create a hierarchy. Not only do they establish a hierarchy between cities, they also develop a set of norms and best practices that allow the measurement of deviance. In that they allow ranking and comparability, they produce rationality and comfort"* (Kornberger and Carter, 2010) Competition and/or ranking through city tables creates discourse which shapes our interpretation of cities, creates and boundary object to communicate urban/rural reality, and acts as the political tool to incubate transition to more sustainable practices.

6.2.1.1 Function and User Interface

The city league tables are designed to be presented in the form of an interactive webpage where users can access city both rankings, as well as, more detailed comparative information. The figure below illustrates and information architecture and interface of the webpage. On the home page the three cities are presented at the top with along with their overall ranking, this page also shows two categories in which these cities are ranked; Value Creation, and Infrastructure with drop down menus with clickable links of the values. The user can click on these links to reveal the ranking for the local food system of each city within each category, detailed comparative data on how each region is performing in terms of the local food governance, and how the rankings have been generated. Creating the information architecture enabled us to figure out the functionality of the design and led to the next stage of creating a high fidelity mock-up to bring the design to life making it easier to communicate our ideas to the users/participants.

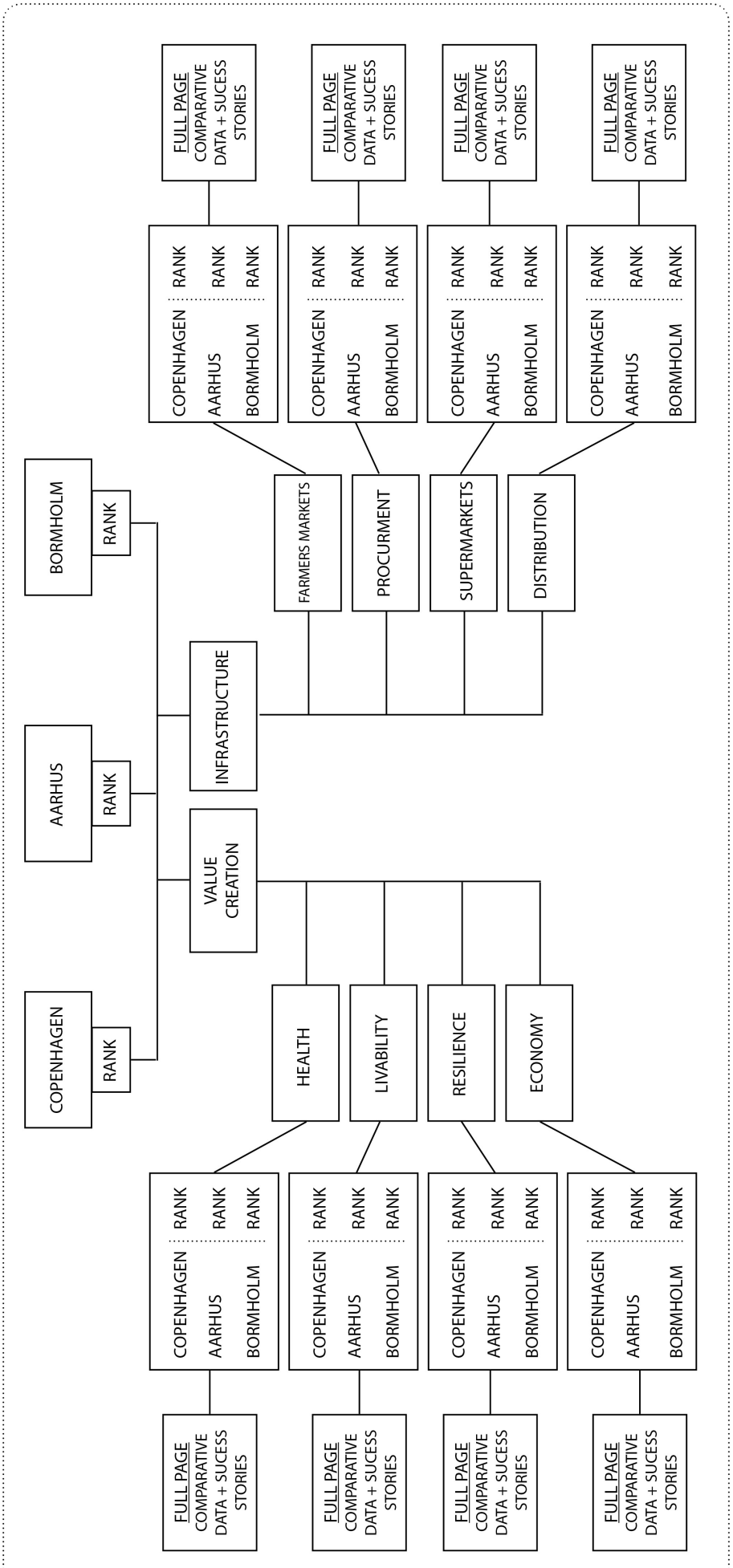

Figure 17: I.A. for City League Tables

6.2.1.2 Concept Mock Up

The concept mockup shown in the figure below further develops and illustrates the look and interface of the webpage. The home page is shown as well as an sample page of what the user can expect when they select a specific value to inspect. The colour palette for the design has been inspired by popular Danish food items; herring, spids kål, remoulade, and beetroot. It is important to note that the data show in this mockup is not accurate and for demonstration purposes only as the data collection phase of this project has not yet begun.

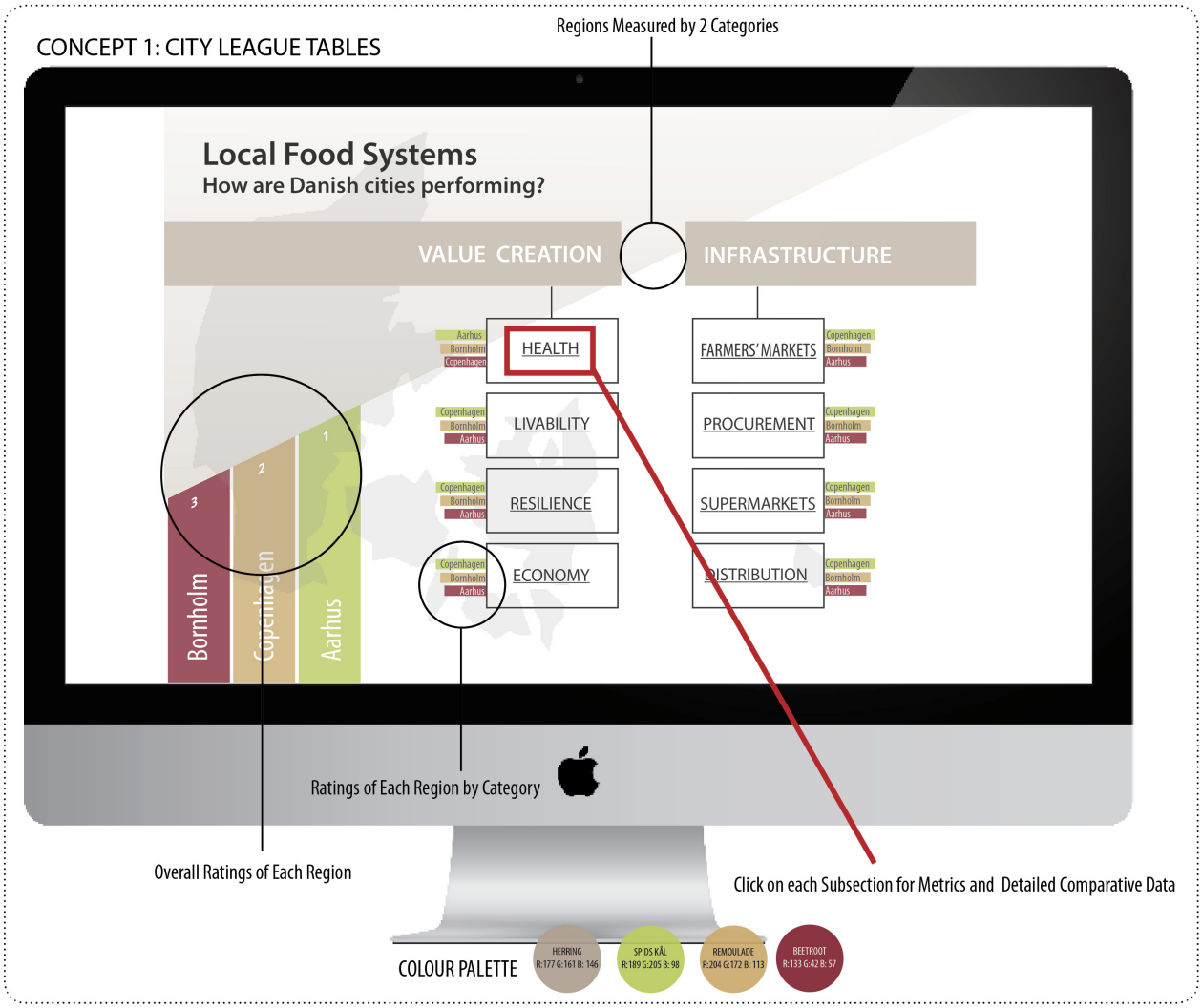

Figure 18a: City League Tables - Mock Up (Page 1 of 2)

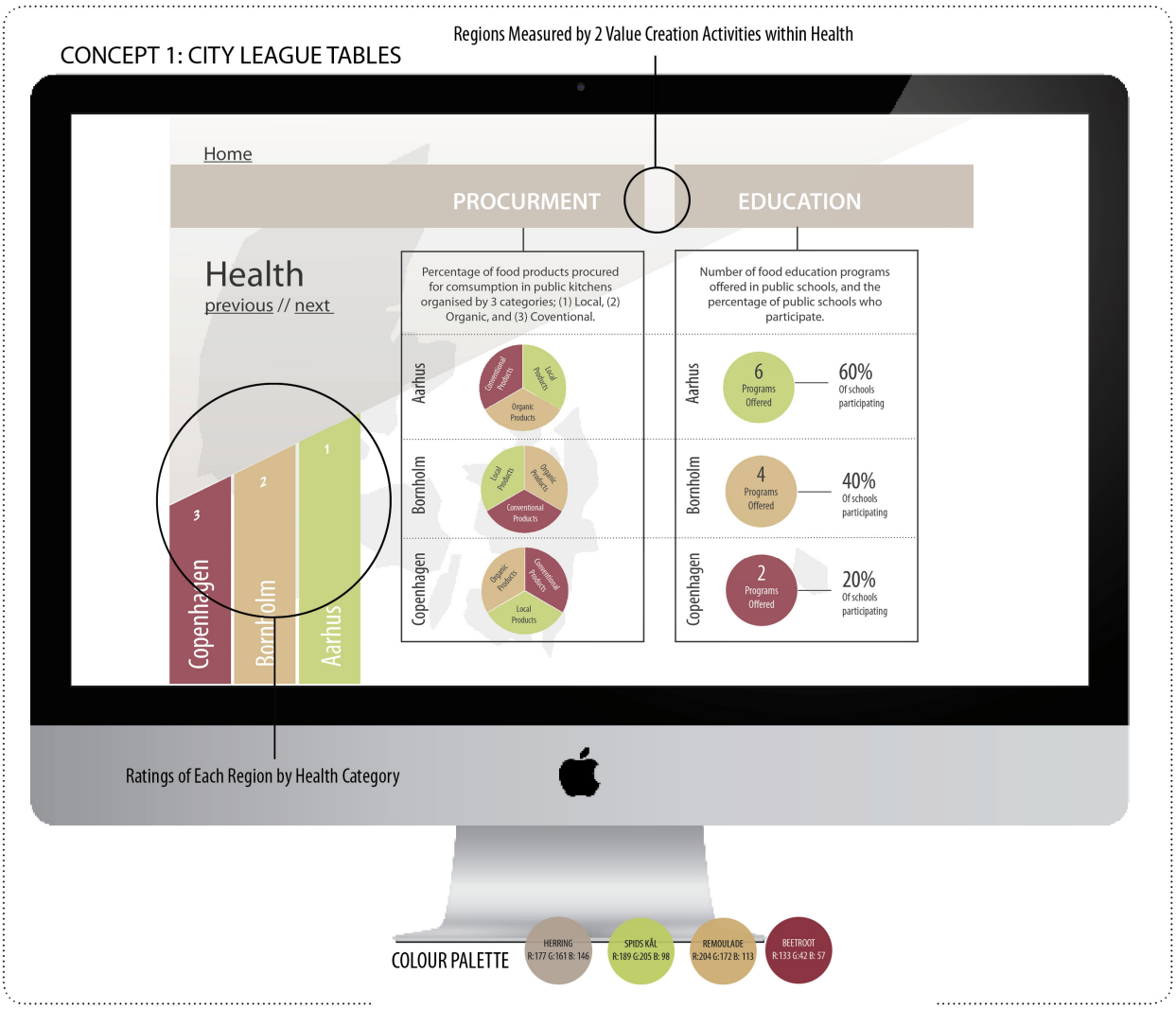

Figure 18b: City League Tables - Mock Up (Page 2 of 2)

6.2.1.3 How Can it Cultivate Commitment

With this concept we will frame information on local food systems in a way that will urge the policy makers to take action and begin the process of enrolling them into a new governance network. Kornberger and Carter, 2010 argue that *"league tables are engines not cameras"* - they transform and simplify complex information to create ranking and competition, much like the process of mapping actor networks both visualises the network and has the ability to drive and facilitate movement and change. When we try to cultivate commitment we must ask what motivates people? The question of positive or negative rankings - a positive such as ranking the best university or a negative ranking such as the US ranking the *'fattest city'*, is a topic we had discussed during conceptualisation. The negative 'fattest city' metric spurred positive results by prompting policy makers in the US to create healthy eating programs, perhaps that could also work for our case, where the lowest ranking region would be motivated to catch up with its counterparts.

6.2.2 Knowledge Sharing Platform

The knowledge sharing platform is an interactive database where local food actors can view comparative statistics, agendas, progress and performance reports, and success/failure stories, pertaining to local food, between and within Danish cities. This concept is designed to be used at governance level, however with further development it could possibly be opened up to include more actors such as providers, suppliers etc.

The idea for the knowledge sharing platform first arose from our observations of the current lack of communication and collaboration between and even within municipalities. On further exploration, academic literature also provided insight into the idea that *"working, learning, and innovating are closely related forms of human activity"* (Orr, 1996). During a study on *'Organisational learning and communities-of-practice'*, Orr observed that in an I.T. company employees were trouble shooting errors, learning (outside of the scope of training), and innovating by sharing what he called *'war stories'*, essentially employees were growing professionally by sharing between one another anecdotes of success and failure. Through participatory design with the policy maker in Bornholm, we explored together the successes and failures of the local products and organisations and discussed how sharing these stories could help to define a local food system and strengthen governance networks.

6.2.2.1 Function and User Interface

The knowledge sharing platform designed to be presented in the form of an interactive database where the information is categorised by the four key city agendas/goals (established through participatory design) in the food system model. Each goal has connecting nodes that represent the building blocks to obtain that goal (as illustrated in the accounting device), for example to improve livability through local food, governance actors should address social inclusion and experience. The building block nodes are clickable and within each the user is presented with detailed information about who is responsible for this development, current performance, strategies, goals, infrastructure, and success stories in each region. The figure below illustrates and information architecture and interface of the database. Creating the information architecture enabled us to figure out the functionality of the design and led to the next stage of creating a high fidelity mock-up to bring the design to life making it easier to communicate our ideas to the users/participants.

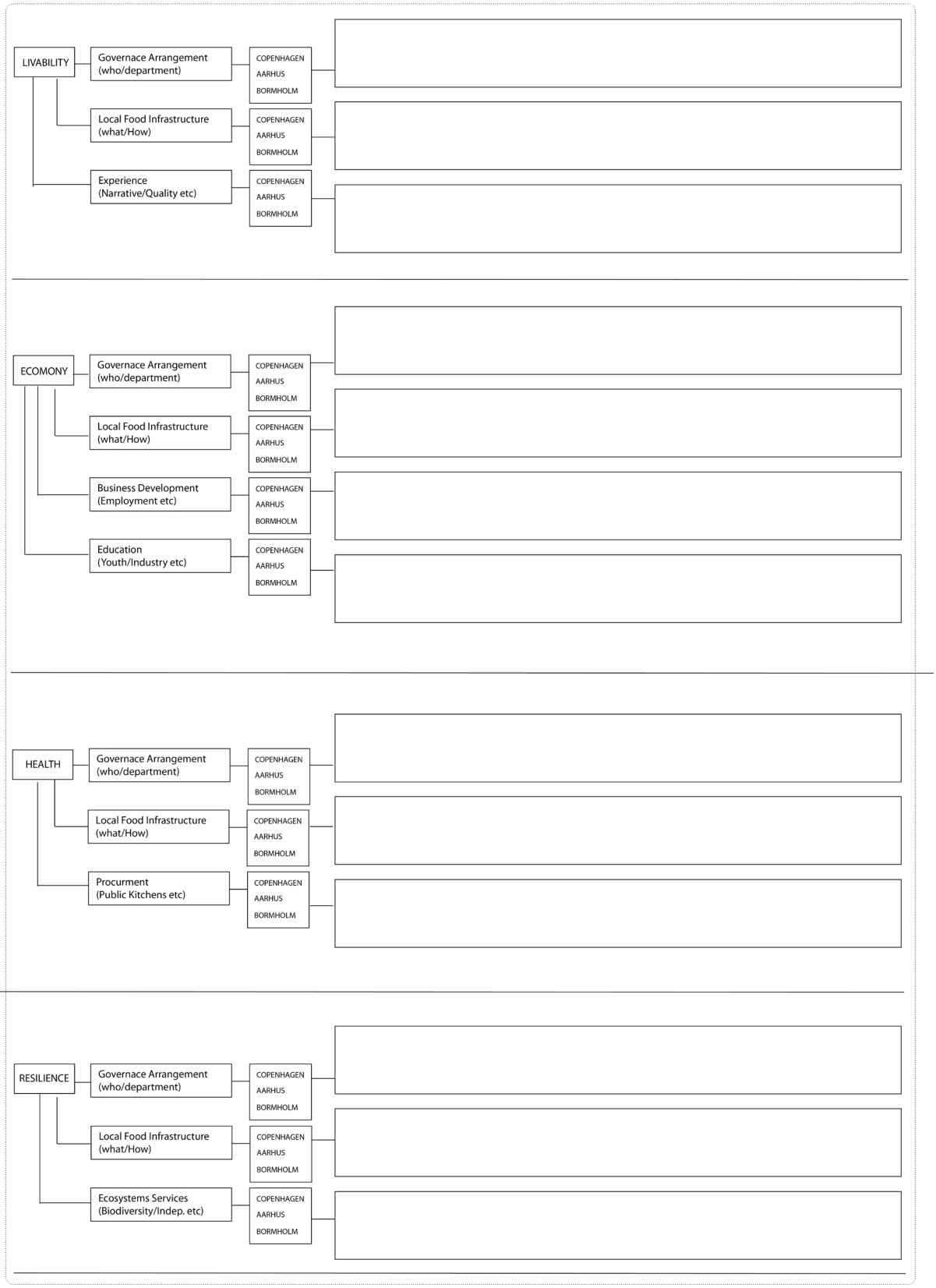

Figure 19: Knowledge Sharing Platform - I.A.

6.2.2.2 Concept Mock Up

The concept mockup shown in the figure below further develops and illustrates the look and interface of the knowledge sharing database. The landing page is shown as well as an sample page of what the user can expect to see when they select one of the building block nodes. As with the previous concept, the colour palette for the design has been inspired by popular Danish food items and i the data show in the mockup is not accurate and for demonstration purposes only as the data collection phase of this project has not yet begun.

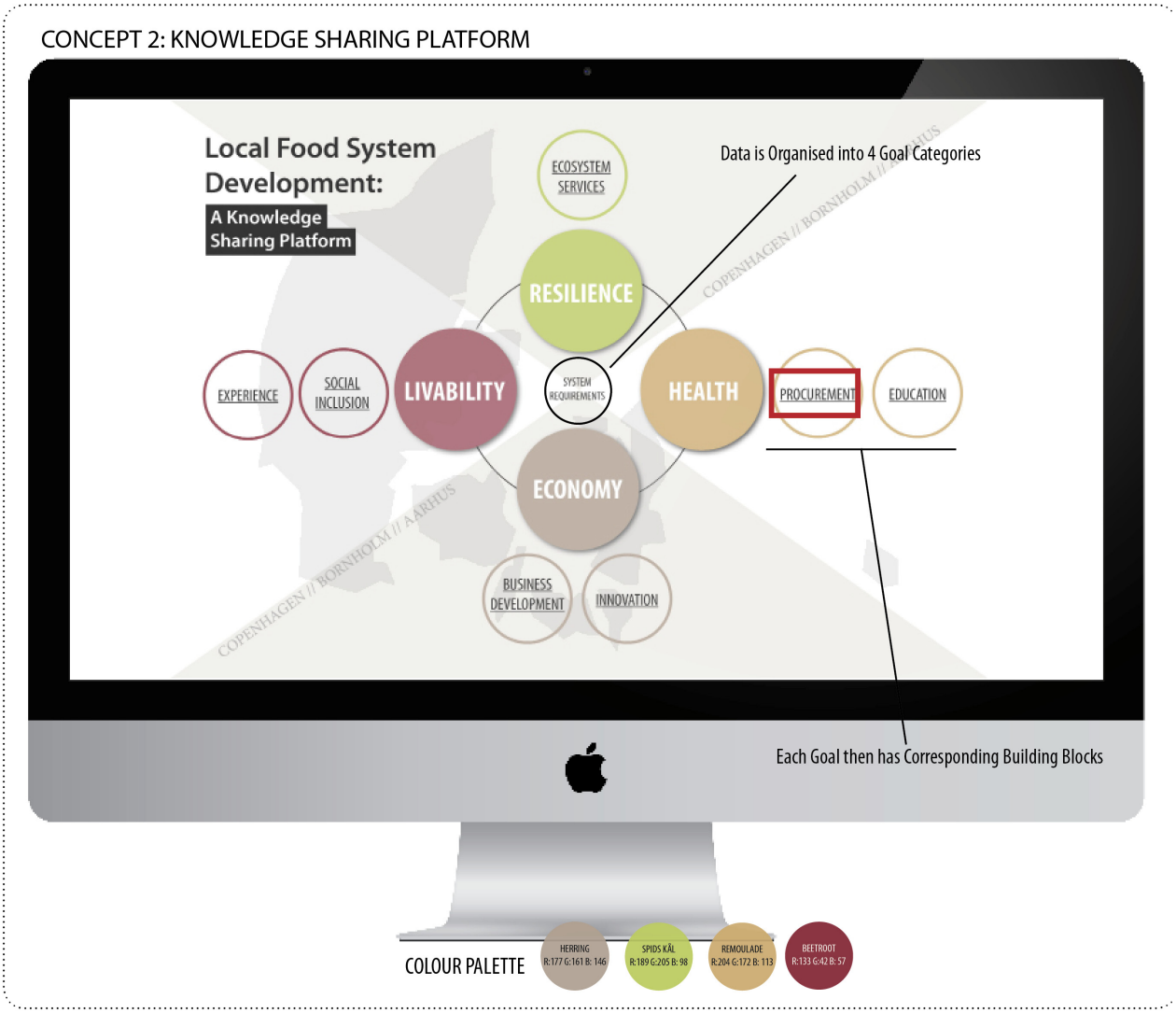

Figure 20a: Knowledge Sharing Platform - Mock Up (page 1 of 2)

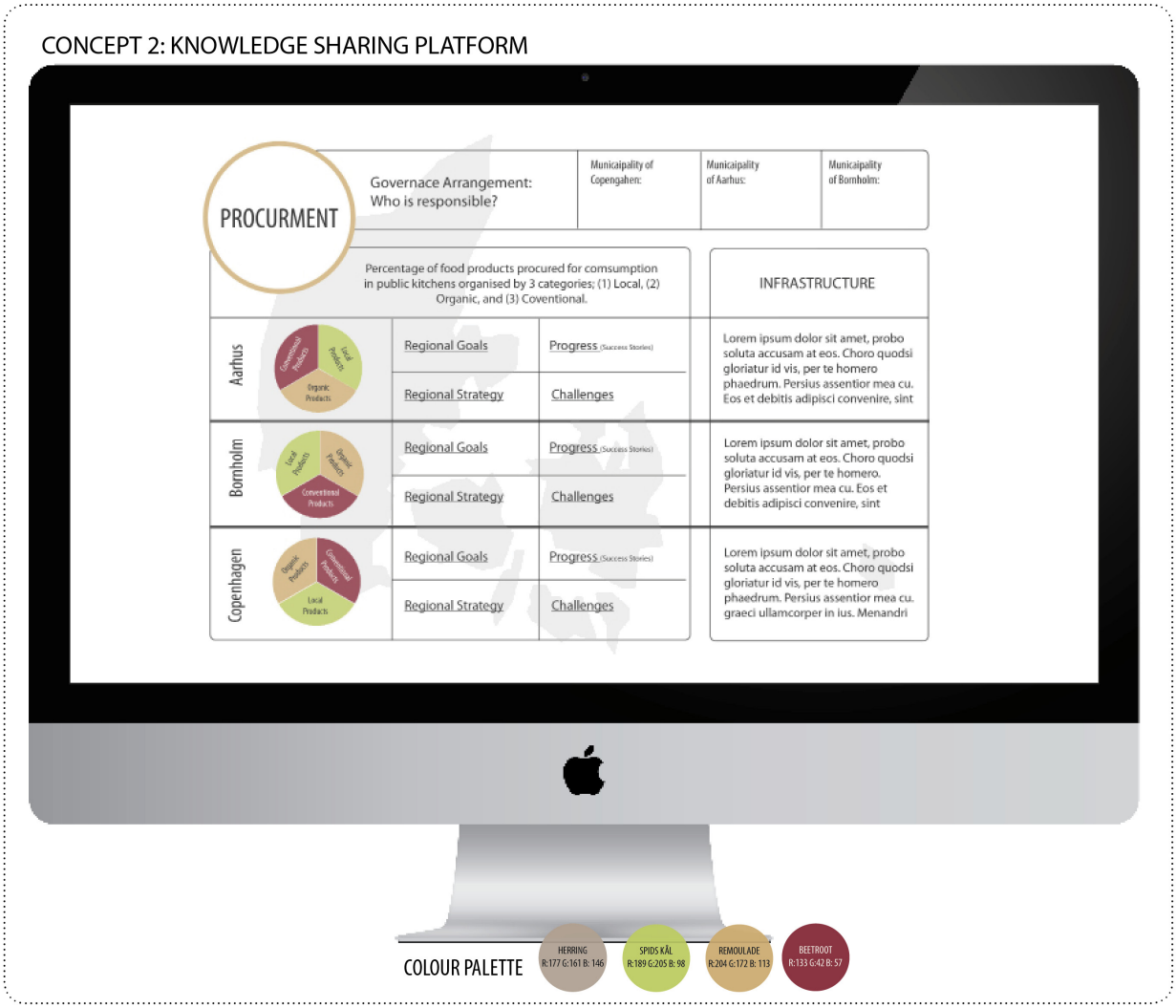

Figure 20b: Knowledge Sharing Platform - Mock Up (page 2 of 2)

6.2.1.3 How Can it Cultivate Commitment

The current reality of local food as a collection of fragmented framings that is difficult to govern has been reiterated many times throughout this thesis. The challenge is not, for the most part, that governance actors are uninterested or unwilling to develop a locally focused system, in fact our empirical research has proved the opposite. The challenge is, that one cannot govern something that is not visible through a distinct system definition and organised governance network. Likewise, if local food is not presented/framed in a way that demonstrates the broader systemic value, it will likely be considered as peripheral in governance agendas.

The knowledge sharing platform creates value appropriation by linking the development of local food to four key pre-existing city agendas in an integrated systems perspective. Through generation

of roles and assigning accountability to particular governance actors (governance arrangement) relationships can be formed within and between Danish cities and municipalities. Tangible resources are produced and deployed through data visualisation and commensurable framings. Concrete governance interventions can be undertaken due to the ability of the tool to strengthen and coordinate governance arrangement, by offering actors a common understanding of what they are doing.

6.4 Testing

In the final step of the design phase we reconnected with one of the participants (Peter Astrup, Aarhus) from the appraisal phase where we used the participatory approach to test and adapt the designs. Peter had some interesting comments and feedback with regards to both concepts the detail or which are as follows;

6.4.1 City League Tables

Although the participant stated that they liked and saw potential for both concepts, the one of City League Tables was the least preferred of the two. In terms of the general structure, categorization, and organization of the concept,, the feedback was good with the participant stating that *"This is a balanced scorecard with a great categorization"*. However, the limitation of the dataset were addressed in particular the decision to include only three Danish cities. *"We have 5 regions and 98 municipalities. The league's table should represent this"*. Additionally and probably the most prominent critique was that the clarity of the target audience was not inherent *" The purpose in not clear to me. Who is this table made for? Politicians, Citizens or Companies?"*.

6.4.2 The Knowledge Sharing Platform

The Knowledge Sharing Platform was the preferred concept of the two. The participant discussed the values of the concept as an epistemic and visibly producing device *"This could give me – and others – insights into what is going on where, with whom and why"*. *Additionally , the ability of the device to fallicalitae the coordination of networks was praised "This would also give eg. european partners a possibility for searching new partners for cooperation"*. Once again the limitation of the concept was identified as the decision to include only three of the five Danish regions.

6.4.3 Data Collection

In relation to data collection for the City League Tables concept, Peter made the following statement:

> *"Collection the data will be near impossible. We collect a lot of data (on very few of the areas) already but basically all official data is at least 2-3 years old and if you wanted to do on a european level the data would be even older."*

In relation to data collection for the Knowledge Sharing Platform concept, Peter made the following statement:

> *"The whole gathering of information part will be extremely arduous. I would LOVE to have the information – but it would be difficult and challenging to gather it – just in my own organization. - And: the risk will be, that the data will be old before the gathering is finalized"*

6.4.4 Additional Uses of the Accounting Device

During the testing phase of the design process Peter also had some insights with regards to additional applications/uses of the second accounting device concept, two additional concepts were discussed;

(1) The potential for using the accounting device as an internal project management and knowledge sharing/producing tool that could provide a backbone for local food related projects, and perhaps direct links to official databases (if possible) to draw stats. The concept was discussed in relation to a cross-European project that his department is currently working with where the focus is on:

> *"developing stronger food clusters- innovation, collaboration between public-private-knowledge institutions and so on. In these kinds of projects it is common to begin with an analysis phase, where all the partners spend a couple of months basically analyzing themselves (SWOT analysis good/bad cases etc.) Each and every time one partner has the job of coming up with a methodology, that will ensure, that the analysis is carried out and that you can in fact "measure" the regions up against each other. This is often a rather messy process. My thought was, that the second concept could be used for this purpose – especially if it was "open source" and the different partners could define goals, categories and so forth. It would be a cool way of presenting their analysis."*

(2) The second accounting device could have a possible application as a fee-for service platform for either project partners or the different EU secretariats who monitor the local food projects. In this concept data is gathered from projects and present different possibilities (data, categories, presentations etc.) for partners in charge of the analysis phase to make it easier for them to carry out their job.

> *"This way the problem of gathering data and keeping it up-to-date is gone because the ones using the system will be required to gather the data anyway (part of the project) and the up-to-date thing isn't an issue as it is a one-off analysis. The data collected could then be used by you to make an even better product"*

The key ideas within these concepts and the possible application are explored in the reflections when we discuss the opportunities for future work on the topic.

7. DISCUSSION

The goal of this study was to develop an accounting device that will render local food systems visible, in order to establish stronger governance networks, this chapter will discuss the outcomes of the process. Firstly we will explain how the accounting device can improve governability by establishing strong governance networks and governance arrangements around local food. Secondly the cost of reducing complexity is discussed. Following, we will discuss how the device can be made operable through the collection of data and the cultivation of actor commitment to the accounting device. Finally, we will address the topic of sustainability in relation to local food systems.

7.1 Improving Governability

An important discussion is how the accounting device will improve the overall governability of local food. Working with the concept of governability as '*'the overall capacity for governance of any societal entity or system"* (Kooiman 2008) does our accounting device facilitate to the overall capacity for governance of local food? In this section we discuss the three variables of governability (1) How the system to be governed is defined, (2) How the governance networks are coordinated, and (3) Governance Interactions (Kooiman 2008).

(1) The construction of a shared system definition: The system definition consists of the four key goals as outlined above. First and foremost, this enables governance actors to interpret their position within the system and facilitates the forming of governance networks surrounding the system. An interesting reflection can be made with regards to the iterative and reflexive nature of the theoretical model. Are these goals sufficiently broad and robust to accommodate additional and/or changing framings. The current device configuration is flexible in terms of the prioritisation of the gaols, the ranking of which, are open to interpretation within and between governance arrangements, because of this should governance agendas change at any point, for example an economic crisis, the system allows for a shift in focus.

(2) The governance networks are coordinated by the value creation building blocks. Networks are coordinated by making visible the connections and relations between specific governance roles and how they pertain to an overall goal. For example, in our device the individual governance roles of procurement and eduction and connected by working towards the goal health. Additionally, communication within governance networks is strengthened through the creation of knowledge and quantitative data *"with numbers one can often make new things, or at least transform old ones"* (Bueger 2015)

(3) Defined Infrastructures will be the result of the governance networks actually interacting with the system - the goals and values - this is about taking action where governance actors actually participate and interact with a wider network of actors such as producers, and local food organisations to generate results within the specific activities outlined in the device.

7.2 The Cost of Reducing Complexity

"In order to cope with complex, interconnected , global problems we need instruments better tuned to the conditions of modernity, better able to respond to uncertainty, complex enough to reflect reality, yet simple enough to be grasped." (Steel 2012)

A problem that may rise from reducing a system and try to simplify it in order to make it governable is oversimplification. The reduction was carried out for the purpose of the creation of an accounting device and to a certain extent this involves manipulation of information and the reduction of noise, so that the value relations can be visible. Undoubtedly, when a system is reduced to such an extent information is lost. The context and the application of this system representation are the factors that play an important role on filtering which information is relevant or not. It is also important to note, that in another context or other applications such a reduction would potentially lead to failure since some pieces of the missing information would be critical in another context.

7.3 Data and Commitment

As mentioned above, the purpose of the accounting device is to produce shared information about a local food system thus making it governable, the collection of data is a considerable challenge. Firstly, to understand and establish the specific qualitative and quantitative data required, and secondly, to cultivate sufficient actor commitment that will motivate policy makers to input and update data into the device. The initial consideration must be in relation to the metrics, as of course, shared information can only be produced by a standardised and shared metric. Likewise, this metric must be adaptable to changing circumstances to align with the reflexive nature of governance, and if we consider the fact that data will need to be updated on a regular basis, weather this monthly, annually, or, biannually.

In the case of this project, having a limited time frame has resulted in a rudimentary investigation into the topic of data collection, therefore the following paragraphs will simply explore some initial ideas. We will look at the Health value creation of the accounting device and conduct a brief exploration on how data could be collected to account for the integrated building block of procurement.

Public kitchens have official records of the origin and quantities of the products purchased for use. For example in the current effort to transition to organic, many public kitchens have used method to measure organic food procurement called the *Dogme* method.

> *"The Dogme method was developed in 2005 as an online measurement tool to assess the organic food procurement based on self-reported estimations and background data on each kitchen" (Sørensen et al, 2015)*

This could be the starting point of aggregating data about the consumption of local food in the public sector. As it was introduced in the paper *'Reinventing the bicycle: how calculative practices shape urban environmental governance'* (Jensen et al 2017), Police reports for accidents were the starting point to render known certain representations of urban cycling in Copenhagen. In the case of local food, this data could produce a representation of current performance or standing from which governance actors can determine what actions can be taken to improve their performance. By comparing such data in different cities, knowledge can be created in terms of visible challenges and opportunities and problematise policy makers in order to take action.

For example it was uncovered through literature and empirical research that public kitchens face challenges during both local and organic food conversion, in relation to *"inadequate food selection, unstable deliveries, a need for multiple suppliers and price premiums"* (Sørensen et al, 2015) through discussions with actors in participatory design workshops we established that a solution to this problem would be to create a coordinate network between producers and distributors. The establishment of such networks would both establish infrastructure and produce new knowledge about local food procurement practices and thus new system representations that would lead to more data.

Until data are available, cultivating commitment is a difficult task. Commitment at this point emerges from people that are interested in the concepts only. The devices are just conceptual and will have to be operable with fully data set in order to cultivate commitment. Moreover the fact that governance actors have been sceptical about data and how difficult it could be to collect them is an evidence of a gap in governance of local food system.

7.4 Sustainability

Surprisingly, environment and sustainability was not mentioned so much by actors throughout the empirical research. On the other hand, local food systems and their ecological framings have been discussed in detail by scholars and it is of great importance for the project to include in the sustainability perspective the environmental factor. We justify our choice of including the environment in the value relations from a governance perspective because of the overall branding of Denmark as a frontrunner regarding environmental issues. Moreover, Sustainability is constitutive of three pillars; people profit planet. In that respect, as it has been discussed in the value creation relations and in the multiple framings section local food has certain attributes that can be seen as sustainable.

People: One of the most common practices of purchasing local food is based on direct marketing (such as farmer's markets) which bring in direct contact consumers and producers or from an urban center perspective people from rural and urban areas. The social framing of local food has been discussed in previous chapters for strengthening notions of trust and community.

Profit: Economy and its effect by local food systems has been discussed extensively in the Value creation relation section . Boosting local economies and substitution of imports are only two of the benefits of local food in terms of economy.

Planet: As it has been mentioned before, local food connotes sustainability and pro-environmental discourse. It is arguably more sustainable than conventional food practices in terms of distribution and transport, that is however a really small amount of GHG emissions and energy consumption. More sustainable practices of agriculture and farming could be promoted by governance actors in order to push for more sustainable local products.

8. REFLECTIONS & CONCLUSION

In conclusion, with the goal of strengthening and coordinating local food governance arrangements, it is necessary to render local food as a well defined and attractive socio-technical system. Local food cannot be defined as it is characterised by the high complexity of multiple framings and a scattered governance network, In order for a system to be defined we needed to reduce complexity into one shared framing of local food. This was achieved, with the use of the theoretical framework of governance on the inside and the phase of appraisal.

However, the local food system model we ended up with, includes a broad spectrum of framings and is designed according to the governance agendas with the use of co-design methodology. The model is characterised as reflexive, in order to fit with the changes in the prioritisation of the agendas and goals. The local food system model we created in collaboration with the governance actors, is a well defined object that is composed by the four goals, of livability, health, economy and resilience, the means to achieve those goals (building blocks) and the infrastructures.The goals and their building blocks are representing the value creation relations that are integrated within local food systems, but are not visible. The infrastructures represent how the activities of distribution and transport are facilitated within the system and what are the necessary structures to make the system work.

The final representation of the system, the two concept of the accounting device, are clearly defined objects of the local food systems with boundaries but also with limitations but also with the demanded reflexivity. As it has been discussed in the previous chapter, the accounting device improves governability of the local food system since it constructed a shared definition, it is based on quantification of data which create consensus and it facilitates collaboration within local food systems with a larger network of actors producers, local food organisations etc. In that respect it can be concluded that with strong system representations, governance arrangements and networks are strengthened.

The theoretical framework of governance on the inside has helped us to structure each phase of design process; The investigation phase was where we explored the Multiple framings, in the organisation phase empirical data was organised and analysed through appraisal, and finally the design phase was centred around cultivating commitment. Moreover, Governance on the inside served this project by supporting the pluralistic character of local food as a socially constructed concept and to formulate it into a single framing without excluding actors from being represented, which is a key factor for establishing system representations. Another advantage of the theory was that it is reflexive, in the sense that it enabled us with evolving and growing (opening up) the framings during the different phases.

On the other hand, the four moments of translation from Actor Network Theory were used as a way of viewing reality that firstly, enabled us to understand the goals and identities of the actors, and to understand the fragmented networks that existed within the multiple framings, and more importantly to establish the new networks and interrelations between actors pertaining to the local food system representation.

Participatory design functioned as a *'change management'* tool throughout the project. In order for the design to be relevant and functional the actors (users) needed to be involved in the process as we, as designers only had assumptions on what was required for a functional local food system, additionally participatory design combined well with the theoretical model, specifically during the appraisal phase where we collaboratively negotiated the reduction of the multiple framings into one coordinated system framing. However, recruiting participants was a challenging task. Local food at governance level is not one single governance entity but rather separated into different departments. This became an obstacle for various reasons: it was a challenge to make contact with the relevant people to participate in the workshops as it was difficult to even pinpoint who was responsible for what in terms of local food activities and agendas. When participants were finally recruited, it was not possible to arrange collective workshops with representatives from each region due to a combination of tight schedules and proximity. Additionally, in relation to cultivating commitment, we found that we had to frame the workshops differently according to these governance departments, in order to convince each actor to take part.

On the other hand, at this point we have to state that it has been a challenge for us as well to identify what motivates actors in governance. The difficulty of pinpointing actors may be an evidence of governance gap in the local food sector, but the difficulty of engaging with actors and establishing contacts may have occurred from our own lack of association with governance actors and what interests them. However, this was something that we learned along with the process, which reflects the reflexivity of the theoretical model itself.

To conclude, we would like to propose directions for this project to be further developed. Firstly, aggregating the data for the accounting device is the next essential step for the two concepts to become reality. Moreover, more co-design workshops can be used in order to create alternative concepts of accounting devices. Finally, a first step to make the accounting device more broad is to add cities from all five regions of Denmark.

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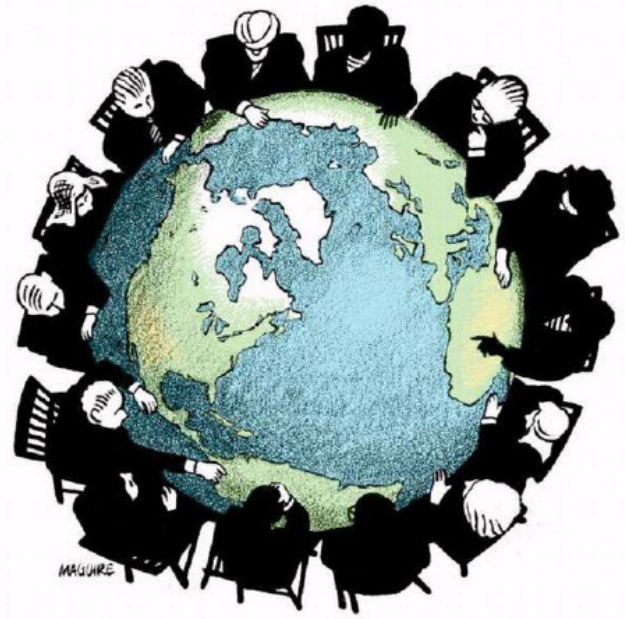
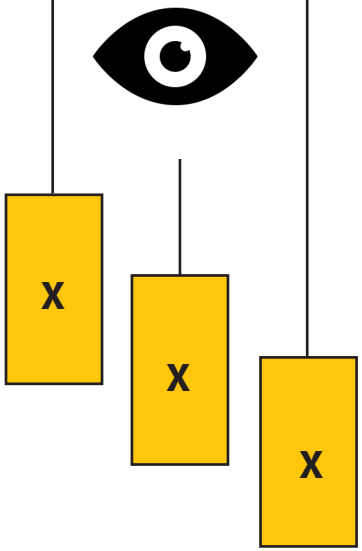
HOW CAN WE COMMUNICATE THE URBAN-RURAL VALUE EXCHANGE?



Good Quality Products
Clean Water
Climate Services
Eco-system Services
Agrigcultural Education
Food Tourisim

Reduce Food Miles
Guaranteed Business
Higher Price Point
Food Tourisim

COMPLEX-CITY



FOOD LOCALISATION: ACCOUNTING DEVICE

1. REGIONAL: Area, Demographics, Overview of prodcuers. Percentage of food produced.

2. EDUCATIONAL: Activities, Audience (citezens, organisations), Organisation, Supermarkets, Tools.

3. TOURISIM: Branding material, Tourist activities and events, Infrastructure.

4. NARRATIVE: Quality, Traditions, Production process (e.g. handmade), labeling, traceability.

5. LOCAL FOOD INFRASTRUCTURE: Local markets, supermarkets, other distribution, transport, accessibilty.

6. ECO-SYSTEM SERVICES: Protection of bio-diversity (local seeds etc), Seasonal production, farming methods.

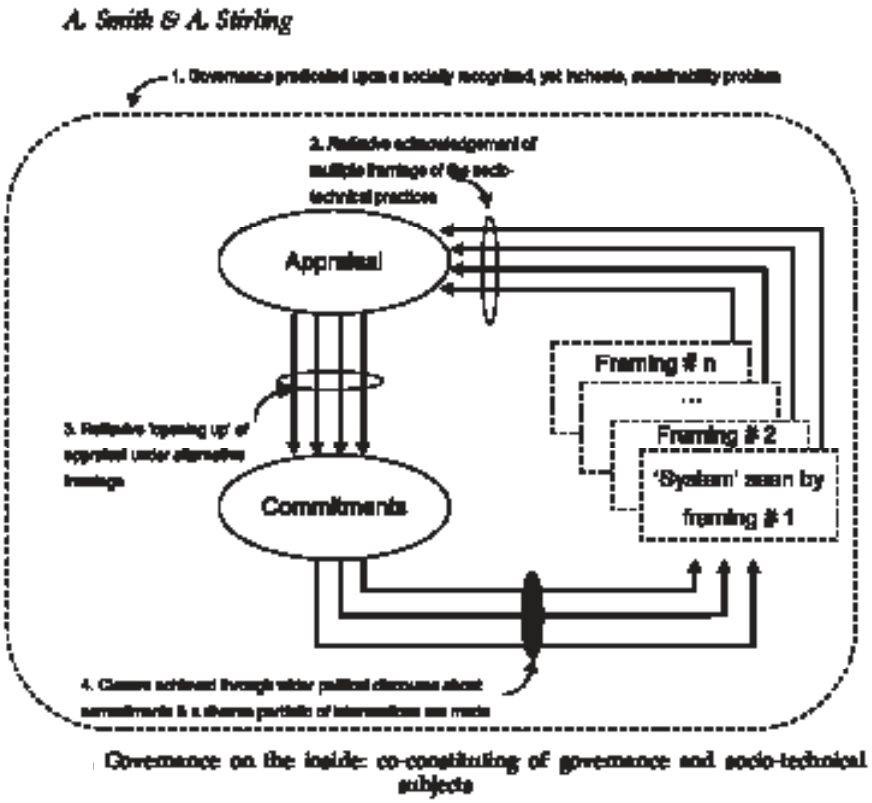
7. RESILIENCE: Enviornment, Climate, Water resources (use, treatment, flood prevention), Engergy (use and generation)

8. GOVERNENCE ARRANGEMENT: Established forums, policies.

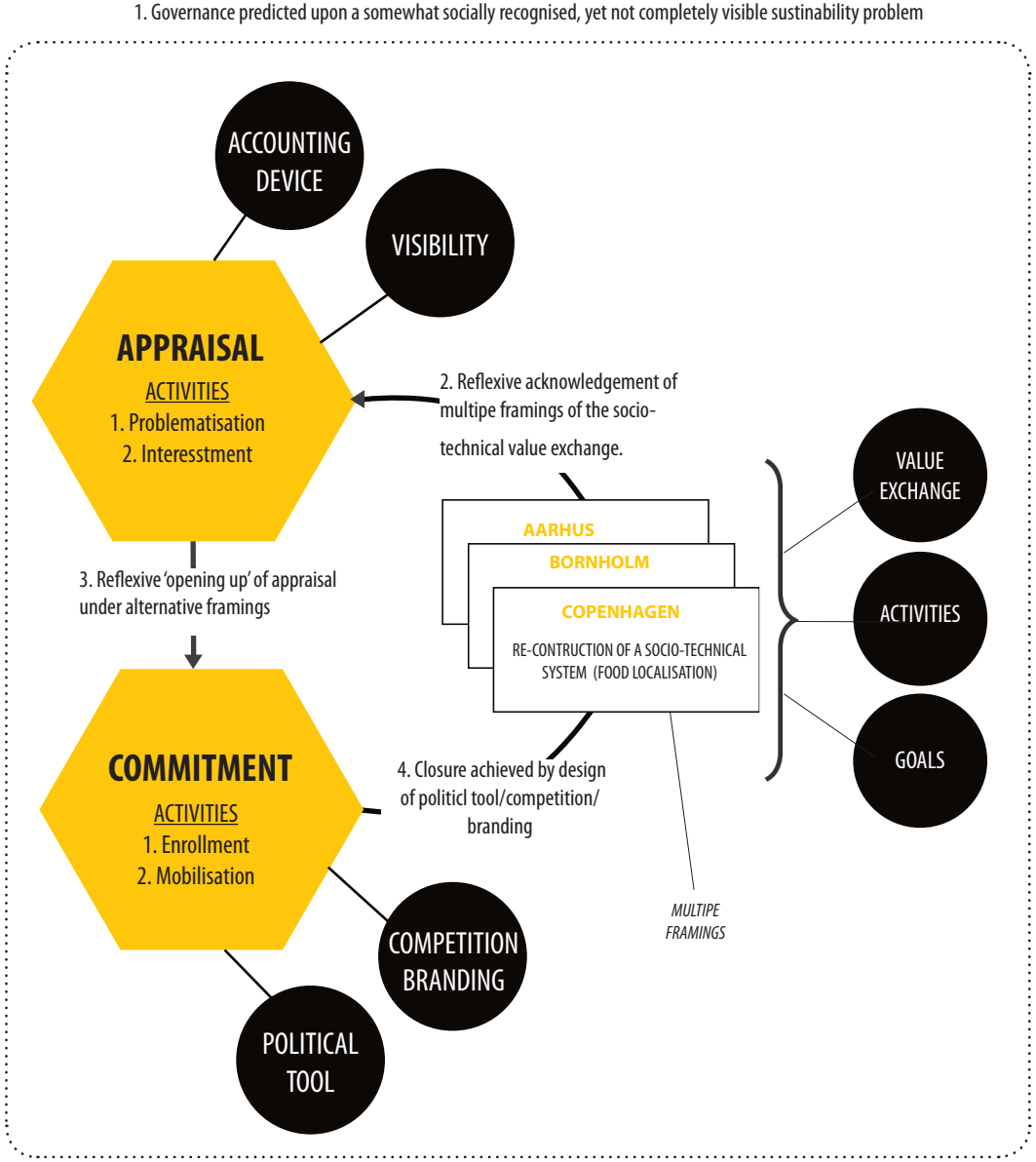
9. URBAN GARDENING: Activities, organisations, enagement.

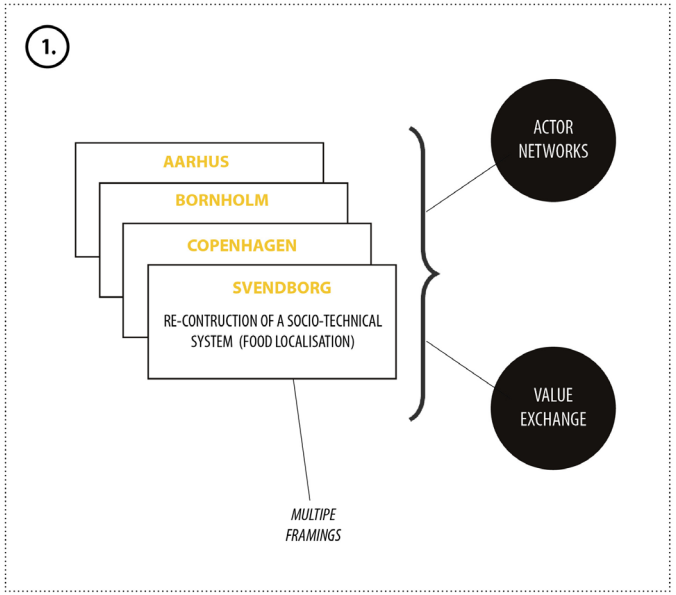
10. URBANISATION/RURALISATION: Demographics of persons living and working in urban or rural areas.

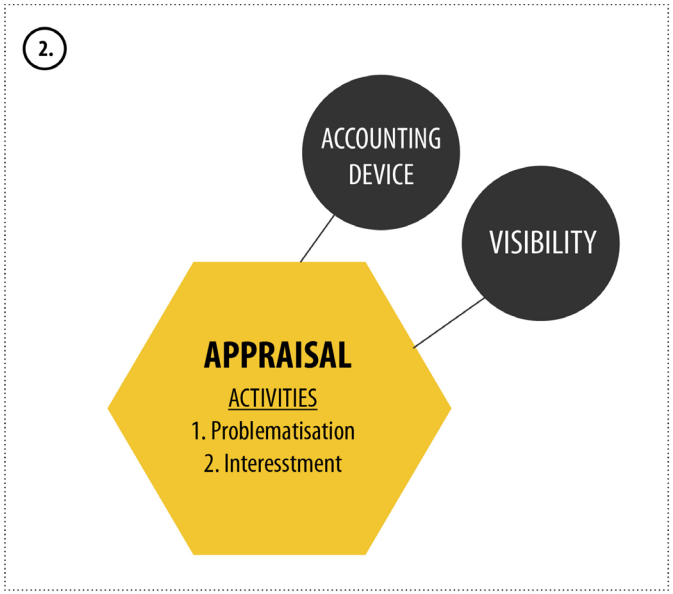
The theoretical approach for the project, adapted from '*Moving Outside Or Inside? Objectification And Reflexivity In The Governance Of Socio-Technical Systems'* (Smith & Stirling, 2006). This approach combines the theory of *'Governance On The Inside'* with *'Actor Network Theory'* and Callon's (1986) four moments of translation.

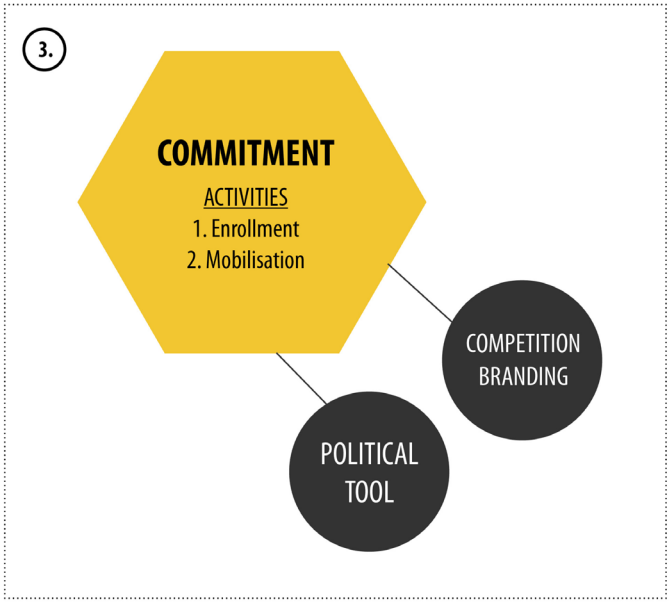


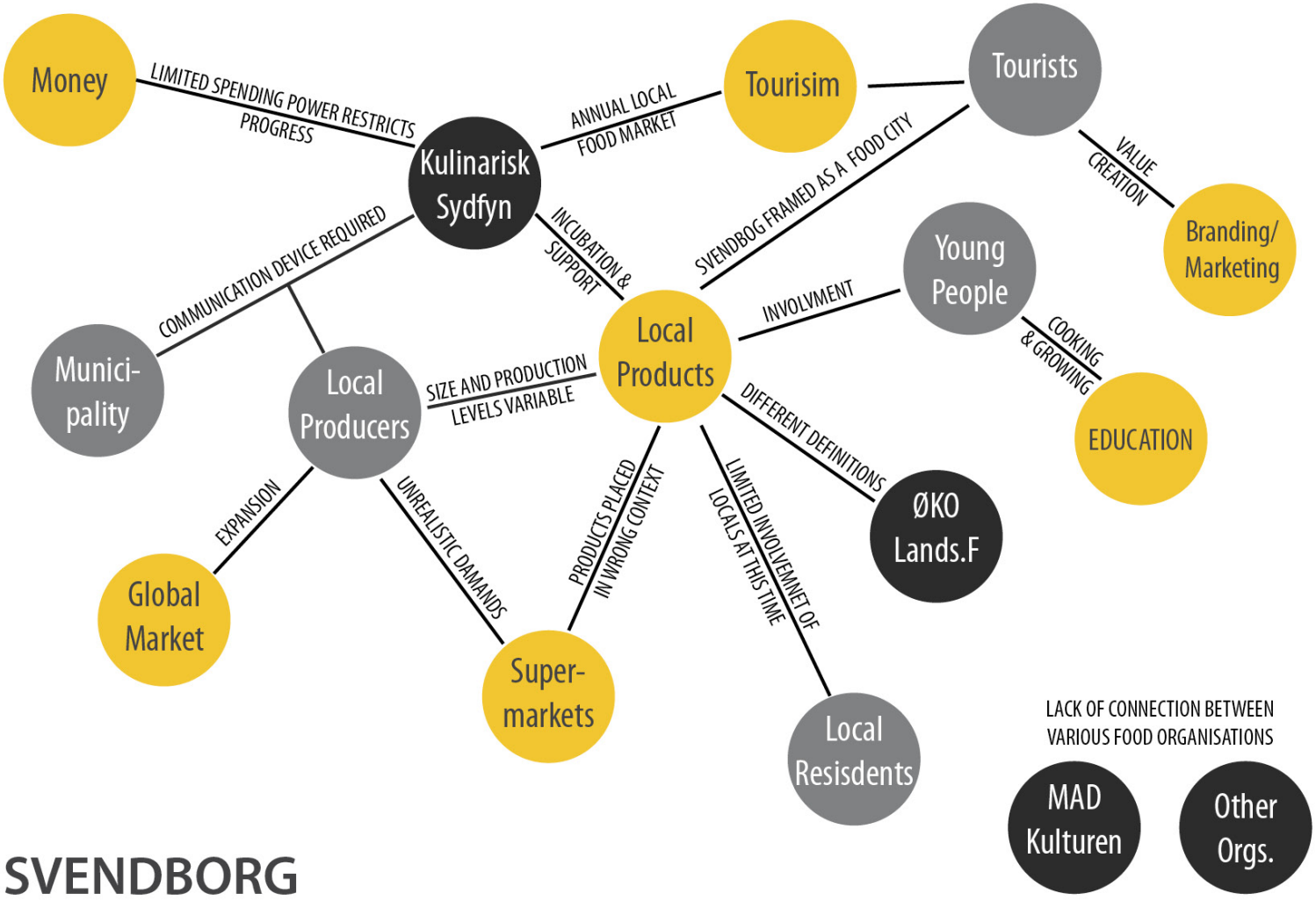
Governance on the inside: co-constituting of governance and socio-technical subjects




1.
AARHUS
BORNHOLM
COPENHAGEN
SVENDBORG
RE-CONTRUCTION OF A SOCIO-TECHNICAL SYSTEM (FOOD LOCALISATION)
ACTOR NETWORKS
VALUE EXCHANGE
MULTIPE FRAMINGS

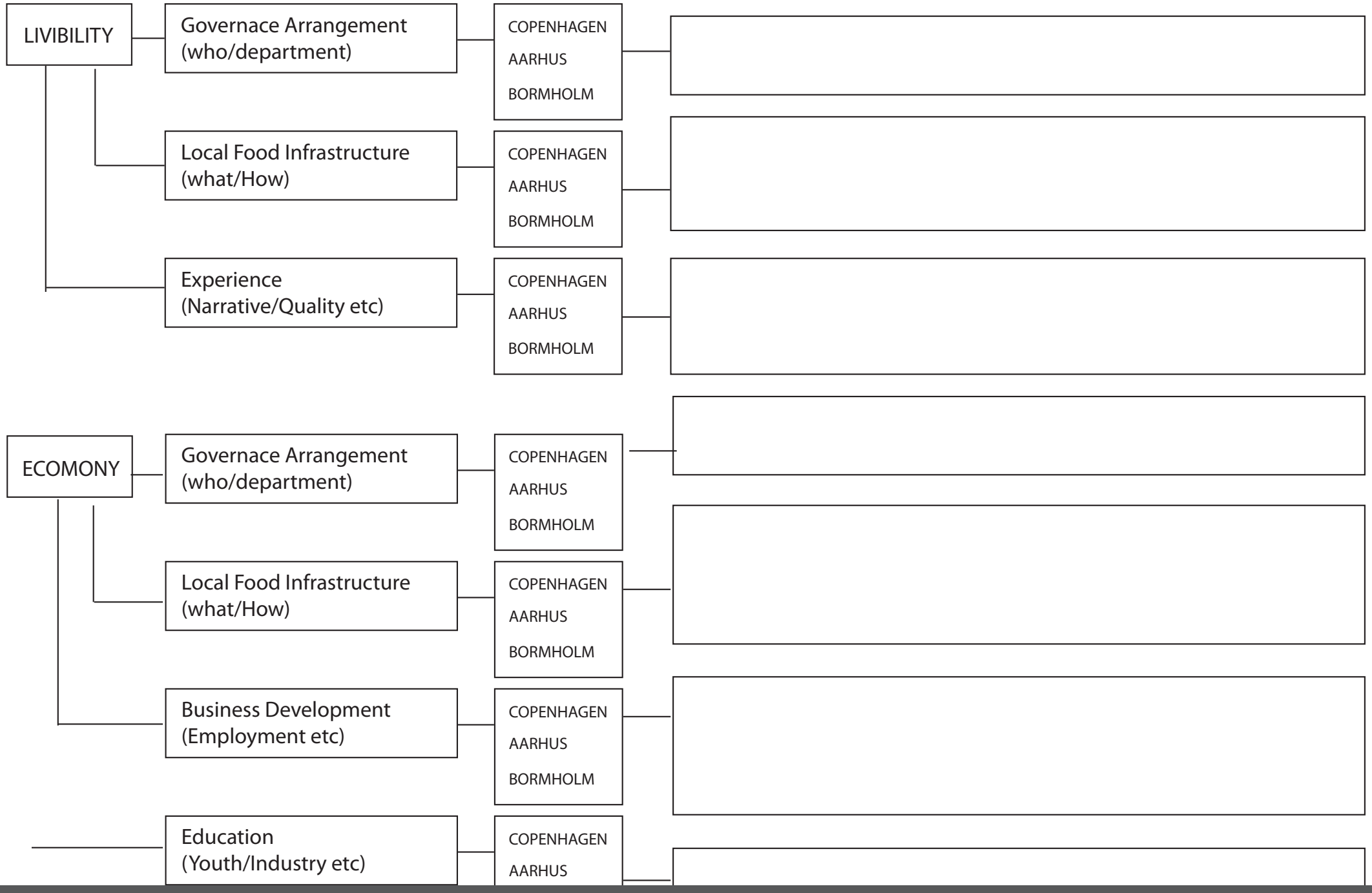

2.
ACCOUNTING DEVICE
VISIBILITY
APPRAISAL
ACTIVITIES
1. Problematisation
2. Interesstment

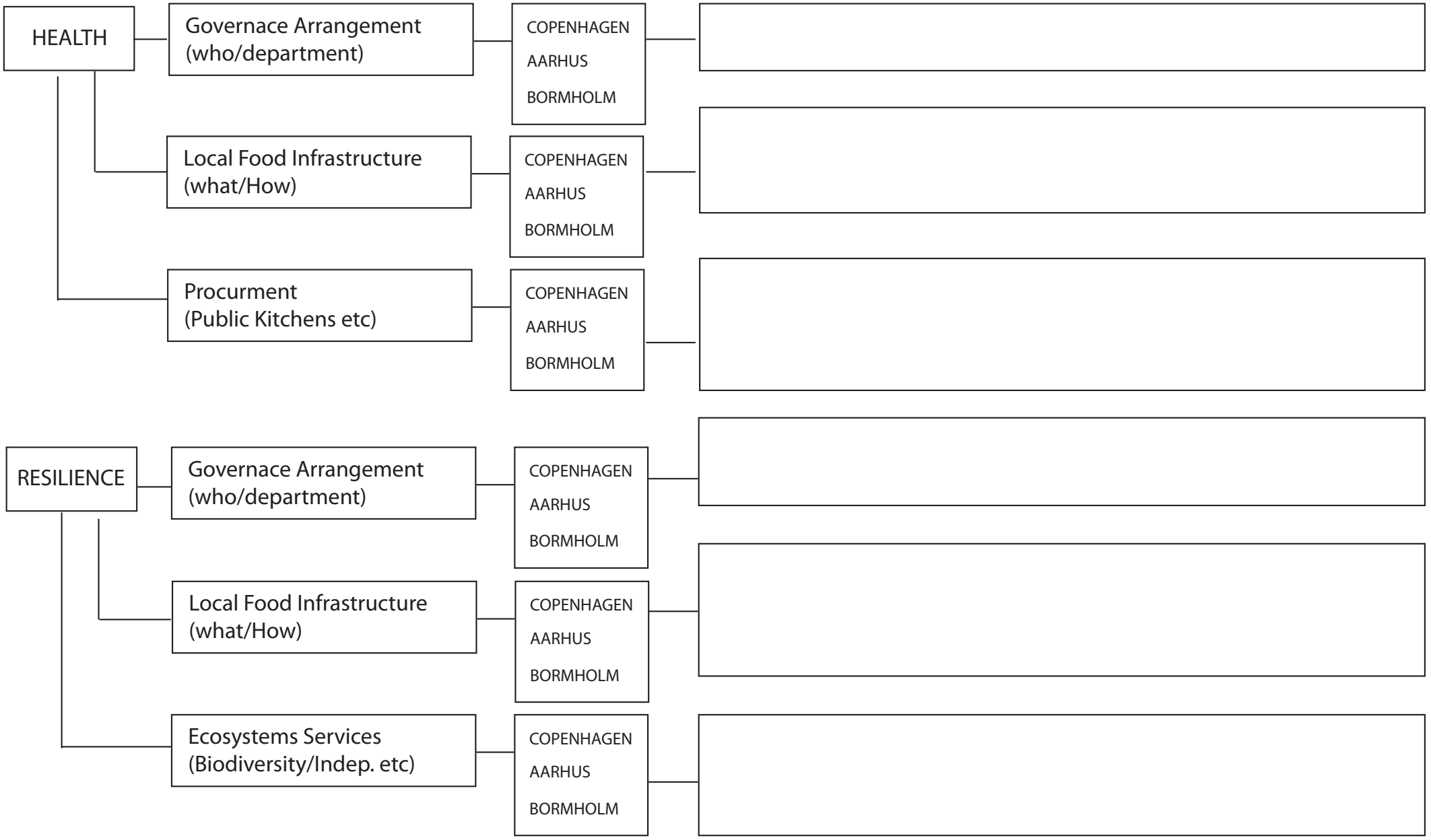

3.
COMMITMENT
ACTIVITIES
1. Enrollment
2. Mobilisation
COMPETITION BRANDING
POLITICAL TOOL



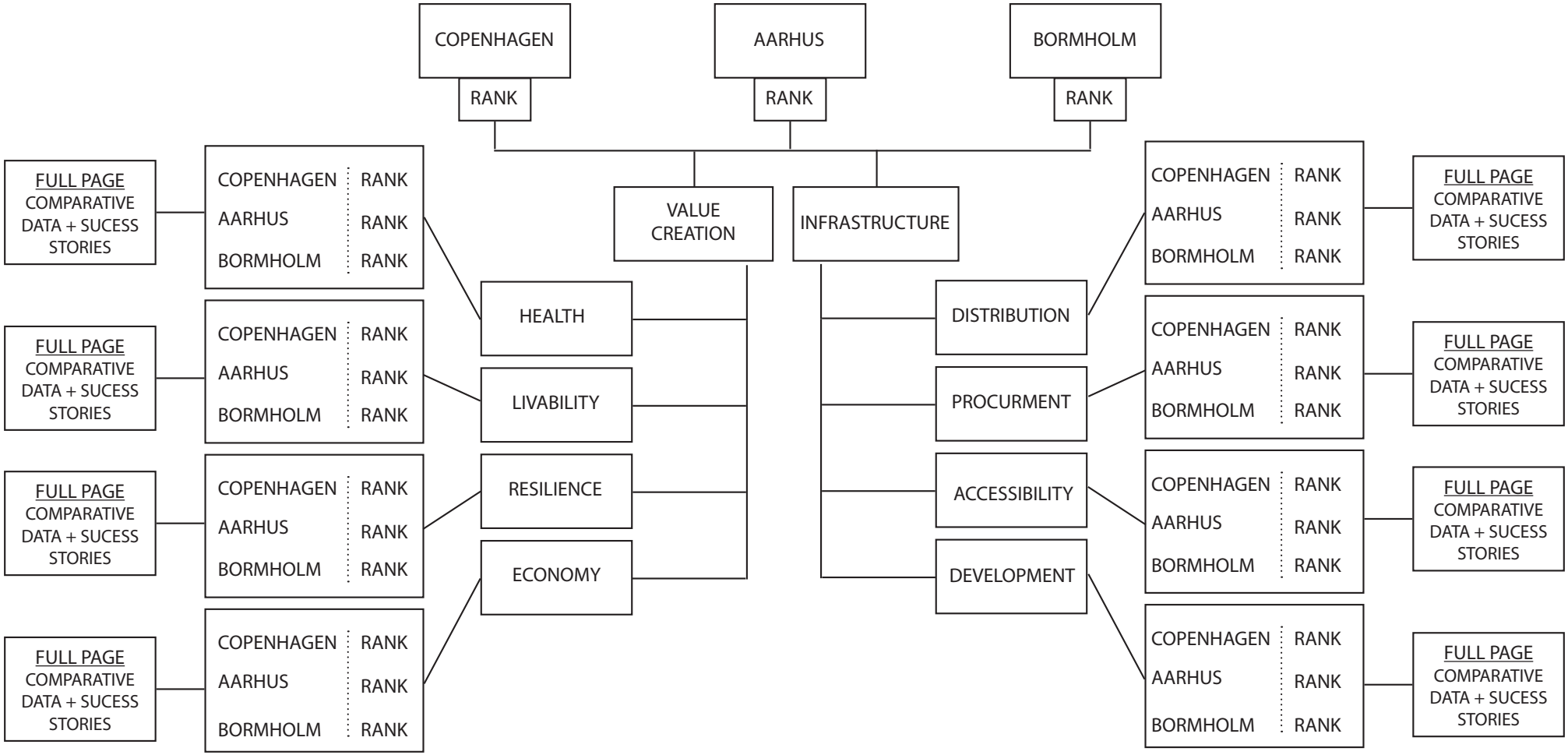
SVENDBORG

WORKSHEET 5: ACTOR NETWORK (SVENDBORG) // 17/03/2017

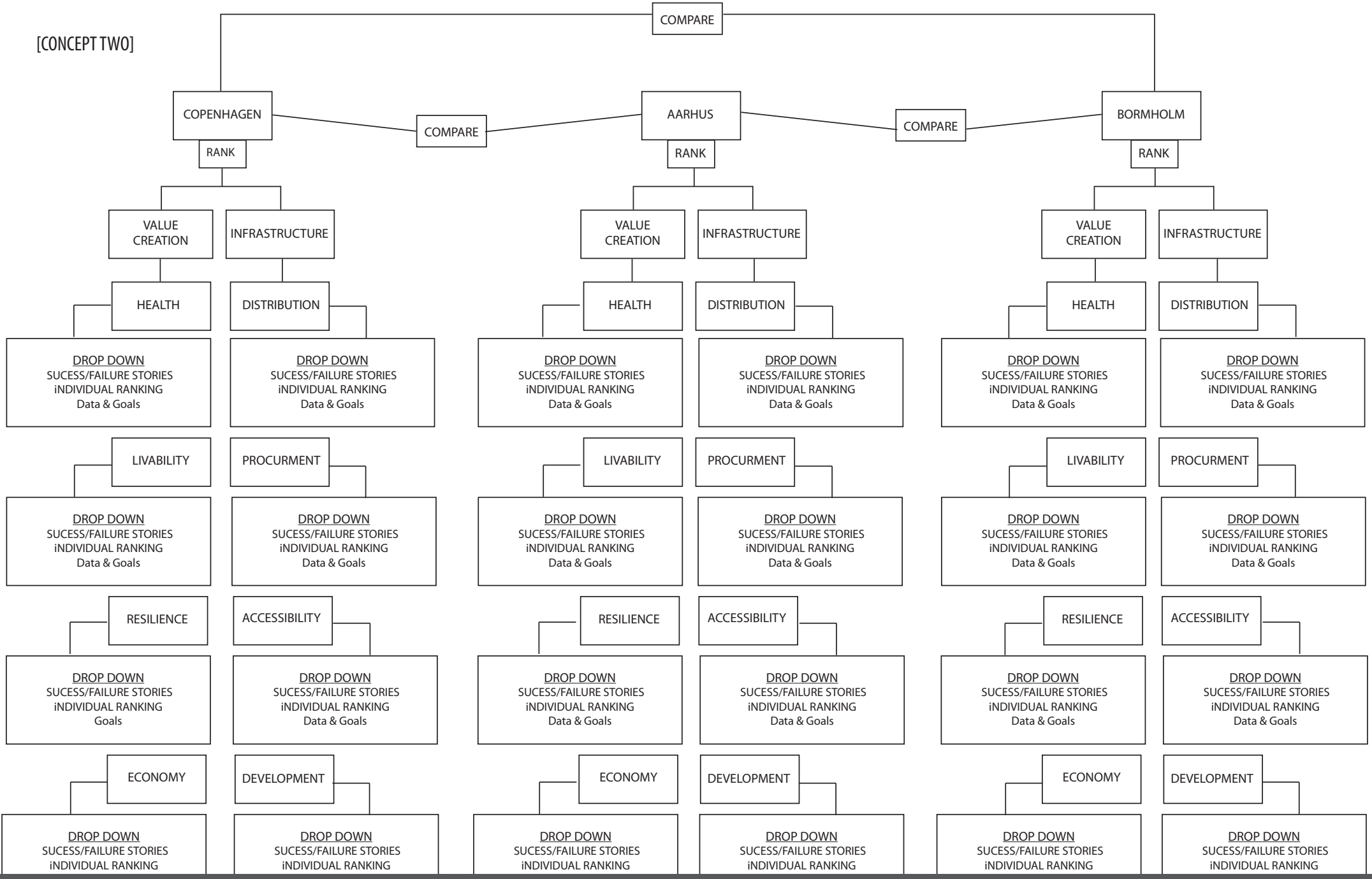

LIVIBILITY
Governace Arrangement (who/department)
COPENHAGEN
AARHUS
BORMHOLM
Local Food Infrastructure (what/How)
COPENHAGEN
AARHUS
BORMHOLM
Experience (Narrative/Quality etc)
COPENHAGEN
AARHUS
BORMHOLM
ECOMONY
Governace Arrangement (who/department)
COPENHAGEN
AARHUS
BORMHOLM
Local Food Infrastructure (what/How)
COPENHAGEN
AARHUS
BORMHOLM
Business Development (Employment etc)
COPENHAGEN
AARHUS
BORMHOLM
Education (Youth/Industry etc)
COPENHAGEN
AARHUS


HEALTH
Governace Arrangement (who/department)
COPENHAGEN
AARHUS
BORMHOLM
Local Food Infrastructure (what/How)
COPENHAGEN
AARHUS
BORMHOLM
Procurment (Public Kitchens etc)
COPENHAGEN
AARHUS
BORMHOLM
RESILIENCE
Governace Arrangement (who/department)
COPENHAGEN
AARHUS
BORMHOLM
Local Food Infrastructure (what/How)
COPENHAGEN
AARHUS
BORMHOLM
Ecosystems Services (Biodiversity/Indep. etc)
COPENHAGEN
AARHUS
BORMHOLM

[CONCEPT ONE]


COPENHAGEN
RANK
AARHUS
RANK
BORMHOLM
RANK
VALUE CREATION
INFRASTRUCTURE
HEALTH
LIVABILITY
RESILIENCE
ECONOMY
DISTRIBUTION
PROCURMENT
ACCESSIBILITY
DEVELOPMENT
FULL PAGE COMPARATIVE DATA + SUCESS STORIES
COPENHAGEN RANK
AARHUS RANK
BORMHOLM RANK

[CONCEPT TWO]



WORKSHEET 8: INFORMATION ARCHTECHTURE FOR CITY LEAGUE TABLE [2 OF 2] // 21/05/2017