“9 billion by 2050?”

- A literature study on the framing by Alternative Food Networks -

Image: hands holding plate (Rannals, 2013).

YSS-82812 BSc Thesis
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01-07-2015
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"When the last tree is cut, the last river is poisoned, and the last fish is dead, we will discover that we can't eat money..."
- Greenpeace, 2015[1] -

[1] Earlier found versions of this quote refer to Native Americans giving a warning for the consequences of their actions to the environment (Osborne, 1972).

LIST OF ABBREVIATIONS

AFN	Alternative Food Network
CSA	Community Supported Agriculture
FAO	Food and Agriculture Organisation
FM	Farmers' Market
FoEI	Friends of the Earth International
GHG	Greenhouse Gas
GMO	Genetically Modified Organism
GO-Science	Government Office for Science
IAL	International Alliance for Localisation
IFOAM	International Federation of Organic Agriculture Movements
ISO	International Organisation for Standardisation
IPCC	Intergovernmental Panel on Climate Change
NGO	Non-Governmental Organisation
PDO	Protected Designation of Origin
PGI	Protected Geographical Indication
SFSC	Short Food Supply Chain
UN	United Nations
WHO	World Health Organisation

ABSTRACT

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Submitted 1st of July, 2015.

The goal of this study is to analyse the way in which Alternative Food Networks (AFNs) frame the discourse "9 billion by 2050". This discourse currently dominates the agricultural sector, estimating the global population to grow to 9+ billion people by the year 2050. The big question linked to this discourse is: *how are we going to feed so many people?* The answers proposed by AFNs to this question vary significantly. By means of a literature review, the two concepts – AFNs and "9 billion by 2050" – are analysed and linked. By categorising AFNs and performing three case studies on AFNs from different categories, this link is studied. From this study the following has come to the fore. AFNs do not take up the discourse of "9 billion by 2050" as a starting point for action or policy. The extent to which the discourse is incorporated differs between AFNs, but there does not seem to be a clear motif for AFNs whether or not to incorporate it. When the underlying problems in the discourse – climate change, losses and waste, diet and distribution – are analysed on the basis of the goals of AFNs, many commonalities are found. This shows AFNs do involve the discourse and the aspects underpinning it, but they do not always use the discourse in literal sense.

Keywords: *Alternative Food Networks – "9 billion by 2050" – food security – sustainability.*

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1. INTRODUCTION

1.1 Introduction to the problem

Since 2009, with the publication of a press release by the United Nations (UN), there has been a discourse dominating the development and agricultural sectors. This discourse tells us that by the year 2050, there will be an estimated 9 billion people in the world (UN Population Division/DESA, 2009). This discourse has gotten a lot of attention and scholars all over the world have been wrecking their brains, trying to figure out how to satisfy the growing demand for food entailed by this population growth. Studies show it would be necessary to double the current food production to provide everyone with enough calories (Parry & Hawkesford, 2010; Ray *et al.*, 2013). This doubling of food production is not only based on the population growth, there are more factors pressuring food production. An estimated economic growth also entails a growing demand for food (especially meat, fish and dairy products) as does the increased use of biofuels due to a diminishing amount of increasingly more expensive fossil fuels (Godfray *et al.*, 2010; Tomlinson, 2013; Defra, 2008).

However, different scholars have challenged the imperative of needing to produce twice as much food in order to feed 9 billion people by 2050 and suggest a more diversified set of solutions (Tomlinson, 2013; Godfray *et al.*, 2010; Guillou & Matheron, 2014). In the end, the goal is to achieve food security worldwide. Food security, according to the Food and Agricultural Organisation (FAO), "exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (FAO, 1996). According to the FAO (2006), this definition, created in the World Food Summit in 1996 is widely accepted on an international scale.

1.2 Research Questions

The focus of this thesis will be on the way in which Alternative Food Networks (AFNs) frame this discourse of "9 billion by 2050", and the possible solutions they put forward. AFNs have grown significantly over the last few decades (Renting *et al.*, 2003). Furthermore, AFNs have emerged to distinguish their practices of food production and consumption from the conventional food system (Jarosz, 2008), which makes them an interesting object for research. The scientific purpose of this thesis is to provide an overview of these AFNs and the way in which they frame this discourse. By constructing this overview, possible solutions to food insecurity proposed by AFNs, and the perspective of AFNs on the discourse will be discussed. This brings me to the societal relevance of this thesis, which is the fight against food insecurity and hunger. The way in which AFNs conceive the discourse will be analysed. Hereby, ways to achieve food security, as proposed by AFNs, will be discussed. If AFNs are able to help achieve food security, by proposing viable solutions to the discourse, this could contribute to the fight against food insecurity and hunger.

The research question used in this thesis is: *"How do Alternative Food Networks frame the growing demand for food imposed by the discourse of "9 billion by 2050?""*, which will be assessed using several sub-questions:

1. *"Which different elements are of influence in the discourse of "9 billion by 2050"?*
2. *"What are Alternative Food Networks?"*
3. *"What categories can be found among AFNs?"*
4. *"How is the discourse of "9 billion by 2050" framed by the selected AFNs (case studies)?"*
5. *"What solutions do AFNs suggest to the growing demand for food?"*

The next chapter of this thesis will be the literature review in which the first two questions will be discussed. The two main concepts – AFNs and "9 billion by 2050" – will be discussed separately. First, the academic literature on the discourse of "9 billion by 2050" will be discussed from which different influential elements and possibilities for solutions come to the fore. Thereafter, the literature on defining AFNs and different examples of AFNs will be addressed.

Chapter three will address the methodology. In this chapter theory, concepts, and methods will be discussed. The literature review from Chapter two will be used, together with the methodology chapter to perform an analysis on the way in which AFNs frame the discourse of "9 billion by 2050". This will be demonstrated in Chapter four. There, the ways in which the discourse comes up in the work of AFNs will be discussed.

Finally, the conclusions of this thesis will be outlined in which the aforementioned research questions will return.

2. LITERATURE REVIEW

Before examining the relations between Alternative Food Networks and the discourse of "9 billion by 2050", both of these concepts will be explored. First, the discourse will be described. In this section, the situation prior to the discourse will be described in which several triggers for this discourse come to the fore. Besides increasing production, there are more aspects of influence in this discourse of which four often mentioned aspects are discussed in sub-sections. Second, the concept of AFNs will be defined extensively. In this section, several different categories of AFNs will be discussed as well as the different aspects emphasised in different AFNs.

2.1 "9 billion by 2050"

Nelson *et al.* (2010) have summarised several aspects preceding the increasing pressure on food production. This all began, according to them, in the 1960s when the Green Revolution increased food production and land productivity significantly. This also caused for a decrease of public investments in agricultural productivity. However, even though production had been rising profoundly, the number of the world's poor and hungry began to rise from the 1990s, after decades of decline. Later on, in 2008, the world had to deal with a peak in food prices which led to food riots and was a wake-up point for the world's leaders. These food riots emerged in more than 25 countries in Asia, Africa, the Americas, the Caribbean and the Middle East, such as Bangladesh, Senegal, Argentina, Haiti, and Yemen (Schneider, 2008). The significance of the food riots in this discourse have also been acknowledged by Guillou & Matheron (2014), which were, according to them, rooted in the wide disparities in the distribution of calories throughout the world due to unequal access to food. Guillou & Matheron argue that the average availability of food is significantly higher in the Global North than in the Global South. The FAO (2009) provide several causes of the rising food prices in 2007 and 2008. Global economic growth and a dietary transition resulted in increased demand for food. At the same time, the supply of agricultural products decreased due to multiple causes, such as bad weather conditions and low investments in agriculture. Besides, the oil prices were high, which made the production and transportation of food more expensive. Following the food price spikes, in 2010 extreme weather circumstances occurred, such as extreme droughts in Russia and floods in Pakistan. These circumstances have influenced the amount of food produced as well as trade flows. The pressure on food production increased even more with the combination of a population growth and higher incomes which means higher demands for food. It does not stop here, climate change further challenges food production as well due to, among others, rising temperatures (Nelson *et al.*, 2010). Taken together, these aspects have had their own share of influence on bringing the discourse of "9 billion by 2050" to the surface.

Since the discourse became publicly known in 2009, the flow of perspectives on, solutions for, problem statements about, and critique on this discourse started to emerge. Several scholars and other actors, such as governments, have stated total food production has to be doubled by the year 2050 in order to achieve food security (Parry & Hawkesford, 2010; Ray *et al.*, 2013; Lawrence *et al.*, 2010; Defra, 2008). However, this imperative of having to double production has also been contested by different scholars (Tomlinson, 2011; Godfray *et al.*, 2010). Other possible solutions and aspects of influence in this discourse will be discussed.

Guillou & Matheron (2014) have written a book about the challenges of "9 billion by 2050" and state there are two main scenarios to propose a solution to the increasing demand for food. First, they discuss the scenario called Agrimonde GO (Global Orchestration). In this scenario, the current patterns of production will continue in which agricultural food production will rise by means of technology use and innovation. The development of certain areas in the world, such as Asia, former Soviet countries and Africa, will increase production and alleviate poverty in those regions. However, this means production would continue to be unsustainable. The second scenario, Agrimonde 1, is quite different. This is a pro-active scenario in which the agricultural system and the food industry will undergo many changes in order to become more sustainable. Ecosystems will be preserved and food availability will increase due to a pair of influences, namely; reducing waste and losses of food during distribution and final consumption, and the introduction of more efficient food policies. Besides, diets will be diversified by several influences, such as culture of food policies (Guillou & Matheron, 2014). In short, Agrimonde GO stands for continuing current practices and trends, and Agrimonde 1 stands for change into a sustainable direction. The point of discussing these scenarios is to present the key challenges and the changes that are necessary in order to produce more sustainably.

In the executive summary of "Foresight. The Future of Food and Farming" by the Government Office for Science (GO-Science, 2011) in the UK, an elaboration on these 'efficient food policies' is provided. According to the GO-Science, there are twelve key priorities for action for policy makers. Among these twelve key priorities, different aspects of the food systems are addressed. According to GO-Science (2011), *existing* as well as *new* knowledge and technology can contribute significantly to increasing production and improving sustainability. This latter aspect, sustainability, should be central in development of the food system. In order to increase production GO-Science advises to intensify agriculture. It is stated that converting more land from e.g. forest to land for agriculture is unwise and that the emphasis should be on restoring land that is already used for agriculture. Besides agriculture, there are of course more sources of food, like fish, and it is recommended that long-term sustainability of fish stocks is ensured, as they are currently undergoing overexploitation.

Besides changes on the production side of the food system, actions have to be realised on the consumption side as well. Through education and raising awareness among consumers, consumptions patterns can be changed and consumers can hold all other actors in the food system accountable for their actions. Furthermore, we should reduce waste. This is one of the actions for food security that continues to be mentioned in the literature written on the discourse (GO-Science, 2011; Tomlinson, 2013; Guillou & Matheron, 2014).

There are four aspects involved in the discourse of "9 billion by 2050", which are repeatedly mentioned in the debate about this discourse. It is here argued that these aspects all have significant influence on the problem of and solution to this discourse. First of all, 'climate change' will be discussed: what influence does food production have on climate change? What is the relation between climate change and the discourse? Why should, and how can we produce more sustainably? Thereafter, 'losses and waste' will be related to the discourse. As different scholars have stated (Tomlinson, 2011; Guillou & Matheron, 2014), food losses and waste is one of the major failing points of the current, global food system. Next, 'diet' will addressed. The relation between the discourse and diets, and the way in which diets can pressure as well as alleviate food production will be discussed. Finally, the role of distribution of food in this discourse will be discussed. The distribution of food worldwide can be connected to all three former aspects.

These four aspects have been chosen because they are the most common aspects in which both problems and solutions are situated in literature on the discourse. Guillou & Matheron (2014) have addressed these aspects in their list of drivers of change. Tomlinson (2013) lists the problems and limitations of the challenge to reach global food security on the basis of these four aspects. In further literature, the aspects also return regularly (Evans, 2009; GO-Science, 2011).

2.1.1 Climate change

According to the Intergovernmental Panel on Climate Change (IPCC), agriculture contributes 10-12% to the total global emissions of non-CO_2 greenhouse gas emissions emitted through human actions (GHGs). Of the global emissions of methane and nitrous oxide caused by humans, agriculture contributes 47% and 58% respectively (IPCC, 2007). According to Evans (2009), food and agriculture even have the enormous contribution to the global greenhouse gas emissions of 32% if deforestation for agricultural purposes is included as well. These emissions are mainly originated from fertilizer use and livestock. The danger of further deforestation for agricultural purposes is also acknowledged by Buttriss & Riley (2013). They state deforestation, especially of tropical rainforests, brings along significant rises in the emission of GHGs as well as a great loss of biodiversity.

In his report, Evans sums up several challenges faced with the discourse "9 billion by 2050" in relation to climate change. First of all, due to abundant GHG emissions, temperatures have been and will most probably continue to rise. Especially in areas at a low altitude, rising temperatures can affect agriculture negatively. Secondly, climate change will affect the water availability on earth. Currently, the amount of freshwater available for consumption is decreasing. Due to global warming, sea-levels are rising which will only reduce the available freshwater more. Besides, the rising sea-levels cause for a growing risk of flooding. Thirdly, "*sudden onset weather shocks*" are driven by climate change (Evans, 2009: 28). This extreme weather (e.g. hurricanes, floods, droughts) can have a significant impact on agricultural yields.

Buttriss & Riley (2013) discuss the opposite and sum up several contributions from agriculture to climate change. The first problem they recognise is soil degradation which includes soil loss as a result of soil erosion, and decreasing soil fertility. Secondly, the use of water for irrigation exceeds the amount of water that is returned to nature. This causes for water scarcity. Thirdly, poor management of fishing practices is an increasing problem in certain areas in the world, resulting in overexploitation of fish stocks. Fourthly, agriculture relies heavily on energy derived from fossil fuels as well as fertilisers and pesticides containing nitrogen which contributes significantly to GHG emissions.

The impacts of climate change on agriculture and vice versa the impact of agriculture on climate change give rise to serious concerns about the potential of feeding a growing population. With this in mind, the search for possible solutions is influenced. The pursuit for more sustainable food production, distribution and consumption is a returning aspect in the discourse of "9 billion by 2050".

2.1.2 Losses and Waste

'Losses and waste' contain two forms of the diminished use of available food. Food losses occur, according to Guillou & Matheron (2014), through non-human activity. For instance losses due to natural disasters or hygiene crises. Food waste is the result of poor management of food or neglect. In both cases, the food that is not anymore available for consumption could have been used to nourish people.

There is a significant difference between the amount of calories available from production and the amount of calories available for consumers. Guillou & Matheron (2014) provide a clear overview of the difference between the calories produced and the calories consumed. This overview shows that no less than 4600 calories per person per day are produced of which only 2000 are left for consumption. This means 2600 calories per person per day globally, which is more than the amount of calories available for consumption per person per day, are lost. The 2600 calories per person per day which are lost have been divided by Guillou & Matheron between 'harvest losses' (600 calories), 'animal feed' (1200 calories are lost: 1700 are fed to animals and the animals only deliver 500 calories), and 'losses and waste' (800). The 2000 calories per person per day do however not end up on every person's plate as there are both problems of obesity and undernourishment (Guillou & Matheron, 2014).

The GO-Science (2011) states that the problem of waste occurs especially in low- and high-income countries and should be addressed differently in these different groups of countries. In low-income countries, the problem lies mainly in the post-harvest stage of food production. GO-Science propose multiple possible solutions for this kind of losses and waste. For instance, investments could be made to develop and deploy knowledge and technology on transport infrastructure and storage. Furthermore, reforming the market, infrastructure, and/or financial department could contribute to reduction of food losses and waste. GO-Science has, however, not elaborated on the potential limitations of these interventions. In high-income countries, the most food is wasted in retail and consumption. Productive recycling, educating consumers, and technologies to detect spoilage are options to reduce waste in high-income countries (GO-Science, 2011).

Food losses and waste can also be understood to be a result of overproduction. Viertel (2010) states in 2008 enough was produced to feed no less than 11 billion people. In 2008 there were not nearly 11 billion people present on the earth. Thus, an extremely excessive amount of food was produced to subsequently be wasted. What if we would produce a little less, but in a sustainable way and distribute it more equally? Maybe food prices would rise, but at least we would not throw away our food that easily anymore.

2.1.3 Diet

In describing the issue of food security, Tomlinson (2013) states *"the nutritional transition"* has been neglected. A dietary transition in the Global South is part of this nutritional transition. In developing countries, the FAO predicted a structural change in diets in which a transition occurs from staple foods rich in carbohydrates to a diet rich of vegetable oils, animal products and sugar. This dietary transition brings along many possible health problems (Tomlinson after FAO, 2013). In the Global North however, these health problems related to diets high in fat, sugar and salt, have already caused for health problems. Obesity and other diet-related health problems are growing burdens on society. This means there will be an accumulating pressure on health costs as well as on the production of certain foods because of this nutritional change (Tomlinson, 2013).

The diet one consumes thus has an effect on one's health and on food production, but it also has an impact on the environment. It is up to the consumer to choose between sustainable or un-/less sustainable products. For example, when a consumer chooses for a vegetarian diet, this can alleviate a part of the burden on the environment caused by the production of meat (Lawrence *et al.*, 2010). Macdiarmid *et al*. (2012) have studied the impact one's dietary choices has on mitigating climate change. They have also examined the possible connection between a healthy diet and a sustainable diet. However, they have found that a healthy diet is not necessarily also a sustainable

diet. One finding which positively influences health and also mitigates climate change is reducing the consumption of meat and dairy products. This is better for one's health, because of the high amounts of fat in these products. It mitigates climate change, because of the high amounts of emissions emitted through livestock, as described in section 2.1.1. Macdiarmid *et al*. (2012) continue by comparing the recommended replacements for meat and dairy products in both a healthy and a sustainable diet. In a healthy diet, these products would most likely be replaced by lower-fat products that are plant-based. In a sustainable diet, they would be replaced by products with low GHG emissions which generally are products high in fat and sugar. Hereby, Macdiarmid *et al.* recommend that both healthiness and sustainability of a diet are considered in developing dietary guidelines. Furthermore, Macdiarmid *et al.* (2012) state there is no single sustainable diet, there are multiple manners to create a diet that is more sustainable. This could contribute to the potential of mitigating climate change by changing diets as consumers still have room to choose within their diet.

Finally, Macdiarmid *et al.* (2012) acknowledge the challenge of the established cultural norm linked to meat consumption. In many countries, such as the UK, meat consumption has been increasing over the last few decades. One should not underestimate the cultural importance meat consumption may have. Hence, it is important not to underestimate the shift in this cultural norm in order to achieve a reduction of meat consumption

2.1.4 Distribution

To examine this section about food distribution, reference will be made to the three core pillars of food security according to the World Health Organisation (WHO): food availability, access and use (WHO, 2015). In the next chapter on methodology, these three pillars will be discussed extensively. The problems regarding the distribution of food can be related to the first two pillars – food availability and access. These pillars concern the availability of sufficient, nutritious and diverse food products and the ability to access these food products, thus possessing the needed resources to obtain proper food for a healthy and nutritious diet (WHO, 2015). Accessibility thus also entails the presence of affordable food products.

Problems with the availability of food are rooted in the issues regarding food distribution. In the Global North, there is an excessive availability of conventionally, industrially produced food products (Tomlinson, 2013). Hence, there is more than enough food available, but is there enough nutritious and healthy food available? And is this nutritious and healthy food affordable for all? The excess of conventional, industrial food products in the Global North entails the other main problems in the discourse of "9 billion by 2050". The high amounts of industrial meat that is consumed enhances climate change and increases the amount of diet-related illnesses. Moreover, the amount of food that is wasted in retail and consumption could partially be the result of the excessive amount of food available. (Tomlinson, 2013; Guillou & Matheron, 2014).

In the Global South there is a lacking availability of food products. This too is a distributional problem. As stated in section 2.1.2, food waste in the Global South mostly occurs in the post-harvest stage. This means food products are lost or wasted between harvesting and retail. There is thus more food available than the amount of food that is accessible (GO-Science, 2011; Tomlinson, 2013).

The problems with distribution of food and therefore the availability and accessibility of food relates to the discourse of "9 billion by 2050" as it concerns the possibility to achieve food security. Tomlinson (2013) states there are two perspectives on the overall problems of food insecurity. The first one states this is a problem of insufficient production of food and the other one states inefficient distribution is the main source of this problem. As has been shown in this chapter, the imperative

that more food should be produced has been contested by different scholars and this leaves us the second perspective; distribution of food is insufficient. Hence, this entails as well the insufficient availability of healthy and nutritious food as the ability of all people to access and afford this food.

To sum up this section, there is a multiplicity of aspects underpinning the discourse of "9 billion by 2050". Four much cited influences on the problem, and opportunities for solutions to this problem are discussed in this section. In the next part of this chapter, the concept of Alternative Food Networks will be elaborated on in order to link these two concepts – AFNs and "9 billion by 2050" – to each other later on. AFNs are discussed in such detail because there is a range of different ways to define AFNs as well as a series of different ways in which AFNs appear.

2.1 Alternative Food Networks

In order to examine the relationship between the discourse of "9 billion by 2050"and AFNs, a clear definition of AFNs is needed. In this section, different definitions of AFNs will be discussed and thereafter different ways in which AFNs appear in people's lives will be addressed.

2.2.1 Definitions

AFNs have been assigned many different definitions by different scholars (Forssell & Lankoski, 2015; Goodman & Goodman, 2009; Jarosz, 2008; Murdoch *et al.*, 2000; Renting *et al.*, 2003; Tregear, 2011). There are, however, some aspects included in these definitions which often return. Tregear (2011) argues the most commonly used definitions is as follows:

"rooted in particular places, [AFNs] aim to be economically viable for farmers and consumers, use ecologically sound production and distribution practices, and enhance social equity and democracy for all members of the community." (Tregear after Feenstra, 2011: 421)

In my opinion, this definition is quite broad, but so are AFNs. As Forssell & Lankoski (2015) state, the term 'AFN' can be regarded as an umbrella term for different sorts of food production and distribution. The different characteristics included in the definition by Tregear will be discussed in more detail.

The first characteristic mentioned is "*rooted in particular places*", which indicates that AFNs are anchored in a specific locale. This can be manifested in consumption as well as production, processing and retailing of food. According to Tregear (2011), this 'localness' of AFNs can be perceived as opposing the rootless, placeless nature of the conventional food system.

The second characteristic mentioned in this definition is "*economically viable for farmers and consumers*". This implies farmers will benefit from higher revenues and have room for manoeuvre in their production process (chances for diversification, entrepreneurship, etc.), while consumers are able to access fresh, healthy products for an honest price.

Thirdly, "*ecologically sound production and distribution practices*" is ascribed to AFNs. This is demonstrated through, among others, reducing of the GHG emissions, ecological farming practices and food miles. An example of ecological farming practices is organic farming. According to the European Commission (2004), organic farming is an agricultural system seeking to provide consumers with food of a certain freshness and tastiness. This also often implies authenticity of the food. There are several conditions organic farmers adopt, such as broad diversity of food products being produced on the farm, strict limits on use of chemical pesticides and fertilisers, exclusion of

genetically modified crops (GM crops), on-farm use of resources, and more. By applying these conditions, organic farmers aim to farm as environmentally responsible as possible (European Commission, 2004). Another way in which AFNs aim to produce and distribute food ecologically sound is by reducing food miles. Food miles represent the distance from the place of production to the place of actual consumption, meaning the consumer's plate (Cleveland *et al.*, 2014). Reducing food miles has, according to Cleveland *et al*. (2014), become the main objective for many AFNs. This is elaborately criticised by them, because they argue a reduction of food miles is hardly sufficient to reach the complex goals of AFNs. They state "*[AFNs] often seek to transform the mainstream system toward the goals of economic and social justice, improved nutrition, and environmentally nurturing production methods (...), based on the belief that the large spatial, structural, and economic scale of the centralized mainstream system is the chief cause of its negative impacts"* (Cleveland *et al.*, 2014: 282). The latter part of this statement, concerning the negativity of the centralised mainstream system also is a characteristics mainly ascribed to AFNs. As Jarosz (2008) emphasises in her definition of AFNs, they mainly emerge as a countermovement to the conventional food system. Jarosz also states the emergence of AFNs is mainly taking place in North America, Europe and Australia. This is, however, not always the case, but it is interesting Jarosz specifies AFNs to Western areas.

Fourth, and finally, the characteristic "*social equity and democracy*" will be discussed. This refers to a transformation in the relationship between producers and consumers. This closer relationship should ensure "*closer proximity and mutual understanding [and] the resulting relationships are more respectful, trustful and committed*" (Tregear, 2011: 422). Renting *et al.* (2003) state face-to-face contact between consumer and producer mediates trust and authenticity. This feeling of trust is a requirement more often found within AFNs (Goodman & Goodman, 2009; Forssell & Lankoski, 2015).

The article by Forssell & Lankoski (2015) also gives an extensive definition of AFNs. In this definition, one core characteristics is assigned to AFNs which is missing in the definition by Tregear. This characteristic is about the notion of quality. Quality is often one of the main requirements for participants in AFNs. According to Murdoch *et al.* (2000), demand for quality products has risen with the increasing occurrence of food scares in which illnesses have emerged due to viruses or bacteria in food – e.g. E. Coli or salmonella poisoning and BSE (mad cow disease). The notion of quality is therefore often associated with more healthy and natural food (Murdoch *et al.*, 2000).

2.2.2 Concrete examples in defining Alternative Food Networks

The definition of AFNs up till now has been quite abstract. In examining the concrete appearances of AFNs, it has come to the fore that they are quite complex. In this section, this complexity of AFNs is shown. The concept of the 'short food supply chain' (SFSC) will be discussed. This connects to the local characteristic assigned to AFNs. These SFSCs show the complexity of AFNs as they are just one of the ways in which AFNs can be categorised.

Renting *et al.* (2003) give an overview of different categories of AFNs. However, in their article they use the term 'short food supply chain' instead of AFN. Ilbery & Maye (2005) argue, an SFSC is more of a core characteristic of AFNs They state SFSCs concern foods that are embedded in the locale and which are laden with value and information about the production process the product has been through. According to Galli & Brunori (after LavkaLavka, 2013) the word 'short' in 'short food supply chain' stands for transparency and traceability which also points to products laden with information about its origin and journey. This means that when AFNs are characterised as being 'local' or have 'short' supply chains, this does not necessarily mean there was face-to-face contact between

producer and consumer, like there is on a farmers' market. The local characteristic can also even be found on a global scale. The 'localness' then lies in the values and information connected to the product.

Renting *et al*. give an overview which provides a clear review of AFNs/SFSCs on different spatial scales. In Table 2.1, this overview is shown. Hereafter, different appearances of AFNs will be discussed in further detail.

Face-to-face SFSCs	Proximate SFSCs	Extended SFSCs
Farm shops	Farm shop groups	Certification labels
Famers markets	Regional hallmarks	Production codes
Roadside sales	Consumer cooperatives	Reputation effects
Pick your own	Community Supported Agriculture (CSA)	
Box schemes	Thematic routes (articulation in space)	
Home deliveries	Special events, fairs (articulation in time)	
Mail order	Local shops, restaurants, tourist enterprises	
e-commerce	'dedicated' retailers (for example, whole food, speciality, or dietetic shops)	
	Catering for institutions (canteens, schools)	
	Sales to emigrants	

Table 2.1 Overview of SFSCs on different spatial scales (Renting et al., 2003: 399).

2.2.3 Appearances of Alternative Food Networks

As shown in the previous section of this chapter, AFNs appear in different forms and shapes. Some of these appearances often found in the literature on AFNs will be discussed here.

Starting off with Community Supported Agriculture (CSA). Lang (2005) sums up several characteristics of CSA. He regards CSA as an alternative approach to farming by small and locally familiar farms who have adopted organic growing methods. Within these farms, a relationship is established between consumers and farmers. When consumers become a member of the CSA-farm, they contribute a certain amount of money per season. In exchange they receive a fresh produce from the farm. Paul (2015) describes the relationship between farmers and consumers as a symbiotic one as they share the harvest and the risks that may be attached. Lang (2005) describes two guiding principles for participants in CSA which are (1) farms have to be regarded in ecological terms and (2) CSA has the ability to bring people together while they are chasing the goals of a project they support and believe in. Lang (2005) subsequently enumerates some facts about existing CSAs involved in previous research. Some outcomes have been that most CSA members are white, wealthy and highly educated. Furthermore, most CSA farms are situated in the USA, Canada, Western Europe and Australia. This suggests CSA has so far mainly been restricted to Western countries.

The second appearance of AFNs discussed here, is the Farmers' Market (FM). For FMs, there are similar benefits for producers and consumers as in CSA. Farmers avoid the 'middlemen' and therefore increase their revenues by selling their produce directly to consumers at a fair price. Consumers get fresh, locally grown, and often, organic food. By consuming food from local farmers' markets, the local economy is supported and food does not need to travel over long distances which is perceived as better for the environment. Of course, the latter only applies when consumers do not have to travel far to the FM (La Trobe, 2001). The difference between FMs and CSA is that farmers in FMs do not have the security of an income when the harvest is poor, which is the case with CSA as consumers adopt some of the risk and (partially) pay beforehand.

Thirdly, an example of an 'extended SFSC' will be elaborated, namely: certification labels. Certification labels appear in different sectors, such as a label for Fair Trade products (Fair Trade USA,

2015), for sustainable fishing (Slow Food International, 2015a), and for organic agricultural products (IFOAM, 2015). Certification is defined by the Food and Agriculture Organisation (FAO) as a procedure in which a third party provides a written assurance about a process, product or service in which is stated that it is in accordance with particular standards. These standards are then often defined according to the International Organisation for Standardisation (ISO), as "*documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines or definitions, to ensure that materials, products, processes and services are fit for their purpose*". Altogether, this defines a certification label which is a symbol or label which implies accordance with the established standards has been verified (FAO, 2003). An example of a certain group of certification labels, which can be seen as an AFN, is products with Protected Designation of Origin (PDO) or Protected Geographical Indication (PGI). PDO/PGI products are, according to Vecchio & Annunziata (2011), food products which are typical for a certain spatial area. PDO products need to be produced, processed and prepared for sale in one certain place or region. For the PGI label, it is only necessary one of these steps have taken place in this certain place or region (Profeta *et al.*, 2010). Vecchio & Annunziata (2011) state the labelling of food, and in this case the PDO/PGI labels, can enhance the transmission of information between producer and consumer. Either missing information is supplied or the flow of information is increased. This means the label adds value to the product which is subsequently communicated to the consumer. In this way, the 'localness' of a product is still present even if the products travels long distances between producer and consumer.

2.2.4 Conclusion

By analysing different definitions and discussing different appearances of AFNs, it has become clear there is no "one-size-fits-all" format. In order to be able to involve AFNs properly in this thesis, an overview of characteristics selected to define AFNs will follow. With this overview, it will be possible to make a selection of AFNs and link them to the discourse of "9 billion by 2050".

Characteristics:

- Rooted in place: reducing distance between consumer and producer (spatially or socially)
- Quality notion: healthy, fresh, natural
- Social, economic and ecological sustainability
- Opposing the conventional food system

This can be formulated as the following definition:

> *AFNs are networks of producers, processors, retailers and/or consumers, which reduce the distance between producer and consumer – whether this is in a social or in a spatial manner –, who look for food of a certain quality – which mainly entails freshness, naturalness or healthiness –, commit to social, economic and/or ecological sustainability at all stages of the network, and in some way contrasts the conventional food system.*

Reducing distance between producer and consumer socially points to the aforementioned possibility of 'localness' as a characteristics even though a product travels over a longer distance. So socially reducing distance is realised by attaching value and information to a product.

This definition will be applied in the rest of this thesis. A database of AFNs is constructed (further explained in the next chapter) to select case studies from. The different AFNs in the database have to meet this definition and the corresponding characteristics.

3 METHODOLOGY

This chapter is organized into two parts: theory and concepts; and methods. In the first part, several concepts which underpin this thesis and are of great importance are discussed. In the second part, the methods used to write this thesis are elaborated. This includes discussing the collection of literature and the types of analyses that are performed. Furthermore, the collection of AFNs for the database (Appendix) and the selection of three AFNs for cases studies is discussed.

3.1 Theory and concepts

In this thesis, a focus is on the way in which AFNs frame the discourse of "9 billion by 2050" and the imperative of possibly having to double food production. What possible solutions do AFNs offer to achieve food security in 2050? What elements are emphasised by AFNs?

As shown in the literature review, there are many different aspects underlying and influencing the discourse, and therefore, food security. The problems and possible solutions for food security are perceived differently by different actors in the global food systems. In this thesis, it is understood that AFNs have emerged in reaction to the conventional food system. AFNs are networks offering alternative ways of producing and consuming food and therefore oppose the conventional food system. The focus is on the food systems offered by AFNs and the conventional food system. To clarify these two actors in the global food system, there will be a brief recap of them below.

The conventional, agri-industrial food system is defined by Wiskerke (2009) as the paradigm that has been dominating agriculture in the last few decades. This paradigm is characterised by accelerating modernisation and use of technology within agriculture. In this paradigm, farmers aim to reduce costs by using labour-saving technologies. There is a high standardisation of products within the large-scale, agri-industrial farms. According to Cleveland *et al.* (2014), this conventional food system has numerous negative characteristics and is therefore admitted to be unsustainable. These negativities affect the environment as well as society and the economy.

Opposing the conventional food system, AFNs have emerged. As deliberately defined in the literature review, AFNs are fostered in the attempt to localise (or re-localise) food systems (Cleveland *et al.*, 2014).

Food security, the eventual goal within the discourse (Defra, 2008; Evans, 2009), has shortly been defined in the introduction, but will be discussed in further detail here, because it is a core concept in this thesis. According to the World Health Organisation (WHO), food security is built on three pillars, namely: food availability, food access and food use (WHO, 2015). Similar pillars of food security as defined by the FAO have been described by Qureshi *et al.* (2015): availability, accessibility and utilisation. However, the FAO adds another pillar, namely stability of the other three dimensions. The pillars by the FAO are subsequently explained as, first, the availability of a sufficient amount of qualitative and diverse food, which corresponds to the notion of 'food availability' by the WHO (2015). The second aspect of food security, accessibility, entails enhancing stability in the ability to afford and distribute food while keeping in mind the preferences of persons and families. The WHO has explained 'food access' as possessing the resources to obtain proper food for a healthy, nutritious diet. Thirdly, there is the aspect of utilisation, according to the FAO, and the aspect of 'food use' by the WHO. Utilisation refers to the safe and sufficient ingestion of food in order to meet the mental needs of the individual. Utilisation involves aspects such as food safety, healthcare,

education, sanitation and nutritional value. 'Food use', by the WHO, is explained as: "*appropriate use based on knowledge of basic nutrition and care, as well as adequate water and sanitation*" (WHO, 2015). Hence, 'food use' and 'utilisation' also have similar meanings. Finally, the aspect of 'stability' is added by the FAO. Stability concerns the consistency in obtaining food over time. This aspect takes into account the possible transitory or chronic appearances of food insecurity (Qureshi *et al.*, 2015).

Besides food security, food sovereignty is a concept often used in relation to the discourse and AFNs (GO-Science, 2011; Tomlinson, 2013; World Development Movement, 2012). To clarify the differences and/or commonalities between these concepts, food sovereignty will be discussed. According to Hospes (2008), food sovereignty is more of a political concept whereas food security is more of a technical concept which focuses on the legal right to food. Food sovereignty is "*a protest against economic and political marginalisation of small farmers*" (Hospes, 2008: 1). The World Development Movement (2012) argues food sovereignty is presented as an alternative for food security, stating that realising food security does not always happen in an equal way. People should not only be able to access healthy and nutritious food, they should also be able to choose what they want to consume and the way in which it has been produced.

Within this thesis, the concept of food security will be adopted as the general goal within the discourse. Food security is preferred over food sovereignty, because food sovereignty is more of a distinct characteristic when it comes to AFNs, this will be demonstrated in the following section. Food security on the other hand, is a more generally applicable concept when discussing AFNs and the discourse of "9 billion by 2050".

Next to the concepts of food security and food sovereignty, there is another concept of underlying the discourse as well as AFNs; sustainability. This concept is said to be built on three pillars: social sustainability, environmental sustainability and economic sustainability. When these three pillars are integrated and a holistic approach is taken, the most feasible solutions for sustainable development will be proposed (Tavanti, 2010). According to Hansmann *et al*. (2012) these three pillars *"reflect that responsible development requires consideration of natural, human and economic capital or colloquially speaking the planet, people and profits"* (Hansmann *et al.*, 2012: 451). Natural capital includes the entire assortment of goods and services provided by the environment. This assortment encompasses opportunities offered by the environment, such as hunting, fishing and ecotourism, as well as crucial aspects in the ecosystem which keep humans healthy (Barbier, 2014). Human capital indicates the skills, knowledge and capabilities a person possesses. Human capital can be differentiated from social capital, which implies the connections and relations between people which may facilitate action (Coleman, 1988). Finally economic capital entails financial incomes, resources and assets and is institutionally expressed in property rights (Anheier *et al.*, 1995).

Nonetheless, these three pillars have been rejected by different scholars. Soini & Birkeland (2014) suggested a fourth dimension, namely; cultural sustainability. Von Hippel *et al*. (2011) on the other hand, stated energy sustainability should be added to the existing three pillars of sustainability. In this thesis, due to time and space, these suggestions will not be discussed in further detail and the three pillars of sustainability – social, environmental and economic – will be accepted.

3.2 Methods

Assessing the discourse of "9 billion by 2050" from the perspective of AFNs, I created a database of different AFNs present nowadays on a global scale. I chose for this global scale as food security and the discourse of "9 billion by 2050" are global issues. However, as Jarosz (2008) stated before, most

AFNs have emerged in Western countries: North America, Europe and Australia. This also counts for Community Supported Agriculture (Lang, 2005). Because of this, only the AFNs that have grown to a global scale will be included. Using Figure 3.1 and Figure 3.2 (Tavanti, 2010: 7) below, a categorisation of AFNs will be created. In this categorisation, the pillar of sustainability (social, environmental, economic or a hybrid form) that is emphasised by an AFN will determine the category in which it is placed. Besides selecting global AFNs, it is crucial for this research that the AFNs have used the phrase of "9 billion by 2050". The AFNs that meet all of the characteristics assigned to them in section 2.2.4 and have taken up the discourse of "9 billion by 2050" are listed in the Appendix (p. 54).

In this chapter, the way in which literature has been collected and analysed, and the way in which AFNs have been collected, selected and analysed in case studies will be discussed.

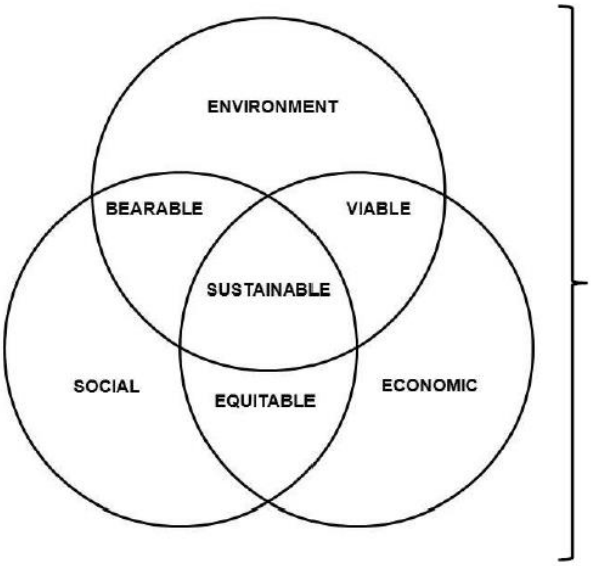

Figure 3.1: Sustainability Frameworks

Figure 3.2: Framework applied to sustainable food movements

3.2.1 Literature Review

This thesis is, for the most part, based on a literature review. Onwuegbuzie & Frels (2014) provided three categories of literature review: *topic-driven, method-driven* and *connection-driven*. The category most suitable for this research is the latter one. *Connection-driven* literature review implies the identification of connections between a theory or concept and practice. This relation between concept and practice is translated in this thesis as the relationship between the discourse "9 billion by 2050" and the reality in which they are framed by AFNs. Chapter two – Literature Review – discusses both the literature on "9 billion by 2050" as on AFNs. Hereafter, in Chapter four, a link will be established between the discourse and AFNs. For the most part, this will be based on a literature review as well and that is also where the *connection-driven* literature review is realised.

3.2.2 Analysis

The goal of this research is to analyse the relationship between the discourse of "9 billion by 2050" and practice; indicating the framing of the discourse by AFNs. To properly analyse the literature, a secondary data analysis will be applied. Secondary data analysis simply implies that the researcher analyses already existing sources or artefacts (Onwuegbuzie *et al.*, 2012). Besides, a within-case

analysis is performed. According to Paterson (2010), a within-case analysis provides an in-depth understanding and explanation of the phenomenon that is being studied, which is in this case the way in which AFNs frame the discourse "9 billion by 2050". Finally, in the conclusion, these three case studies will be compared with a cross-case analysis (Mathison, 2005).

As described in the research methods section below, documents were collected and organised. The collected literature can be divided into two categories. Firstly, there is literature for the literature review, which gives a state of the art on the two main aspects – AFNs and "9 billion by 2050". Secondly, there is literature collected for documentation. This literature functions as data for the analysis. The literature for the literature review has been summarised in the previous chapter. The literature for documentation is used to establish a link between AFNs and the discourse which is discussed in the following chapter. There, the analysis continues by studying the way in which AFNs frame the discourse.

3.2.3 Research methods

To collect enough information and literature to write this thesis, I applied the method of forward and backward snowballing (Kitchenham & Brereton, 2013). Forward snowballing entails searching for certain keywords in a search engine. The search engine I used was the Global Search option in the online library of the Wageningen University. In this search engine, keywords such as "9 billion by 2050", "Alternative Food Networks", "Food Security", "Food Sovereignty", and others, have been used to obtain a sufficient amount of articles. The most satisfying and useful hits were mainly found within the first ten hits on the first page, but generally I also looked at the second and third page as well. Backward snowballing entails searching for relevant studies in the reference lists of studies found through forward snowballing. The reference lists of relevant articles were studied to see whether reference was made to articles that might be relevant for this thesis. Sometimes, when an interesting argument was made in an article with reference to other authors, I already highlighted the articles referenced to before checking the entire reference list. This helped me find articles that were very relevant, but may have not caught my eye just by reading the title. New articles also helped me find new keywords to use while searching.

Besides the collection of literature, I made much use of the many possibilities on the Internet. For example, I set a Google Alert for the keywords "9 billion by 2050" and "Alternative Food Network". Whenever there is a new post found by Google containing these keywords, I got an email with a link to the post. This was mainly to keep me updated on the subjects, and did eventually not contribute a lot to my research. Moreover, many AFNs have their own Facebook page or Instagram account. I liked or followed some of these pages (e.g. Slow Food International) to stay up to date with their activities. This did not contribute much to my research, but was still interesting to keep up with their latest developments.

3.2.4 Database

In order to make a selection of global AFNs applying the discourse, a database has been made (Appendix). In the table in the Appendix, different AFNs have been displayed. The characteristics these AFNs have to contain are displayed the columns of this table. For each AFN it has been checked whether it meets all the characteristics. Furthermore, the link between the AFN and the discourse of "9 billion by 2050" is has been examined. The AFNs with one 'X' under "9 billion by 2050" have only mentioned this discourse moderately or have been linked to the discourse by other authors. The AFNs with 'XX' under "9 billion by 2050" have taken up the discourse and proposed their own set of

solutions. In total, 12 global AFNs with a link to "9 billion by 2050" have been found. I believe there are actually more global AFNs with a link to "9 billion by 2050" present, but due to a limited period of time to write this thesis, there remained 12.

In the process of selecting the global AFNs for the database, some struggles arose. Firstly, it can be hard to find many different AFNs, because the movements or organisations that qualify as an AFN according to the previously formulated characteristics, do not necessarily call themselves an 'AFN'. It even occurred that a Non-Governmental Organisation (NGO) would meet all characteristics, meaning the terms AFN and NGO may overlap. I would like to stress the fact that I do not perceive AFNs as something tangible or concrete. These networks can appear within all kinds of organisations and institutions, as long as they meet the core characteristics ascribed to them. In this thesis specifically, the definition is consciously kept quite broad in order to be able to analyse AFNs on the global level. If AFNs are analysed on a national, regional or local level, the definition assigned to them can be more specific as there are many AFNs operating at a smaller scale.

An example of an NGO which qualifies as an global AFN is 'Friends of the Earth International' (FoEI). On their website, FoEI explain 'what they do' in a fivefold set of goals (FoEI, 2015a). In these goals it is stated they challenge the current model of economic and corporate globalisation. They oppose trade negotiations which emphasise market access and thereby subvert people's needs, environmental justice and community rights. Furthermore, FoEI promotes sustainable initiatives from local communities and helps building a diversified and effective global initiative to end climate change. In their actions, FoEI are on the sides of peasant farmers who are, according to FoEI, under attack from large-scale industrialised food and farming. FoEI supports food sovereignty of small-scale farmers. Food sovereignty is defined by the FoEI as: *the right of peoples to healthy and culturally appropriate food produced through ecologically sound methods* (FoEI, 2015b). To recap the definition and characteristics assigned to AFNs:

> *AFNs are networks of producers, processors, retailers and/or consumers, which reduce the distance between producer and consumer – whether this is in a social or in a spatial manner –, who look for food of a certain quality – which mainly entails freshness, naturalness or healthiness –, commit to social, economic and/or ecological sustainability at all stages of the network, and in some way contrasts the conventional food system.*

The first characteristic – reducing the distance between actors in the food network – is satisfied by the FoEI by supporting peasant farmers and local markets which brings producers and consumers closer to each other. The second characteristic – the quality notion – is addressed in FoEI's support for food sovereignty which entails the right to healthy food. Within the third characteristic of sustainability the focus is mainly on environmental sustainability. However, their pursuit for food sovereignty and justice also involves social and economic sustainability. Finally, the fourth characteristic – contrasting the conventional food system – is clearly addressed by the FoEI, because they challenge the current model of economic and corporate globalisation (FoEI, 2015b).

3.2.5 Selection of Alternative Food Networks

The following chapter (Chapter four) examines the link between the discourse and AFNs. This link will be illustrated and clarified by means of case studies. From the database several cases were selected on the basis of purposive sampling. Purposive sampling, also called judgement sampling, is a non-random, non-probability sampling technique. This means the researcher is the one deciding which cases are selected from a database (Dolores, Tongco, 2007). This technique is suitable for this thesis, because in this way the AFNs most involved in the discourse can be chosen for further analysis.

By applying purposive sampling, three case studies were chosen. The criteria the AFNs had to meet in order to be discussed in a case study, were multiple. First of all, they had to meet the characteristics assigned to AFNs. Second of all, it was a requirement the AFN talks about the discourse of "9 billion by 2050". On the basis of the three pillars of sustainability, three main categories and three hybrid categories of AFNs will be made. From these six categories, three AFNs from different categories are selected for a case study. The selection of these three AFNs is based how much they talk about the discourse of "9 billion by 2050" and the way in which they frame the discourse. The AFNs with the most interesting view on the discourse or the most arguments about it were selected. This turned out to be: Local Futures, Slow Food International and Food First – the Institute for Food and Development Policy. The choice for these three cases was also based on their fundamental differences. Local Futures is a quite idealistic AFN with a strong focus on local food. Slow Food International, has a much broader range of aspect they involve. Their placement in the Social category will be discussed in Chapter four. Finally, Food First is an organisation not typically characterised as being an AFN although I believe they are. Their focus is also quite broad, but they emphasise food justice.

The differences between the kinds of organisations, their goals, and the scope of the aspects they discuss, make it interesting to see whether there are significant differences or commonalities in the way in which they frame the discourse of "9 billion by 2050".

4 LINKING THE CONCEPTS

Having examined the two main concepts – AFNs and "9 billion by 2050" – and the methodology, these different aspects will be linked to each other. In this chapter, different categories of AFNs will be analysed in relation to their way of framing the discourse. Thereafter, three case studies are examined to provide a deeper insight into the subject. Each case study concerns a certain category of AFNs.

4.1 Categories

In the previous chapter on methodology, the Figures 3.1 and 3.2 by Tavanti (2010) were displayed. A more detailed explanation of these figures and their context is given to start this section. Sustainability is used as the starting point for the categorisation of AFNs. First, in Figure 3.1, the three different dimensions of sustainability are presented in the three main categories; social, environment, and economic. The places in which the circles meet represent more hybrid forms of sustainability. In Figure 3.1 these are shown as: equitable (social and economic), bearable (social and environment), viable (economic and environment), and sustainable (all three dimensions are incorporated). Subsequently, these different categories are translated to categories applicable for what Tavanti (2010) calls 'sustainable food movements' (Figure 3.2). According to Tavanti, sustainable food movements are *"various multi-stakeholder initiatives and organizations [that] offer viable solutions to the international dependent, often unfair and unsustainable global food market system"* (Tavanti, 2010: 3). In this definition the global food market system (similar to what was previously referred to as the conventional food system) is contrasted. However, this definition does not translate perfectly to the definition given to AFNs. Because of this, Figure 3.2, in which the categories are translated to be more applicable for sustainable food movements, does not completely match the categories that would be applicable for AFNs. Inspired by Figure 3.1, I developed a figure to categorise AFNs. This new figure is displayed below (Figure 4.1).

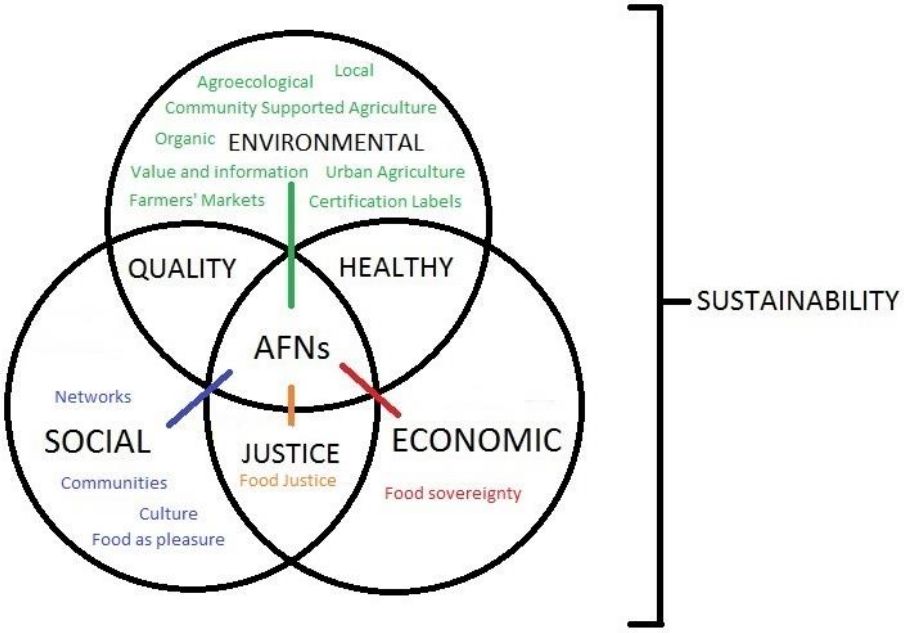

Figure 4.1 Framework applied to Alternative Food Networks

In Figure 3.2, Tavanti (2010) links the pillar 'economic sustainability' to 'food justice' and 'sovereignty movements'. To me, this seems illogical, because food justice does not solely concern economic sustainability. To still incorporate the justice category, it is now located at the place where the social and economic category meet. This is a more logical position for the justice category because food justice has a social as well as an economic side. Furthermore, what used to be the 'food justice' category (Figure 3.2) is now replaced by an economic category. This category is now more focussed on food sovereignty.

The distinction between food sovereignty and food justice will be discussed here. According to Holt-Giménez (2010), food justice emphasises equality and challenges the marginalisation of certain groups based on race, gender or economic status. Food sovereignty on the other hand, calls for structural and redistributive reformations, such as the redistribution of land or other resources, such as energy and water. Holt-Giménez states the overall goals of these two concepts overlap as they both strive for sustainable and healthy environments. This distinction between food justice and food sovereignty shows food justice is indeed leaning towards the social category as well as the economic one. By involving marginalised groups based on certain characteristics and working together in a community, the social category is included. By aiming to establish a healthy and sufficient food supply, economic sustainability is included, because then, food justice contributes to a more stable livelihood and a stronger position in the economy. Food sovereignty puts the emphasis more on the distribution of resources which are tools to establish an economically sustainable livelihood.

Besides the changes in categories discussed above, the other two main categories have changed as well. Tavanti (2010) linked the social sustainability category directly to 'Slow Food' and 'relational movements'. Instead of specifying already by placing Slow Food in the social category, this category now just says 'social'. These social AFNs are based on social sustainability which involves the importance of networks and communities. Features of culture are also taken into account in this category of AFNs. The 'Local Food' category is in Figure 4.1 replaced by an environmental category. This replacement has been made to avoid confusion around the meaning of 'local food'. As stated before, this 'localness' does not necessarily indicate a decrease in the distance a product travels from field to fork.

It is of importance to note that these are not static categories. According to the definition assigned to AFNs in Chapter two, AFNs aim to incorporate all three dimensions of sustainability. However, the emphasis different AFNs establish in their goals determine the category in which they are placed. Next, different categories of Figure 4.1 will be explained in further detail and linked to the discourse "9 billion by 2050". The categories that will be discussed are: Social, Environmental, Economic and Justice. Healthy and Quality are not examined, because they are among the hybrid categories that are the least strongly present. Justice, on the other hand, is a more explicit category as it represents food justice. One of the three case studies, which will follow later on, is about an AFN from the Justice category as they have a strong view on the discourse of "9 billion by 2050". The other two case studies will concern one AFN from the Social category and one from the Environmental category.

4.1.1 Environmental

The Environmental category, relates to environmental sustainability. The emergence of AFNs with a focus on environmental sustainability has been understood as a response to the rapid changes in food and agriculture in the conventional food system. These changes include the growing distance

between place of production and place of consumption. AFNs in this category are rooted in the concern for the environment (Tavanti 2010). This concern is mainly expressed by AFNs by focussing on local food. Examples of 'local AFNs' will be given below.

In the literature, mainly Community Supported Agriculture (CSA) and Famers' Markets (FMs) are linked to local AFNs (Brown & Miller, 2008; La Trobe, 2001). CSA and FMs are, as explained in Chapter two, examples of AFNs in which producers and consumers come closer to each other and often have face-to-face contact. Nonetheless, as Renting *et al.* (2003) have argued, the 'local' characteristic does not necessarily indicate a literal shorter distance between producer and consumer. This 'localness' can also be retrieved in specific characteristics in the product, which are attributed to a certain place or manner of production. A way in which this latter option of local food is found is through certification labels.

An example of a global AFN suited for the environmental category is URGENCI, the international network for Community Supported Agriculture. URGENCI stresses the need to maintain and develop small-scale organic family farms. Furthermore, they emphasise the need to achieve food sovereignty worldwide (URGENCI, 2015). Therefore, UGENCI does not only concern environmental goals for AFNs, but also economic and social ones. URGENCI puts local food in a global perspective by connecting local initiatives worldwide and spreading the practice of CSA. Therefore, URGENCI is an umbrella organisation linking networks of CSA all over the world together. Pursuing the goal of food sovereignty for all in an organic way connects to the goals of feeding all 9 billion people by 2050 whereby food security is established in a sustainable manner. However, this discourse is not literally found in URGENCI's terminology. On the other hand, CSA in general, can be linked to the discourse. According to Paul (2015), Community Supported Agriculture involves mostly small-scale organic farms. He argues these farms are more efficient than large-scale industrial farms in use of land and energy. Yet, Paul questions the extent to which CSA is able to continue expanding as impressive as they have been the last few decades. Although this is interesting information about CSA in relation to the discourse, it is written from a position outside the CSA networks. No evidence has been found in this study in which a global network of CSA takes up the discourse.

Local food can, nonetheless, be adopted in different ways by AFNs. For instance, AeroFarms – an initiative producing food for local consumption – focusses on technological innovation in food production. AeroFarms uses Urban Agriculture to make sure urban populations can enjoy fresh and local food. One of the main examples in which these innovative technologies are applied is in so called 'vertical farms' which are indoors and therefore can be sited in urban areas (AeroFarms, 2015a). In the policy of the Urban Agriculture movement from AeroFarms, the discourse "9 billion by 2050" is mentioned as one of the main motivations for action. Besides the problem of this fast population growth, they state urbanisation will be another challenge to achieve food security. 80% of these 9 billion people in 2050 will, according to AeroFarms live in urban areas. This consequently causes for an increase in food miles which is unsustainable. AeroFarms decreases the amount of food miles through Urban Agriculture. (AeroFarms, 2015b). In this way, the discourse is framed by AeroFarms to display their relevance in today's society.

4.1.2 Social

Within the social category, different AFNs can be distinguished, but all emphasise the importance of social sustainability. As explained previously, social sustainability implies the extent to which a social system is able to function to maintain a certain level of social wellbeing. Linking this to AFNs, this could imply they try to improve the functioning of social systems to eventually improve social

wellbeing. An example of an AFN focussed on social sustainability, which will be discussed in this section, is community gardening. In Chapter three, social capital has been linked to social sustainability. Social capital has been defined differently by different scholars. The definition most suitable for the link between community gardens and social capital and sustainability puts the emphasis on a communitarian interpretation of social capital. This definition focusses on aspects of social life, such as networks, trust and norms, which may enhance collective actions. Collective action can function as a tool to improve a society's efficiency. Community gardening is a good example of collective action through social capital (Alaimo *et al.*, 2010). Furthermore, community gardening also is a good example of a form of AFNs emphasising social sustainability. In community gardens, citizens are able to grow food of their own by which they may challenge dominant power relations in the conventional food system (Ghose & Pettygrove, 2014). Besides growing your own food and challenging the conventional food system, people engaged in community gardening may increase their social capital. According to Alaimo *et al.* (2010), studies have shown this social aspect in community gardening plays a significant role in people's motivation to engage in it. This shows community gardening is placed well in the social category. There are, however, also characteristics of community gardening more related to other categories. For instance, community gardening enhances local food production and consumption, which is typical for the environmental category. Furthermore, communities may increase their independence from the conventional food system, improving their livelihoods. This is a characteristic suitable for the economic category.

Having explained the motivation to place community gardening in the Social category, this example will be linked to the discourse of "9 billion by 2050". How can community gardening contribute to the problems underpinning this discourse? And what solutions can community gardening offer to the discourse? Community gardens have mainly emerged in the Global North. This means that, mostly in urban areas in Western countries, community gardens are providing fresh, local food as well as enhancing social capital and social sustainability. As shown in Chapter two, it is in the Global North where the industrial, conventional food system and excessive amount of available calories per person per day cause for a heavy burden on society because of people with diet-related diseases. Furthermore, waste in retail and consumption is pressuring the global food supply. Community gardens provide fresh and local food through collaboration in a community, which may influence the diets of the people involved.

As I have not found an AFN focussed on community gardens and active on a global level, the example given here will be a national AFN, namely; Ample Harvest. The mission of Ample Harvest is to bring together people engaged in community gardens in order to reduce the losses of fresh food and hunger and malnutrition in the USA. Ample Harvest aims to do this by encouraging as well as empowering people engaged in community gardens to share their excess harvest with the hungry and malnourished people in their community. The problem Ample Harvest determines concerns the problem of food losses and waste. This shows that an alternative initiative to food production may not contribute to the discourse in a good way (Ample Harvest, 2015).

Another AFN emphasising social sustainability, and therefore placed in the Social category, is Slow Food International. They approach social sustainability in a different way than community gardens do and this will be explained in the case study on Slow Food International in section 4.3.

4.1.3 Economic

The Economic category is less clearly found in the world of global AFNs than the other three categories discussed in this chapter. Why is this? It could be because many AFNs are based on certain

principles on a certain way of producing food – which concerns the Environmental category – or on improving people's livelihoods through healthier, fairer or purer food – which concerns the Social category. The two terms placed in the Economic category in Figure 4.1 are 'Food sovereignty' and 'La Via Campesina'. These concepts and their relationship to the Economic category and the discourse will be discussed here.

Food sovereignty has been linked to economic sustainability, on which this category is built, in section 4.1. This demonstrated that food sovereignty focusses more on obtaining the resources needed to build an economically sustainable livelihood. One of the biggest networks worldwide defending food sovereignty is La Via Campesina. La Via Campesina focusses on the food sovereignty of peasants or small-scale farmers (La Via Campesina, 2015). However, whether La Via Campesina can be called an AFN is doubtful. Below, the potential of La Via Campesina to be called an AFN will be defended.

First of all, La Via Campesina calls itself 'the International Peasant's Movement'. This insinuates it being a movement that is focussed on only the producers within the food system. This is not entirely true. They focus on defending minorities in the world in relation to the food system: *"La Via Campesina (...) brings together millions of peasants, small and medium-size farmers, landless people, women farmers, indigenous people, migrants and agricultural workers from around the world."* (La Via Campesina, 2015). Furthermore, they state they defend food sovereignty, which is defined by them as having the right to produce *and* consume healthy and culturally correct food which is produced by applying sustainable methods. According to La Via Campesina, food sovereignty highlights the importance of the production *and* consumption of local food. Lastly, but most importantly, food sovereignty ensures rights for all to use resources in order to produce food. This last characteristics relates back to the link between food sovereignty and economic sustainability. Through this elaboration on the people involved in La Via Campesina and their understanding of food sovereignty, it is shown that La Via Campesina does strive for a network reducing the distance between producer and consumer through their struggle for healthy and culturally appropriate food. This struggle for healthy and culturally appropriate food connects to the quality notions assigned to AFNs as well. Besides, the definition of food sovereignty includes sustainability, which is another characteristic of AFNs. Finally, the last characteristic mentioned in the definition assigned to AFNs, is opposing the conventional food system, which is also incorporated in the structure and mission of La Via Campesina. They support the minorities, mainly involved in peasant farming, which are being suppressed by the, as they call it, *"corporate driven agriculture and transnational companies that are destroying people and nature"* (La Via Campesina, 2015).

Now, a link between the Economic category and the discourse will be established by using La Via Campesina as an example. Through fighting for food sovereignty for small-scale family farms, the food system may change significantly. La Via Campesina states that if all these family farms were to adopt the agroecological system (opposing the conventional food system), the food system can be transformed. In this way, climate change can be alleviated, small-scale farmers earn more profit, and consumers are able to access nutritious food. Agroecological approaches are proposed by La Via Campesina as a possible solution to feeding the future population. The problem at the roots of the discourse is attributed to the Green Revolution which, according to La Via Campesina, caused for soil depletion, increasing use of biofuels and climate change. La Via Campesina thus strives to achieve food sovereignty worldwide through agroecology. Subsequently, multiple achievements could be reached since agroecology is said to ensure as well food sovereignty as a solution to the discourse of "9 billion by 2050" (La Via Campesina, 2014; World Development Movement, 2012).

This shows that AFNs in the Economic category, La Via Campesina in this case, may not be underpinned by proposing a solution to the discourse of "9 billion by 2050", but eventually contribute to a solution anyway. In La Via Campesina's terminology, the discourse is not incorporated in a significant manner, they only mention it sometimes. This shows the link between their practices and the discourse, but the discourse is not understood to be of such importance to give it a prominent presence in their terminology. Why is the discourse not taken up by La Via Campesina as it is by other AFNs? La Via Campesina is considered to be a quite radical movement (Martínez-Torres & Rosset, 2010) which could possibly be a reason not to take up the discourse of "9 billion by 2050" significantly. This discourse has been taken up so extensively by all kinds of actors, including news entities and governments, that it may be too commercial for La Via Campesina. This could mean they just stick with their initial goals and do not feel the need to adopt the discourse literally, because it has already been covered.

4.1.4 Justice

Finally, the Justice category addressing food justice will be discussed. This category is derived from the combination of social and economic sustainability. In the case study in section 4.4, the AFN Food First – The Institute for Food and Development Policy – will be discussed. Food First is an important organisation in terms of food justice movements (Tavanti, 2010).

First, the concept of food justice will be discussed briefly. As stated by Gottlieb & Joshi (2013), food justice involves many groups engaged in the food system. Through food justice, many different advocates can be linked to each other. Wekerle (2004) distinguishes the concept of food justice from food security: *"The food justice frame highlights the focus on systemic change and the necessity for engaging in political and policy processes as well as consciously addressing issues of movement mobilization and strategies"* (Wekerle, 2004: 379). Subsequently, Wekerle argues this food justice frame exposes connections with more concepts than food security does. This corresponds to the statement by Gottlieb & Joshi. Alkon & Agyeman (2011) give a much more specific definition of food justice: *"communities exercising their right to grow, sell, and eat* [food that is] *fresh, nutritious, affordable, culturally appropriate, and grown locally with care for the well-being of the land, workers and animals"* (Alkon & Agyeman after Just Food, 2011: 5). This definition focusses on a wider range of characteristics inherent to the communities exercising food justice. The emphasis is, however, on the 'right' to exercise food justice. This brings back the political feel inherent to the concept also found in the other definitions given to food justice. Furthermore, Alkon & Agyeman argue there is an additional characteristic for communities exercising food justice, namely their marginalisation by the conventional food system. This marginalisation means the community has to provide food for itself. They take control of their own food supply. It is also argued that the marginalisation is attributable to inequality on the basis of race and class (Alkon & Agyeman, 2011). Holt-Giménez (2011) also emphasises the marginalisation of certain groups based on race, gender or economic status. In short, food justice is defined as a resistance to the marginalisation – based on race, gender, class or economic status – by the conventional food system, by which many different advocates are involved and communities are making use of their right to food to provide for themselves.

Food justice thus mainly concerns equality. Equality in the food system could possibly contribute to solutions for the discourse of "9 billion by 2050" as it appeals to the problem with distribution which was revealed in Chapter two. By working together, communities can provide their own food supply which means food is grown and consumed locally. Through fighting the marginalisation of these minorities, they will be able to enjoy a sufficient, nutritious amount of food

which ensures a better livelihood. Furthermore, if these groups are able to access food for a fairer price, they might be able to invest their income in other things improving their livelihoods. Elevating the standards these marginalised groups live in and therefore, reducing poverty, may influence the discourse in different ways. It could be the case that food is distributed differently, which may reduce waste and diet-related diseases in the Global North and undernourishment in the Global South. However, it could also increase the pressure on the global food supply. One of the main pressures on the food supply that has been recognised in Chapter two, is the global economic growth, as this also implies an increased demand for food.

An example, besides Food First, of an AFN addressing food justice, is Fairtrade International. Fairtrade International supports producers who are faced with challenges in the food system, whether these are economic, environmental or social challenges. Eventually, the goal is to strengthen the livelihoods of these producers and to make a contribution to a more sustainable world. The reason why Fairtrade International may be placed in the Justice category is basically in their name. They fight for more equality in the food system. They want to make sure small farmers receive a fair price for their products. In their vision, Fairtrade International states they believe in the ability of people to overcome marginalisation (Fairtrade International, 2015a; Fairtrade International, 2015b).

Fairtrade International frames the discourse of "9 billion by 2050" in relation to their goal of contributing to a more sustainable world. Their main goal is still focussed on social and economic sustainability, but while supporting producers and improving their livelihoods, they also encourage them to produce more sustainably. In this way, environmental sustainability is also addressed (Fairtrade International, 2010; Fair Trade Advocacy Office, 2015). If Fairtrade International would succeed to redress the economic inequality in the global food system and the economic status of producers would increase, this may affect the discourse. When this economic inequality decreases, the difference in distribution of calories consumed between the Global North and the Global South may decrease.

Among consumers (in the UK), the moral goals Fair Trade adopts seem to be appealing. This is stated by Kennedy (2013) as she argues the amount of food sold by Fair Trade has grown more rapidly than the amount of organic food sold. This has caused for a significant increase of retail numbers which is, according to Kennedy, the result of the adoption of Fair Trade products in supermarkets. When Fair Trade products appeals to an increasing audience, its potential to influence the goals of Fair Trade, and eventually the discourse, may also increase.

4.2 Case study I: Local Futures

Local Futures – International Society for Ecology and Culture – is an AFN focussed on protecting and restoring the wellbeing of the ecological and the social. This is carried out by means of promoting localisation and therefore moving away from globalisation of the economy. This shift away from globalisation is mobilised by Local Futures' "education for action" programs which are instruments for enhancing people's participation in realising this shift. (Local Futures, 2015a). Local Futures has been placed in the Environmental category (Figure 4.1), because of their purpose to develop the potential of local food to feed the entire global population. Their actions are rooted in a concern for the environment and by promoting local, organic food they aim to curb climate change.

Currently, Local Futures is working on several programs. For instance, the launch of an International Alliance for Localisation (IAL). IAL is ought to become a countermovement to the monoculture brought along by globalisation. Local Futures states there are many advantages

inherent to localisation of the food system, such as resilience of communities and their capacity to adapt to changes, the reinforcement of food security in local communities, and preserving the integrity of cultures. (Local Futures, 2015b). The advantages of localisation of the food system are also found in the way Local Futures frames the discourse of "9 billion by 2050". The relationship between Local Futures and the discourse, and the way in which Local Futures frames the discourse will be discussed according to the four main problems underpinning the discourse (Chapter two).

4.2.1 Climate Change

Local Futures recognises multiple problems underlying the discourse of "9 billion by 2050", of which one is climate change. According to Local Futures, the conventional, industrial food system is for a big part to be blamed for the climate change as it is present today. They state the conventional food system is responsible for depleting the world's soils, wasting the supply of water which already was scarce, decreasing the biodiversity, poisoning the ecosystem as well as our own bodies, and, most importantly, assaulting the livelihoods of many farmers and farm workers (Local Futures, 2015c).

The solution Local Futures proposes includes a radical shift away from the way our food is produced in the conventional food system. Shifting to alternatives which are more sustainable and productive would, according to Local Futures, bring back biodiversity which had disappeared in the last decades through monocultures in agriculture. This shift also includes providing more jobs at a local level, and restoring farmers' livelihoods while ensuring consumers' access to fresh, local and healthy food for an affordable price. A way to reduce climate change suggested by Local Futures is, obviously, by consuming locally produced products. However, Local Futures shows a quite realistic view in this goal. They state this does not mean that, for instance, cold climates should live without tropically grown fruits. The local aspect is more focussed on meeting basic needs at a local level as much as this is possible. Local Futures also states local food encourages farmers to produce a more diverse range of products which makes it easier to adopt an organic way of farming. This is made easier by being able to use on-farm waste to replace chemical fertilisers (Local Futures, 2015c).

4.2.2 Losses and Waste

The problem of high amounts of food that are lost or wasted globally is not directly discussed by Local Futures. However, they do emphasise the efficiency of small-scale, organic, local farms. It is stated that these farms produce more sustainably as well as most efficiently with the available amount of resources. Organic farms contrast the conventional food system with their definition of efficiency. Gorelick (2013) states, on behalf of Local Futures, *"The efficiency touted by the promoters of industrial agriculture has nothing to do with producing large amounts of food on a limited landbase: it's about producing the highest yields with the least amount of human labour"*. From this, he concludes that efficiency in industrial agriculture is not about producing food, but about eliminating farmers and farmworkers. This can be linked to the problem of food losses and waste in agriculture, because the conventional food system wastes the opportunity of producing more food. The food is wasted even before it has been produced.

Gorelick (2013) also introduced another way in which food is wasted in industrial agriculture. He states that on an organic farm, much of the on-farm residues are used. The example he provides is that weeds, which would be eliminated with chemical pesticides in industrial farming, are collected from the farm and fed to the cattle on the farm. It is in this case required that the farm is diversified. On a farm with monoculture, producing just one crop, there would not be any cattle to feed the weeds to.

4.2.3 Diet

Local Futures addresses people's diet by stating local food ensures the production of food that is fresher, which means it is healthier. They state fresh organic vegetables are generally ten times healthier or more nutritious than vegetables produced in the conventional food system (Local Futures, 2015c). This would, according to Local Futures, diminish the amount of undernourished as well as obese and overweight people. They state these problems are often caused by lacking amounts of accessible and affordable healthy and nutritious foods (Local Futures, 2015c).

4.2.4 Distribution

By focussing on organic, local food worldwide, Local Futures addresses the issues with the global food distribution. When organic, local food is produced and consumed globally, Local Futures is convinced the entire global population will be able to access affordable and fresh food. This means the food supply in the Global South will increase and could possible contribute to the fight against hunger and malnourishment. In the Global North, the food that can be grown locally will be produced and less food will be imported. This will enable populations in the Global North to access fresh, local food (Local Futures, 2015c).

Concluding this case study, it has been shown that the discourse of "9 billion by 2050" is extensively discussed by Local Futures. The problems with the current global food system, which are mostly blamed on the conventional, industrial food system, frame the discourse of "9 billion by 2050". The conventional food system has been understood to be a major contributor to the problems underlying the discourse and the solutions proposed by Local Futures all point to the importance they assign to local food.

These solutions may, however, be somewhat idealistic. The complexity of producing and consuming of food locally are not shown. Transitioning from the conventional, industrial food system dominant today, to the alternative, local and organic food system Local Futures suggests is quite the challenge. There are power struggles which have resulted in the domination of the conventional food system which are not being faced by Local Futures in their promotion of local food. How will they empower local, small-scale, organic farmers and challenge the conventional food system?

4.3 Case study II: Slow Food International

Founded in Italy in the 1980s, Slow Food has nowadays grown to be an international movement involving millions of people in their network. Back in the 1980s, the movement emerged as a response to the increasing popularity and reach of fast food chains like McDonald's. However, it is not just a gastronomic movement, but also an environmental one. The gastronomic element is expressed by means of resisting the standardisation of food by the industrialised food system and instead enjoy and celebrate the beauty of locally grown, pure, fresh food. The environmental element is demonstrated in the advantages of producing more locally and sustainably (McFarlin Weismantel, 2008). Slow Food International has been placed in the Social category (Figure 4.1), because they believe food can bring people together. They want to bring producers and consumers closer together and try to defend local food cultures and traditions and strengthen communities (Slow Food International, 2015b). Again, the link between Slow Food International and the discourse of "9 billion by 2050" will be elaborated according to the four main problems; climate change, waste and losses, diet, and distribution.

4.3.1 Climate Change

Similar to Local Futures, Slow Food International states the conventional food system has been responsible for emitting many of the greenhouse gases. Furthermore, it is accused of consuming a lot of energy in their production process (Henderson, 2014). The alternative Slow Food International offers to the conventional food system is moving towards a more sustainable production of food. This is explained by Henderson (2014), on behalf of Slow Food Canada, by giving three examples of how to get to a more sustainable food system. These examples are: reducing waste, eating less meat and localising production. The latter example will be discussed here. Henderson (2014) states shorter food supply chains generally improve efficiency of the energy investments. Examples of shorter food supply chains Henderson provides are, among others, Farmers' Markets and Community Supported Agriculture. Besides localising food supply, Slow Food International aims to preserve and strengthen biodiversity. This is done by supporting small-scale local farmers as they are expected to produce more diverse (Slow Food International, 2015c).

4.3.2 Losses and Waste

Slow Food International has a clear view on the problems related to food losses and waste. Food waste is one of the 'hot topics' found on their website. They state that in a world where a lot of people are undernourished, it is unacceptable that so much food is wasted. Reducing food waste is therefore a crucial step in the pathway to achieving a sustainable food system (Slow Food International, 2015d). To raise awareness about food waste, Slow Food International organises different events worldwide and provides consumers with several tips of how food waste can be reduced. These tips include: eating leftovers, using leftovers to create a new meal, preserving products (e.g. by making soup from vegetables), and buying directly from producers (Slow Food International, 2015e).

Slow Food International thus discusses the problem of excessive food losses and waste. However, they do not literally link this problem to the discourse of "9 billion by 2050". Hence, they acknowledge the problems of undernourishment, food losses and waste and suggest point of improvement, but they do not empower their statements by using this discourse.

4.3.3 Diet

One of the three aforementioned options to reach a more sustainable food system, is 'eating less meat' (Henderson, 2014). As discussed in Chapter two, meat consumption has been growing significantly over the last few decades in the Global North. The nutritional transition, described in section 2.1.3 by Tomlinson (2013) insinuates an increasing demand for, among others, animal products in the Global South as well. This nutritional transition is associated with diet-related diseases due to higher consumption of fat, sugar and salt. Eating less meat would, therefore, alleviate the heavy burden of people in society with obesity and other diet-related diseases. Slow Food International has set up an entire department, 'Slow Meat', to address the high consumption of industrially produced meat. Slow Meat encourages people to: *"consume less meat but of better quality"* (Slow Meat, 2015).

4.3.4 Distribution

Slow Food International clearly opposes the increasing use of Genetically Modified Organisms (GMOs). In their statement in which they criticise GMOs, they state GMOs have, up till now, not

reduced global hunger and undernourishment even though this was promised by multinationals. Hunger has only increased as well as the profits made by multinationals producing the seeds for GMOs (Slow Food International, 2015f).

The president of Slow Food USA, Josh Viertel, has confidence in the ability to feed the world in the year 2050. He states that in 2008 enough food was produced to feed over 11 billion people worldwide. While producing 4000 calories per person per day, a lot of this food was wasted or used to make biofuels. Hereby, Viertel emphasises the problem of poor distribution of food globally. He also involves GMOs in his statement. Monsanto and the Deutsche Bank suggested a 'new Green Revolution' to solve the problem of increasing demand for food. This entails elevating global food production by means of GMOs and more industrial agriculture. Obviously, Viertel disagrees as he states there is more than enough food produced already (Viertel, 2010).

This opposition to GMOs and a 'new Green Revolution' connects to the general goals of Slow Food International as they support local communities and small-scale, local farmers. They already opposed the conventional, industrial food system and blamed this system for emitting a lot of greenhouse gases and turning our food into a fuel rather than a pleasure. Enhancing the industrial food system by using GMOs and other technology in order to produce more is thus, in the eyes of Slow Food International, wrong on so many levels.

In conclusion, Slow Food International does not use the literal discourse of "9 billion by 2050" significantly in their terminology. They do however, address the underlying problems. In some AFNs, the way in which they frame this discourse is not as obvious as in some other AFNs. This was also the case with La Via Campesina (section 4.1.3). As "9 billion by 2050" is a short sentence with a big message, its use could contribute to attracting people's attention. This can, in turn, contribute to the potential influence an AFN can have with their actions and projects.

4.4 Case study III: Food First

Food First, the Institute for Food and Development Policy, is a 'people's think tank'. However it may not come across as an AFN, it does meet all characteristics. The characteristics as defined in Chapter two will be linked to Food First[2]. The reduced distance between actors in the food system takes place through sending a message. Food First has the mission of ending injustices that cause hunger. Currently, they have three programs running to achieve their goal. These programs address food justice in North America, food sovereignty on a global level, and enhancing agroecology and sustainable food system. Just as La Via Campesina argued, Food First defines food sovereignty as: *"people's right to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems."* (Food First, 2015a). This involves people on both the producer- as the consumer-side of the food system and brings them together in sending a collective message. The quality notion of food is addressed by ensuring *healthy* and *culturally appropriate* food. The sustainability characteristic is addressed in their program for the enhancement of agroecology and their support for sustainable food production. Lastly, they contrast the conventional food system as they call for a political transformation in the global food system.

[2] Definition: *AFNs are networks of producers, processors, retailers and/or consumers, which reduce the distance between producer and consumer – whether this is in a social or in a spatial manner –, who look for food of a certain quality – which mainly entails freshness, naturalness or healthiness –, commit to social, economic and/or ecological sustainability at all stages of the network, and in some way contrasts the conventional food system.*

Now this is clear, the way in which Food First works will be discussed briefly. Food First focuses on research for action, education for action and projects for transformation. These three areas of the work of Food First are set up to inform citizens in order to enhance engagement in efforts to control their food (Food First, 2015b). Through these areas of work, Food First seeks to analyse causes that lie at the roots of global poverty, hunger, and environmental degradation. They also aim to promote initiatives to fight hunger (Tavanti, 2010). Food First engages in participatory research which enriches their information and insights with real experiences. These insights are then transmitted to people all over the world through education programs. Besides being a think tank and their research and education programs, Food First supports projects in communities worldwide.

Framing the discourse of "9 billion by 2050", Eric Holt-Giménez, executive director of Food First, criticises the Five Step Plan by National Geographic (Holt-Giménez, 2014). These five steps are: freezing the agricultural footprint (avoiding any more deforestation for agricultural means); growing more on the farms already existent by using highly technological farming systems besides methods derived from organic farming; making more efficient use of resources like water and fossil fuels; shifting diets by reducing the amount of food used for biofuels and livestock feeding; and reducing waste (Foley, 2015). Holt-Giménez (2014) states these steps are relatively simple and good technological solution, but is wondering why, if they are such good solutions, they have not been implemented. He states it is even more alarming that there is still hunger and poverty in places they have been implemented already. According to Holt-Giménez, there are several assumptions underlying these five steps which have not been taken into account. The first false assumption is that production should be increased by 70 percent by 2050 since there is already enough food produced to feed the entire global population. The second false assumption is that a combination of conventional and organic farming will turn out great. Holt-Giménez states this assumption ignores the fact that conventional farms destroy small-scale farmers on a global scale. The position Holt-Giménez adopts, on behalf of Food First, is very critical. What he is trying to do is to open your eyes to this discourse and the underlying factors.

Subsequently, the problems Food First recognises and the possible solutions they propose to the discourse of "9 billion by 2050" will be discussed according to the four underlying problems acknowledged in Chapter two.

4.4.1 Climate Change

Just like the abovementioned examples of and case studies on AFNs, climate change is largely blamed on the conventional food system. Furthermore, Bittman (2013) argues, on behalf of Food First, the conventional food system is also responsible for the excessive use of resources. As a solution to this, the peasant way of farming is promoted for its sustainability, diversification, efficiency and productivity. Hereby, when agroecology is adopted, peasants are able to feed themselves and others. Nonetheless, this is not always possible due to lack of resources to farm efficiently.

The peasant way of farming or, otherwise called, small-scale, local, often organic farming is promoted once again as a solution to the problem of climate change. However, Food First provides a realistic view on the potential of peasants in the global food system. As Holt-Giménez (2014) argued above, one of the false assumptions made in plans to solve the problems underlying the discourse is the assumption that the conventional, industrial, large-scale food system and the organic, small-scale food system will go well together. It is not without reason that small-scale peasants/farmers are currently under great pressure from the conventional food system.

4.4.2 Losses and Waste

To address food losses and waste, Bittman (2013) states resources like money and energy should be invested differently. Now, most money and energy are distributed unequally between actors in the food system. Bittman (2013) thinks more money and energy should be invested in is the reduction of waste. He states this reduction would hugely reduce greenhouse gas emissions as well.

Furthermore, the problem of food losses and waste is inherently attributed by stating there is more than enough food on the world to feed the entire population properly (Lappé *et al.*, 2015). Lappé *et al.* (2015) state, on behalf of Food First, that food scarcity is a myth. When more is produced than is needed and there are still many people suffering from hunger, this means it is going wrong at some point. As shown in Chapter two, the biggest problems underlying this are poor distribution and food losses and waste. Bittman (2013) states too much food is fed to animals, used for biofuels, and wasted. To solve this problem, again reference is made to the small-scale farming system.

4.4.3 Diet

Bittman's (2013) former argument that, due to a lack of resources to farm efficiently, peasants are not able to adopt agroecology to feed themselves and others, has consequences. He states that when peasants cannot farm anymore because of this lack of resources, they often flee to the city. In the city they are forced to engage in badly paid labour in order to sustain themselves and their families. Subsequently, they cannot afford healthy food anymore so in order not to suffer from hunger, they have to consume bad, industrial food. Thus both hunger and obesity are incorporated in this process (Bittman, 2013). This means the conventional food system is blamed for providing bad, industrial food as well as indirectly forcing people to eat it. This could be a circulating process in which the conventional food system is increasingly empowered because more people have no other choice than to consume the food produced in this system.

4.4.4 Distribution

Bittman (2013) states it is not a matter of producing more, but of prioritising where the produced calories go to. As mentioned before, Bittman (2013) promotes a different distribution of resources, especially money and energy. When this is distributed more equally, many problems could be solved according to him:

> *"If equal resources were put into reducing waste – which aside from its obvious merits would vastly prevent the corresponding greenhouse gas emissions – questioning the value of animal products, reducing overconsumption (where "waste" becomes "waist"), actively promoting saner, less energy-consuming alternatives, and granting that peasants have the right to farm their traditional landholdings, we could not only ensure that people could feed themselves but also reduce agriculture's contribution to greenhouse gases, chronic disease and energy depletion."* (Bittman, 2013)

Lappé *et al.* agree with the statement that food insecurity is a distribution problem, not a problem of food scarcity. They emphasise that hunger is not just a problem from the Global South. For instance, in the USA in the 1990s, there were over 30 million people not able to afford a healthy diet. This means, hunger is not just about not being able to afford or access enough to eat, but also about not being able to afford or access enough *healthy* food. They finally state: *"Only when we free ourselves from the myth of scarcity can we begin to look for hunger's real causes"*, referring to distribution.

As shown in this case study, Food First is an AFN well informed and opinionated about the discourse of "9 billion by 2050". Because they are well informed about the problem and possible solutions to this discourse, they are able to elaborately discuss their view on it and criticise other assumptions.

4.5 Conclusion

The extent to which the discourse is incorporated and the way in which it is framed varies somewhat between different AFNs. All three case studies have been analysed according to the four main problems underlying the discourse of "9 billion by 2050": climate change, losses and waste, diet, and distribution. The findings in these four categories will be discussed briefly.

One aspect all previously discussed AFNs have in common is that they state the conventional food system is the major contributor to climate change within the global food system. Another commonality between the AFNs discussed in this chapter, is that they all propose an alternative, mainly localised, small-scale and/or organic farming system to solve the problems the conventional food system has created.

Food losses and waste are acknowledged to be a major problem in the global food system by all AFNs in this chapter. Solutions they propose are however not very concrete. They mention efficiency, distribution and approaching consumers to act more responsible, but there does not seem to be a concrete, realistic plan on how to solve this problem. This is somewhat surprising as reducing food waste has a lot of potential for increasing the global food supply.

Diet also comes back in all three case studies. AFNs mostly associate conventional, industrial food with diet-related diseases and to be unhealthy. Moreover, they associate food product in an alternative network is healthy, fresh and/or natural. Besides alternative food being healthier, they assume this food is also more sustainable than conventionally produced food. However, they might be wrong here. As Macdiarmid *et al.* (2012) have shown before, a healthy diets is not necessarily a sustainable diet and vice versa. Furthermore, Wickramasinghe *et al* (2013) have studied the relation between organically or locally produced food products and greenhouse gas emissions. They have found that these food products do not necessarily all have lower greenhouse gas emissions than conventionally produced food products. As the amount of greenhouse gas emissions are mainly related to impacts on climate change, it can be stated that Wickramasinghe *et al.* show a more sustainable diet does not always include organic or local products.

Finally, distribution was discussed for each case study. The views on this topic were quite similar for Local Futures, Slow Food International and Food First. Ultimately all three proposed supporting or investing in localised food systems to improve distribution of food. When the food that is produced locally is also consumed locally, a big part of people's daily dietary needs could be met already, without having to rely on importation of food. Nonetheless, there seems to be a long way to go before a localised food supply is realised. Before local producers are even able to start selling their products locally, they need to be able to access the necessary resources for production, such as land, water and energy. This latter aspect has been acknowledged by Food First.

It is hard to analyse why some AFNs have and some have not taken up the discourse. There does not seem to be a motif visible to declare the motivations whether or not to take up the discourse. Overall, there is one thing that is clear. All three AFNs from the case studies promote what Buttriss & Riley (2013) call sustainable intensification. This involves increasing yields, increasing resource use efficiency, and reducing negative effects on the environment due to food production (Buttriss & Riley, 2013).

CONCLUSIONS

The introduction of this thesis includes the description of a research question and several sub-questions. To recap, the main research question is: *How do Alternative Food Networks frame the growing demand for food imposed by the discourse of "9 billion by 2050"?* Having performed a literature review, secondary data analysis and a within case analysis the findings concerning this question will be discussed with the support of the different sub-questions. Thereafter, a cross-case analysis will be continued by comparing the different findings from the AFNs that have been studied.

In Chapter two, the literature review, the first two sub-questions concerning the elements influencing the discourse of "9 billion by 2050" and the definition of AFNs were addressed. Some elements influencing the discourse which often returned in the literature were discussed in more detail – climate change, losses and waste, diet, and distribution. Thereafter, various definitions for AFNs were examined and considering these different definitions, a customised definition was drawn. This definition and the different elements included in the definition have been utilised throughout this thesis as criteria for the selection of entities which then could be called AFNs. This definition is intentionally broadly formulated so the core characteristics assigned to AFNs in already existing literature are still present, but still many different initiatives could be called an AFN. Because of this, many different AFNs were collected which was interesting in the different case studies. Something that has become clear while analysing different definitions and appearances of AFNs, is that there is an enormous complexity and diversity to this phenomenon. Due to this complexity, different categories were develop to structure the AFNs (Chapter four).

The categorisation of AFNs has been based on the figures by Tavanti (2010) which are displayed in Chapter three. Tavanti's categories were based on the three pillars of sustainability; social, environmental and economic. These categories were subsequently translated into categories for, as Tavanti called it, sustainable food movements. Because the categories did not correspond perfectly to AFNs and the definition assigned to them, a new figure was created which applied better to AFNs. The three main categories are the same as the pillars of sustainability. However, another important category has been added, namely; Justice. The Justice category is based on the concept 'food justice' which is based on the equality in the food system and the fight against marginalisation of minorities. In this category also AFNs focussed on the fairness of the food system, such as Fairtrade International, are included. This category has been placed at the intersection of the Social and the Economic category. This means the Justice category entails as well social as economic sustainability as their main focus. The four categories – Social, Environmental, Economic and Justice – are elaborately discussed in Chapter four, which covers the third sub-question.

Chapter four includes, after explaining the four categories, three case studies. From the Environmental, Social and Justice category, AFNs have been selected by means of purposive sampling based on their link to the discourse of "9 billion by 2050". The Economic category has been left out here, because of the limited amount of AFNs emphasising economic sustainability. The relation between these three AFNs – Local Futures, Slow Food International and Food First – and the discourse were analysed according to the four main problems underlying the discourse. The outcomes of these case studies related to the overall thesis will also be discussed according to the four main problems underlying the discourse of "9 billion by 2050".

Climate change

As stated in section 2.1.1, agriculture contributes approximately a third to the total global greenhouse gas (GHG) emissions. More sustainable production is suggested to be a solution to decrease the amount of emissions derived from agriculture. This solution comes back in the goals of AFNs. For instance, the goals of AFNs in the Environmental category, such as Local Futures, which state the conventional food system is a major contributor to the GHG emissions from agriculture. As an alternative, they propose local food which provides, according to them, better priced, organic food which ensures more resilient and sustainable communities where poverty is reduced and which are less dependent on the global food system. By consuming locally grown food, the products travel shorter distances which decreases the amount of GHG emissions from transportations. This is, however, criticised in Chapter two where it is stated the amount of emissions from transportation are just a minor source of the emissions from agriculture.

Slow Food International and Food First have proposed another solution to reduce the environmental impacts from food production and consumption, which is eating less meat. In Chapter two it has been shown that one of the main sources of emissions from agriculture originates in livestock. Eating less meat would therefore decrease the amount of GHG emissions derived from agriculture. Furthermore, eating less meat is also connected to the elements 'diet' and 'losses and waste'. This will be discussed in the following sections regarding these elements.

The other main source of GHG emissions in agriculture named in Chapter two, is fertilizer use. Local futures states local food produced on organic farms involves reducing waste by more on-farm use of residues, like using manure for fertilizer. Hence, this concerns two of the elements underlying the discourse.

A commonality, as discussed in section 4.5, between the different AFNs regarding climate change, is that they all understand the conventional food system to be a major contributor to the GHG emissions derived from agriculture. Furthermore, all AFNs covered in this thesis propose some kind of an alternative way of producing food. Mainly this concerns a localised, small-scale and/or organic farming system.

Losses and Waste

Section 2.1.2 shows that an enormous amount of food is either lost or wasted. This includes more aspects than only the food we throw away at home. The difference between what is produced and what ends up on our plate is also exists from animal feed and harvest losses. Furthermore, food is wasted on the production of biofuels. As discussed in section 2.1.2, the main sources of losses and waste are different for the Global North and the Global South. In the Global North, most food is lost or wasted in retail and consumption. In the Global South, the problems lie more in the post-harvest stage. These different sources of food losses and waste ask for different approaches in solving this problem.

In framing this problem, the AFNs examined in this thesis generally do not make a clear distinction between solutions for the Global North or the Global South. Moreover, the AFNs examined in the case studies all address the problem of food losses and waste, but do not propose a concrete plan to solve this. By encouraging reduced meat consumption, the link can be made between the goals of AFNs and reducing the food that is lost to livestock feed. Furthermore they mention other approaches, such as increasing efficiency in producing and distributing food and encouraging consumers to waste less food. These are all quite general propositions to reduce losses

and waste and the AFNs do not explain a further detailed plan. It could be that AFNs do not address this further, because they already promote a more sustainable, small-scale farming system. Such a system is mainly understood to be more efficient in use of resources and energy, and more resilient to pests. This could reduce losses on the farm and during harvest. Furthermore, as Slow Food International stated, local food which is bought directly from the producer is concerned to reduce waste. This covers the high amount of food wasted in retail. Finally, Slow Food International also addresses waste from consumption by providing consumers with several tips on wasting less food. Hence, food losses and waste are addressed in all stages of food production and consumption, but the distinction for solutions in the Global North and the Global South as well as a coherent plan for action remain missing.

Diet

Changing people's diets has been framed by different scholars as a part of the possible solution to food insecurity. In section 2.1.3, this has been discussed. Unhealthy diets, which are rich in fat, sugar and salt often originate from vegetable oils, animal products and simply sugar consumption. These diets bring along possible health problems. The big problem faced in the Global North is the growing burden of diet-related illnesses of which obesity is one of the most important ones. Multiple AFNs encourage the reduction of meat consumption which relates to the problem of unhealthy and unsustainable diets. Furthermore, a diet one consumes also includes the origin and way of production of the products that are consumed. For instance locally grown or organic food versus industrially produced food. AFNs offer an alternative choice to consumers by producing or supporting alternative ways of food production.

As stated in section 4.5, a healthy diet does not necessarily mean it is sustainable as well. This is a mistake many AFNs make. Locally and/or organically produced products are automatically understood to be healthier and more sustainable than conventionally produced products. The assumption of AFNs can also be found in the definition assigned to AFNs in which the quality notion is incorporated. Hence, AFNs claim to support or produce food that is healthier, of better quality, fresher or more natural. This quality notion has arisen with the increasing occurrence of food scares. The conventional food system has for the most part been blamed for these food scares. AFNs generally want to offer an alternative to conventional, industrial food and therefore value the notion of quality. When people choose for food from AFNs in their diet, they thus also choose for food that meets the conditions of this quality notion.

Just as in the section on 'Losses and Waste', a distinction between the Global North and the Global South is often made. The Global North is associated with an excessive amount of food which results in diet-related illnesses, especially obesity. The Global South is associated with a lack of food, hunger and malnutrition. This distinction can also be found in the way in which AFNs frame the problem with diets. One should, however, be careful making this distinction, because in the Global North, there are also many people suffering from malnutrition. In fact, the people who are obese may have become that way because they can only afford unhealthy, industrial food with few nutrients. In the Global South, this is happening as well as globalisation is continuously spreading 'Western fast food'.

Distribution

In section 2.1.4 a connection was made between food distribution and two of the pillars of food security: food availability and use. These two pillars represent the problems resulting from poor food

distribution. In the Global North, an excessive amount of cheap, industrial food is available, resulting in climate change, diet-related illnesses and waste in retail and consumption. In the Global South, there is a lack of food partially caused by high post-harvest food losses and resulting in malnutrition. This shows the latter three problems underlying the discourse of "9 billion by 2050" all come together in the problem of distribution. This again, is linked to the aspect of food security.

As a solution, AFNs generally propose a localised, alternative, more sustainable way of producing and distributing food. By producing and consuming food as much as possible at a local scale, the local population can enjoy local, fresh food for an affordable price as it did not have to travel halfway around the world. This simultaneously tackles the issue of climate change as AFNs promote a reduction in food miles as well as a more sustainable way of producing.

The red line in this analysis has been of AFNs contrasting the conventional food system and promoting an alternative one. This alternative food system is, when it is linked to the discourse of "9 billion by 2050", suggested to be the solution to problems underlying this discourse. A localised, small-scale farming system, often organic as well, is presented as the way to feed the future population and to curb climate change. However, among the AFNs covered in this thesis only Food First really provided a critical perspective on the potential of local, small-scale and/or organic farming as the prevailing source of food. As Holt-Giménez (2014) stated before, the most solutions proposed to food insecurity sound logical, but if they were so great, why have they not yet been implemented? He was also very realistic about the potential of the organic food system with small-scale farmers working together with the conventional food system. These farmers are not for nothing struggling to survive as they are destroyed by the conventional food system. So the question that arises for me is: *How* will AFNs empower small-scale farmers? *How* will they give them the ability to really form a counterforce the conventional food system? I think only when significantly more consumers start realising the impact of their choices, AFNs stand a chance of really contributing to this transformation in the food system.

In my opinion, Holt-Giménez provided a serious eye-opener with these statements. This also opened my eyes to the idealistic view most AFNs have. The problem has shown to be very complex, but the solutions AFNs propose to it often seem quite superficial. On the other hand, instead of calling them superficial, one can also perceive them to be optimistic.

One big question still remains: why do many AFNs not take up this discourse of "9 billion by 2050" or only moderately? Relating the discourse to AFNs, it would seem logical for AFNs to incorporate the discourse in their terminology. The main elements underlying the discourse correspond to the main goals adopted by AFNs. This implies that AFNs do address this discourse, they just do not use the exact phrase as significantly as other actors do (e.g. news entities, governments). The reason not to use it, may be because they just do not need to use it. The core elements they stand for, such as food sovereignty, food justice, pleasure of food or fair trade, already show a link to global food security. What I am wondering is, if this discourse of "9 billion by 2050" and all it implies already corresponds to the statements made by AFNs, why don't they use it anyway as an eye-catcher? The potential of influencing the food system may even increase using a strong headline like this discourse.

Now I have read and thought about this discourse for eight weeks, I have made up my own opinion about it as well. Taking in consideration the different perspectives I have come across, I think it does not necessarily matter which food system will prevail, but it is more important that the different food

systems will all adopt a more sustainable way of producing food. By this, I do not just mean sustainable for the environment, but also for society and economy. When food as well as income and, maybe even most importantly, resources are distributed more equally on a global level, many problems could possibly be solved. In the Global North, a decrease in the amount of food available could restrict the amount of food that is wasted and even possibly influence diet-related diseases such as obesity. However, to decrease diet-related diseases, it is also necessary to educate consumers and improving the availability of local, fresh and healthy products for an affordable price. In the Global South, poverty may be reduced by increased production (because of resources) and increased incomes. The increased availability of food may decrease malnutrition and hunger. However, increasing the livelihoods of populations in the Global South, may increase the pressure on food again due to a higher demand. This is something that needs to be taken into consideration in future policies and action plans of fighting food insecurity.

Nonetheless, this really is the picture perfect. Performing this research I also realised I should not be too naive. When these changes were to be made, there is much more to it than I just explained. Furthermore, I agree with Food First (section 4.4), that if these solutions are so great, why have they not yet been implemented?

The conclusion I want to draw here, is that we should start by raising more awareness and by educating people better about the complexity of the discourse. This does not just count for producers and consumers in general, but especially AFNs should be well informed on this topic as they represent part of the actors able to spread the word.

REFLECTIONS

Reflection on conclusions and process

While writing this thesis, I have faced several challenges.

First of all, the problem examined in this thesis – achieving food security with 9 billion people on the earth by the year 2050 – is very broad and complex. There is a wide range of factors influencing the problems faced in the world connected to this discourse. Besides, there are a lot of different opinions about and perspectives on this discourse. Since I only had eight weeks in total for this thesis, the amount of information on the discourse and the many aspects that are influenced by it were quite overwhelming.

Second of all, to narrow my research down, I focussed on Alternative Food Networks. However, these networks are still very broad and include many different kinds of entities. The term 'Alternative Food Network' is a quite abstract term among which many different organisations may be included. The entities satisfying the characteristics assigned to AFNs often do not call themselves an 'Alternative Food Network'. Some call themselves a Non-Governmental Organisation (NGO), or a non-profit organisation, but then they still turn out to contain all characteristics of an AFN. Furthermore, I made my research even harder by deciding to search for global AFNs only. This complicated my research, because most AFNs seem to operate at a national, regional or local level. Many times, I thought I found a global AFNs because they stated they operated at an international level, but they turned out to work only at a European or North-American level, which were not the AFNs I was looking for. Because of these problems, the database I have made is quite disappointing to me. I had expected to collect many more AFNs. However, the global AFNs I have collected are valuable and I was still able to select AFNs for case studies and draw conclusions from my findings.

After exploring the two main concepts – "9 billion by 2050" and AFNs – they had to be connected to each other. The way in which I tried to connect them was by simply googling the name of the AFN and "9 billion by 2050". Furthermore, I searched for "9 billion by 2050" (or just "9 billion" or "2050" or only "billion") whenever there was the option to search within the website of an AFN. I also looked on social media to see if AFNs were talking about the discourse. The outcomes this gave varied between different AFNs and the amount of hits I got while searching for this link were often quite disappointing. This made it harder to analyse the way in which the discourse is framed by AFNs. when AFNs do not take up the discourse very much, it is hard to say something about the way in which they frame the discourse. Furthermore, it was sometimes hard to even search for the link. For instance, the AFN 'Urban Farming Global Food Chain' does not have an option to search within its website and when I googled the name of this AFN and the discourse, the most hits did not concern the AFN, but just urban farming or urban agriculture in general.

Coming to the conclusion of this thesis, I first did not really know what to write. Once I got started and wrote down the connections that could be made between the discourse and AFNs, the writing went by more smoothly. Connecting AFNs to the main elements underlying the discourse was not something I had planned to do, but as I listed the findings from my research, this connection became clear to me. By connecting these aspects, the structure of the conclusion became more clear.

Besides the challenges, there were also many thing I learned and interesting findings. First of all, it was very interesting to learn more about the discourse since it is a topic that is very current. There are more factors influencing and underlying the discourse than meets the eye. It was interesting to analyse the different perspectives on the discourse. Just when one perspective seemed

reasonable and convincing, another perspective criticised the first perspective and my own view on the problem would shift as well. The complexity of the discourse is immense, especially because it concerns all people over the world. All these people have different interests which influence their way of interpreting the discourse.

This complexity also counts for AFNs. The wide range of different kinds of AFNs present today is much bigger than I would have thought. Even though this may not count for global AFNs, it was interesting to find out how many initiatives are present at national, regional or local levels.

Personal reflections

In this part of the reflections, I will reflect on the way in which I experienced writing my thesis. Deciding what I was going to write my thesis about was the first step to take. I knew I was interested in Alternative Food Networks and this led me to meet my supervisor Jessica Duncan from the Rural Sociology Group. During our first meeting we talked about these networks and she proposed the discourse to me as a topic for my thesis. After another two meetings, I came to the topic I wrote my thesis about.

Then I had to begin and that is always the hardest part. Writing a proposal is never my favourite part of a research. However, this proceeded quite smoothly and within a week and a half, I had completed the proposal and was able to move on.

Staring my thesis, I was very excited to really accomplish something on my own and to become an expert on a certain topic. I was less excited about the long days in the library, because I was not used to working long days for eight weeks straight. However, the idea that many friends were going to write their thesis at the same time was encouraging. The effort it eventually took to work on my thesis every day for eight weeks was much less than I initially expected. The fact that I had planned certain deadlines was a good encouragement to keep on working. Besides my own deadlines, I was part of the Thesis Ring – a group of students who give each other feedback – in which I had to hand in my proposal, a draft chapter and the draft conclusion. This caused for even more deadlines. Besides getting feedback on my own documents, I had to give feedback to others which was very instructive. By reading the documents of others, I got new ideas a for my own thesis, but also realised what mistakes can easily be made. During the meetings with this Thesis Ring, many tips were given which were helpful and I got the chance to ask questions about things I had trouble with myself. I am very glad I joined the Thesis Ring since it was a great support besides the support I got from my supervisor.

Writing my thesis was sometimes quite challenging. As stated before, the challenges I faced with my topic and the search for AFNs was sometimes frustrating. Besides the trouble with finding global AFNs, the discourse of “9 billion by 2050” was very broad. The hardest part about this was to make decisions about what I should or should not include. Demarcating the discourse could be hard, especially as I was very interested in all the different aspects of this discourse. If I would have had the time, I would have definitely wanted to explore the discourse in further detail. It is such a current topic which concerns everyone on earth, so this makes it very complex, but also very interesting.

Once I decided which demarcations I was going to make writing my thesis proceeded more smoothly. However, I still worried whether I had found enough results. As the concepts I was working with were quite challenging, I was afraid the results would not be sufficient. In the end, I am quite satisfied with the results and the way in which the conclusion turned out. In the conclusion a lot of things finally fell into place. The conclusions may be a bit superficial or general, but I think this is inevitable with such broad concepts to analyse in such a short period of time.

All in all, I very much enjoyed writing my thesis. I have learned a lot about performing a literature study and the discipline that is required. In the process, I learned things about myself to. The effort to get up early every day and to keep working till five in the afternoon was much less than I expected, because this thesis was my own responsibility. The feeling of responsibility contributed significantly to my motivation. Besides, my interest in the subject was a great motivation.

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APPENDIX I

Name AFN	Reduce distance spatial/social	Quality	Sustainability	Contrast conv. food system	"9 billion by 2050"	Mission	Category[3]	Source
Slow Food International	Spatial	X	X	X	XX	"To prevent the disappearance of local food cultures and traditions, counteract the rise of fast life and combat people's dwindling interest in the food they eat, where it comes from and how our choices affect the world around us." Ensuring access to *good*, *clean* and *fair* food.	1	http://www.slowfood.com/international/1/about-us
Fair Trade International	Social	X	X	X	XX	"Fairtrade is an alternative approach to conventional trade and is based on a partnership between producers and consumers. When farmers can sell on Fairtrade terms, it provides them with a better deal and improved terms of trade. This allows them the opportunity to improve their lives and plan for their future. Fairtrade offers consumers a powerful way to reduce poverty through their every day shopping." "Fairtrade standards are designed to support the sustainable development of small producer organizations and agricultural workers in the poorest countries in the world."	4	http://www.fairtrade.net/what-is-fairtrade.html http://www.fairtrade.net/aims-of-fairtrade-standards.html
URGENCI	Spatial	X	X	X	X	The international network for Community Supported Agriculture (CSA). Through CSA, URGENCI strives to achieve food sovereignty on a global scale. Defend health and fight against malnutrition. Triggering civic responsibility and therefore setting up social networks of solidarity. Addressing environmental and climate change issues.	2	http://urgenci.net/vison-and-mission/

[3] 1 = Social, 2 = Environmental, 3 = Economic, 4 = Justice, 5 = Quality, 6 = Healthy.

Friends of the Earth International	Social	X	X	X	XX	"Our vision is of a peaceful and sustainable world based on societies living in harmony with nature." FoEI campaign on the most urgent environmental and social issues. They challenge the current model of economic and corporate globalisation, and promote solutions that will help create environmentally sustainable and socially just societies.	2	http://www.foei.org/about-foei/mission-and-vision
IFOAM	Spatial and social	X	X	X	XX	"Our vision is the worldwide adoption of ecologically, socially and economically sound systems that are based on the principles of Organic Agriculture". These principles divided in four categories: health, ecology, fairness and care.	5	http://www.ifoam.bio/sites/default/files/poa_english_web.pdf
La Via Campesina	Spatial	X	X	X	X	"La Via Campesina is the international movement which brings together millions of peasants, small and medium-size farmers, landless people, women farmers, indigenous people, migrants and agricultural workers from around the world. It defends small-scale sustainable agriculture as a way to promote social justice and dignity. It strongly opposes corporate driven agriculture and transnational companies that are destroying people and nature." Furthermore, La Via Campesina strongly defends food sovereignty.	3	http://viacampesina.org/en/index.php/organisation-mainmenu-44
Demeter International	Social	X	X	X	X	Demeter is a brand for products from Biodynamic Agriculture. A holistic approach to agriculture is adopted and the organic, holistic, requirements from Demeter exceed government regulation. This entails, among others, elimination of the use of synthetic fertilisers, chemical pesticides and artificial additives in the processing stage. "Demeter	2	http://www.demeter.net/what-is-demeter/this-is-demeter

						farmers and processors actively contribute toward the shaping of a future worth living for, creating healthy foods of distinctive tastes, truly "Foods with Character". Demeter - the Brand you can trust in."		
The Institute for Food and Development Policy: Food First	Social	X	X	X	XX	"The mission of the Institute for Food and Development Policy, better known as Food First, is to end the injustices that cause hunger. Food First envisions a world in which all people have access to healthy, ecologically produced, and culturally appropriate food"	4	http://foodfirst.org/about-us/
Local Futures	Spatial	X	X	X	XX	Local Futures' mission is to protect and renew ecological and social wellbeing by promoting a systemic shift away from economic globalization towards localization. Through its "education for action" programs, Local Futures develops innovative models and tools to catalyze collaboration for strategic change at the community and international level.	2	http://www.localfutures.org/about/mission/ http://foodfirst.org/about-us/our-work/
The Urban Farming Global Food Chain	Spatial	X	X	X	X	"The Urban Farming™ mission is to create an abundance of food for people in need by supporting and encouraging the establishment of gardens on unused land and space while increasing diversity, raising awareness for health and wellness, and inspiring and educating youth, adults and seniors to create an economically sustainable system to uplift communities around the globe."	2	http://www.urbanfarming.org/about.html
AeroFarms	Spatial	X	X	X	XX	"AeroFarms® is a mission-driven company leading the way to address our global food crisis by building, owning, and operating farms that grow locally flavorful, safe, healthy food in a sustainable and socially responsible way, setting a new standard for totally controlled agriculture." "We build and operate responsible farms	2	http://aerofarms.com/story/overview/

						throughout the world enabling local production at scale to grow safe, nutritious, and delicious food."		
Grassroots International	Social	X	X	X	XX	"Grassroots International works in partnership with social movements to create a just and sustainable world by advancing the human rights to land, water, and food through global grantmaking, building solidarity across organizations and movements, and advocacy in the US. Grassroots International envisions a world in which a universal commitment to the health and well-being of the earth and all its peoples, fueled by successful global movements for economic and climate justice, has transformed production practices, consumption patterns, and economic and social relations to ones based on sustainability, equity, and the rights to land, food, and water."	3	http://www.grassrootsonline.org/who-we-are http://www.grassrootsonline.org/issues/food-sovereignty