

DEPARTMENT OF PUBLIC ADMINISTRATION

POLICIES BY THE DUTCH GOVERNMENT IN ORDER TO PROTECT VULNERABLE GROUPS DURING EXCEPTIONAL CRISIS SITUATIONS IN THE FOOD SYSTEM

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ABSTRACT

Scholars claim that the war in Ukraine causes food insecurity on a global scale. Food insecurity arises often far away from the battlefield and the war in Ukraine is a war between two major, agricultural powerhouses. As much as 12% of global calories is traded by Russia and Ukraine. Most of the literature focuses on the effects for food insecurity in the MENA (Middle-East & North-Africa) region and does not speak about groups that are particularly vulnerable to this. Therefore, this thesis examines policies that the Dutch government could implement in order to protect its vulnerable groups during this exceptional crisis situation in the food system. We performed a scoping review to do our research, using certain keywords in multiple databases. We did an initial screening of literature, followed up with a full-read if deemed useful. We look at historical accounts of famine and identify vulnerable groups. We also look at food insecure groups in rich, western countries and identify patterns between these two groups. Our results show that there is a large degree of overlap between the two groups and perhaps our most profound finding is that having a low income has proven to be the strongest predictor of food insecurity. We also found that the Netherlands already has a very sophisticated infrastructure in place that identifies vulnerable groups. We looked at historical accounts of famine and identified policies that were effective in mitigating the crisis. We divided these policies up into four categories according to a theoretical model derived from the literature. Namely, subsidies, incentives, capacity-building and system-changing. We demonstrate that governments dealt with famine by implementing similar policies. Most notably, that of allowing unconditional relief to vulnerable groups. We also found that the Dutch government has already dealt with previous crises in other domains by utilizing these same four categories of policies. We are under the impression that the Dutch government is able to protect vulnerable groups during exceptional crisis situations in the food system because: 1) vulnerable groups in the Netherlands can quickly be identified due to its sophisticated civil registry system. 2) Among other determinants, income is the strongest predictor of food insecurity and the Dutch government already has numerous effective policies into place to protect low-income individuals. 3) The infrastructure protecting vulnerable groups has already been stress-tested before during previous crises in other domains, e.g. COVID-19 and the energy crises of the recent winter. 4) The Dutch government has a rich history of successfully implemented policies that fall within the four categories of policies we just described, showcasing both historical and recent achievements. Limitations and gaps do remain. For example, scholars agree that the long-term effects of this war are still very uncertain. Also, technological advances in the past forty years may change the nature policies by a large degree. Lastly, the political and demographic situation in the Netherlands is very different from the countries we studied in this literature.

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SUMMARY

The war in Ukraine is argued by scholars to cause food insecurity on a global scale. This thesis examines policies that the Dutch government could implement in order to protect vulnerable groups during an exceptional crisis situation in the food system. The study addresses two primary questions: 1) identifying vulnerable groups in the Netherlands, and (2), evaluating policies that the Dutch government can implement to protect these vulnerable groups. We performed a scoping review in order to do our research, using certain keywords in multiple databases. We did an initial screening of literature, followed up with a full-read if deemed useful. To answer the first question, we look at historical accounts of famine and identify vulnerable groups. We also look at food insecure groups in rich, western countries and identify patterns between these two groups. Our results show that there is a large degree of overlap between the two groups and having a low income has shown to be the strongest predictor of food insecurity. We also found that the Netherlands already has a very sophisticated infrastructure in place that identifies vulnerable groups. Especially in regards to the most important predictor, namely, having a low income. To answer the second question, we looked at historical accounts of famine and identified policies that were effective in mitigating the crisis. We divided these policies up into four categories according to a theoretical model derived from the literature. Namely, subsidies, incentives, capacity-building and system-changing. We then looked to policies implemented by the Dutch government in the past in order to mitigate crises, both crises in the food system and crises in other domains. Our results show that governments dealt with famine by implementing similar policies. Most notably, that of allowing unconditional relief to vulnerable groups. We also found that the Dutch government has already dealt with previous crises in other domains by utilizing these same four categories of policies. We are under the impression that the Dutch government is able to protect vulnerable groups during exceptional crisis situations in the food system because: 1) vulnerable groups in the Netherlands can quickly be identified due to its sophisticated civil registry system. 2) Among other determinants, income is the strongest predictor of food insecurity and the Dutch government already has numerous effective policies into place to protect low-income individuals. 3) The infrastructure protecting vulnerable groups has already been stress-tested before during previous crises in other domains, e.g. COVID-19 and the energy crises of the recent winter. 4) The Dutch government has a rich history of successfully implemented policies that fall within the four categories of policies we just described, showcasing both historical and recent achievements.

1. INTRODUCTION

1.1 PROBLEM DESCRIPTION

February 24th, 03:40 Kyiv time (GMT+2) would mark the beginning of the biggest military attack on a European country since the Second World War. Aside from the devastating loss of life, displacement of people, refugee streams and increases in poverty, the war also has had far reaching impacts beyond Ukraine. Armed conflict can be a key driver of food insecurity, affecting regions far beyond the battlefield (Behnassi, Haiba 2022). The war in Ukraine is argued to cause food insecurity around the globe Hassen and Bilali (2022), causing a serious blow to commodities markets, most notably those of food and energy. The Russia-Ukraine war is a war between two major agricultural powerhouses, that are major players in the food and fertilizer industry. They are considered the breadbasket of the world, and produce and export crucial commodities such as minerals, energy and fertilizers. Global patterns of trade and production are affected and disrupted, leading prices to remain at historically high levels, in other words, threatening food security (Hassen & Bilali, 2022). This war came at an exceptionally bad moment because food prices were already higher than usual, caused by disruptions in the global food supply chains during the COVID-19 pandemic.

According to the United Nations Global Crisis Response Group on Food, Energy and Finance (GCRG), ripple effects from this war are generating consequences from which no country can escape (GCRG., 2022). People all over the world are already facing a cost-of-living crisis which has not been experienced for a generation (Chen, 2022). The prices of food, energy and fertilizer in particular are going through the roof. In the Netherlands alone, consumer goods and services were 10% more expensive than a year before¹. The UN categorizes this cost-of-living crisis in three dimensions. Rising food prices, rising energy prices and tightening financial conditions. They estimate that 1.6 billion people in 94 countries are exposed to one of these three dimensions of the crisis (GCRG., 2022). And from those 1.6 billion people, 1.2 billion are in so-called perfect-storm countries. Which will in all likelihood be vulnerable to all three of these dimensions (food, energy and finance). The Secretary-General of the United Nations, Antonio Guterres warned the world with the following statement: *“For those on the ground, every day brings new bloodshed and suffering. And for people around the world, the war, together with the other crises, is threatening to unleash an unprecedented wave of hunger and destitution, leaving social and economic chaos in its wake.”* And this all happened in a world which was just recovering from the COVID-19 pandemic.

A war raging between two major agricultural powerhouses threatening food security around the globe, in addition to disturbing food supply chains and sharply increasing food prices. All happening while we are still recovering from the aftershocks caused by the COVID-19 pandemic. Is this an exceptional crisis situation for the food system? In 2013, the Dutch Ministry of Economic Affairs asked the LEI, De Landbouw, Economisch Instituut (Agriculture, Economical Institute) if food supply in the Netherlands would come under threat under exceptional crisis situations. The examples they provided for exceptional crisis situations included: long droughts, immense floods, big volcanic eruptions, massive epidemics among livestock, nuclear disasters or political conflicts. These events would in turn disrupt world trade and would lead to a situation where there would be no import or export anymore. The situation we are currently in does not measure up to the situations described in the report by LEI since there is still trade and there are no widespread famines or food shortages over two years after the war. However, like Hassen and Bilali (2022) found. A considerable amount of uncertainty surrounds the effect of this war on global food security in the medium (6 months – 2 years) to long term (>2 years). This uncertainty includes both the immediate costs of the war and the consequences of sanctions put upon Russia. In that context, the combined effect of the war and the sanctions will have a far-reaching impact on global agri-food markets and food markets. For that reason, it is interesting to examine the implications of an exceptional crisis situation for people living in the Netherlands.

In 2021, the Netherlands imported over two billion euros in goods from Ukraineⁱ. The vast majority of these imports consisted of cereals and cereal products such as maize. But also, fats and vegetable oils such as sunflower oil. In 2022, one report indicated this number to have fallen to a little over 1 billionⁱⁱⁱ (although this number was from January up to including October). As this war is being fought in Ukraine and the literature suggests that it disrupts global patterns of trade and causes worldwide food insecurity. The Netherlands is the second biggest exporter of food^{iv}, making it an important link in the global food trade. Despite this, Dutch people are not all food secure. The goal of this thesis is to examine how food vulnerable Dutch people might be impacted and the distributional implication of this require further education.

In light of this, this thesis asks:

Who in the Netherlands are most at risk of food insecurity during this crisis and what can we do about it?

1.2 RESEARCH GAP

Food insecurity during crises has been the object of intense scholarly interest. Multiple scholars have recently researched about war and its relation to food insecurity. The Ukraine War is a topic which has begun to attract scrutiny from scholars in this field. Hassen and Bilali (2022); Behnassi and El Haiba (2022); Kemmerling, Schetter and Wirkus (2022) argue that in a globalized world like today, whenever there is instability (i.e. armed conflict), food insecurity can arise. Armed conflict will weaken the ability of nations, households and individuals to secure their appropriate food needs. For example, growth and harvest, process and transport and the supply and market of food is impeded. War causes production to decline because the producers may be deceased or have fled the country. Agricultural yields and the necessary water infrastructure may have been damaged or destroyed. Purchasing power of people is reduced because jobs are lost. Generally, the literature finds that war causes food security by disrupting agricultural production, impeding agricultural exports and thus, causes the food supply chain to be disrupted. Sometimes these impacts affect places that lay far away from the battlefield. It also observes many socioeconomic consequences related to this war. For example, labour shortages due to conscription and population displacement. There is also a common theme that this war is occurring at a time where global food supply chains are already under increased pressure because of other factors such as the COVID-19 pandemic and a global energy crisis. Furthermore, there will surely be an impact on the feasibility of the sustainable development goals (SDG's). Most notably on SDG 1 (No poverty), SDG 2 (Zero hunger), SDG 12 (Responsible consumption and production) and SDG 16 (Peace, Justice and Strong Institutions) is achieved. The literature highlights the systemic weaknesses in the global food system during armed conflicts.

Within this body of work, however, very little is mentioned about vulnerable groups who will be particularly hard hit by the heightened food insecurity. Also, the literature does mention the possible negative consequences for the MENA (Middle East & North-Africa) region, but does not mention anything regarding a wealthy western country such as the Netherlands. We almost instinctively think that all people in wealthy countries have enough to eat but that is not the case.

Therefore, this thesis asks, "Who in the Netherlands are most at risk of food insecurity during this crisis and what can we do about it?" It breaks this overarching research question down into the following sub questions:

- **Who are vulnerable groups** – We study vulnerable groups during past times where there were crises situations in the food system, for example during times of famine, or during times of

(extreme) food-shortages. A research gap exists in the cross-referencing of this data to the food-insecure in the Netherlands currently. We can identify patterns and highlight groups that are at a heightened risk.

- **Which public policies** – We study policies during past times where there were crises situations in the food system, for example during times of famine, or during times of (extreme) food-shortages. A research gap exists in categorizing policies into classes of policy instruments and thus identifying patterns of effective policies.

In the following chapters you can find the synthesis of the literature on food insecurity and its causes. In chapter 2, we elaborated on what causes food insecurity and which groups are typically food insecure. Chapter 3 then proceeds with a description of methods. As we ask an exploratory question, a qualitative case study is the most appropriate design for this thesis. We chose for the Netherlands as a case study because the writer is from the Netherlands, and it is written from a University in the Netherlands. The Netherlands is also a major player in regard to global agricultural production. Therefore, making it an interesting topic of research. Many documents were studied and cited for this paper; a comprehensive list can be found in chapter 3 - Methodology. Historical context was provided with papers by Dreze (1991) and Moran (1982). Regional specificity and case-studies were provided the papers of Corbett (1987), Downing (1987), Devereux (2009b) and Neter (2020). Regional case-studies on the ground of food-insecurity were provided by Foley (2009), Kim (2011) and Carter (2010). Policy and governmental responses were examined by Deloitte et al (1986) and Cohen & Lewis (1987). The findings in chapters 4 and 5 suggest that during an exceptional crisis situation, there are a number of policies that can be implemented in order to achieve the best outcome possible. One of these policies is to provide unlimited relief to vulnerable groups. We see a strong comparison when looking at vulnerable groups in the Netherlands and comparing this to vulnerable groups during famines in the past in other countries. Factors that predict food insecurity in the Netherlands that also follow historical trends are: having a low income, having a lower education, being female and being of an ethnic minority. Another policy is to provide unlimited employment to the able-bodied. Thus, providing them with a stable source to obtain food rations or income. It is commonplace during exceptional crisis situations that people lose their job and its subsequent income. Providing unlimited employment is a way to still obtain this. With this mass employment, certain projects can be undertaken to help with the situation such as afforestation (planting of trees), soil conservation, road building and more. The policies implemented by government fall in roughly four categories, subsidies, incentives, capacity building and system changing. Chapter 6 is the discussion where we delve into the meaning and relevance of the results. We explain what we found and how that relates to the literature review in addition to explaining the limitations for this study. In chapter 7 we find a conclusion where we highlight the key arguments of the thesis, and we reinforce the main themes that have been established in the introduction.

2. WHO ARE USUALLY VULNERABLE DURING FOOD CRISIS SITUATIONS?

The aim of this thesis is to identify policies that the Netherlands could employ to address vulnerability during exceptional crisis situations. It is therefore necessary to understand what vulnerability is and which groups are typically vulnerable to crisis, and why. In this thesis we will often mention terms such as food insecurity or famine. Food insecurity is a phenomenon that is observed everywhere on the world including in rich, western countries. Famine is arguably the most severe form of food insecurity

and exposes those who are already food insecure. In other words, those who are food insecure during usual circumstances will be the first victims of famine. First, some definitions.

“Food insecurity exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain.” (Anderson et al, 1990).

Food insecurity can be defined as an inadequate physical and economic access to adequate foods^v.

In statistical terms, [famine] can be defined as a severe shortage of food accompanied by a significant increase in the local or regional death rate (Mayer, 1975: 572).

Famine is a socio-economic process which causes the accelerated destitution of the most vulnerable, marginal and least-powerful groups in a community, to a point where they can no longer, as a group, maintain a sustainable livelihood. Ultimately, the process leads to the inability of the individual to acquire sufficient food to sustain life (Walker, 1989: 6).

Around 2 billion people around the world are considered food insecure^{vi}. Many people think that food-insecurity is solely an occurrence in low- and middle-income countries. On the contrary, although the western world has not seen a famine in a long time, food insecurity also appears to be a prevailing common health issue in high-income countries. Being a high-income country does not mean there are no food insecure groups within these countries^{vii}. As much as 9% of citizens in high-income countries are suffering from a moderate or severe form of food insecurity. Furthermore, research showed that from certain disadvantaged neighbourhoods in the Netherlands, food insecurity prevalence stands at 26% (van der Velde 2020)

Both physical and economical access determines food security status. It may appear that physical access to food in prosperous countries is easier. However, there is evidence that suggests that certain European countries, including England and France, have so called food deserts. These are geographic areas with a limited or reduced physical access to healthy and affordable food. Even though these are prosperous western countries, these areas do exist. This is not the case for other European countries such as the Netherlands. (S Cummins & S Macintyre, 2002) (Food and Agriculture Organization of the United Nations 2018).

Vulnerability to food insecurity is not evenly distributed across the population. During times where food is insecure, or when famine arises, there are certain groups in the population who are far more vulnerable than others. We can learn about these groups by studying famines in the past. Vaughan (1987) commented, the old and the young were not only biologically more vulnerable to starvation. But they were also more socially at risk. Many people in both age groups were dependent on others for their food. They were unable to find their way to assistance and suffered the terrible consequences of the social breakdown that happened. He also said that old people were left to die, and young children were abandoned. When studying literature, we see that baby's, young children, pregnant women, women, the disabled and the elderly are at a far higher risk.

It seems that people in a dependency-relationship, i.e. children, pregnant women, elderly, disabled are especially at risk. Food insecurity is a form of vulnerability. Also, famine allows us to observe who is food-insecure very quickly.

Young children usually constitute the majority of the casualties during famine. One example of this is the Malawi famine of 2002. Between January and April, several hundred people in Malawi died of starvation or of hunger-related diseases. There is no official number for the amount of people who succumbed for the abovementioned reasons but the figure of several hundred is probably on the lower end. A more realistic figure is probably between one and three thousand (Devereux, 2002). The

mortality rate peaked in the months February and March and the highest casualties were concentrated in three groups. The first being the very young, the second being the elderly (most of which were members of child-headed and elderly-headed households) and the last group being the people who were already ill. This is also true for the famine of Somalia between 2011 and 2012. Approximately 52% (or 133,000) of the deaths consisted of children under five (Vaughan 1987). Vaughan (1987) described many young mothers and children being neglected without any means of support. During the famine of Sudan, over half of the excess deaths were constituted by children between one and four, the elderly were also at higher risk of dying (De Waal, 1989). Zhuravskaya (2021) studied the Ukrainian famine from 1932 – 1933 and also found that those who were eight years old or younger were more likely to die from famine than older cohorts. Provinces with the most ethnic Ukrainians also saw the largest decline in births and child survival after the harvest of 1932. As mentioned above in the Malawi famine, the second biggest group of casualties were the elderly. During this famine, social structures broke down that looked after vulnerable groups such as orphans and the elderly (Devereux, 2002). During the Somalian famine, Vaughan commented that the elderly were also a big portion of the casualties. As mentioned in 3.1.1, many young mothers were neglected during the Somalian famine. The United Nations also said that women who are at the brink of starvation, are at greater risk of death, disability or pregnancy-related complications. Additionally, if pregnant women and new mothers are weakened by malnutrition. They are simultaneously at a higher risk of contracting deadly diseases. Dyson and Ó Gráda, eds, (2002) claimed that starvation is negatively associated with the probability of healthy pregnancies or birth. Simultaneously it is positively associated with miscarriages and stillbirths.

The same groups are demonstrated to be vulnerable during famine every time. We expect these same groups to be food-insecure around the world.

2.1 FOOD-INSECURE GROUPS AROUND THE WORLD

In this paragraph, we will look at rich, western countries around the world that contain sections of the population that suffer from food insecurity. We expect the groups that are food insecure in rich, western countries to be the same groups that fall prey to famine in the historical accounts we just mentioned. We look at the literature and illustrate food insecurity in four countries. The United States, South-Korea, Australia and New Zealand. These four examples were chosen because the literature complemented our thesis both in terms of food insecurity and its victims, and the fact that these are rich countries where you would expect these cases to be rare. For instance, all countries are very wealthy and are listed high on the Human Development Index^{viii}. Data by the World Bank also demonstrates the high GDP per capita^{ix}. The countries are also situated on all corners of the globe, adding a layer of scientific robustness to the thesis because it shows that rich countries, wherever they are, suffer from a phenomenon like food insecurity.

The studies have highlighted the various factors that influence food security. Thereby revealing a complex multifaceted issue that is affected by socioeconomic and demographic factors. Globally, food insecurity is significantly influenced by gender, with women experiencing higher rates of food insecurity and being overall less food secure than men. For instance, in New Zealand, the percentage of women being food insecure was higher than in men. With 19% of women experiencing food insecurity against 12% of men. Also, both in South-Korea and in the United States, female headed households were more likely to be food insecure than male headed households. In accordance with our expectations based on historical accounts of famine, we saw age being an important determinant for food insecurity. We saw higher rates of food insecurity among elder-only households in South-Korea. Additionally, the same was true for children under 18 in Australia and younger people in New Zealand. Unexpectedly, we found that income played a major role in predicting food insecurity, being

the strongest predictor of all determinants. Income was the strongest predictor of food insecurity in New Zealand, and it played a significant role in the other three countries we studied. Educational level and employment status also determined food insecurity, with the exception of the United States. We also see higher rates of food insecurity among people that are part of an ethnic minority in most countries. For instance, Aboriginals in Australia and the Maori in New Zealand. Marital status also had an effect on food insecurity. Never being married predicted food insecurity in New Zealand and the same was true in South-Korea for single-person households. Disability status, a factor that we expected to be important given the historical accounts of famine, was not a very strong predictor of food insecurity in our data here. In South-Korea, households with disabled persons were more likely to be food insecure but there was no mention of it in other papers. Lastly, household composition also proved to be a very important factor. Families with children, especially when the children were young and if there were many children, are more likely to be food insecure in most countries studied. Additionally, solo parents and individuals who are not part of a family nucleus were more likely to be food insecure.

Literature:

United States: *Nord et al (2009)*

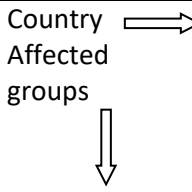
South-Korea: *Kim et al (2011)*

Australia: *Foley et al (2009)*

New Zealand: *Carter et al (2010)*

2.2 CROSS-CASE COMPARISON

As demonstrated in the research above, food insecurity is a pervasive issue that exists in many western countries with a high standard of living. Our research focused on personal characteristics that predicted food insecurity such as age, gender, income and household composition. In the table below, we illustrate the findings we wrote down in chapter 2.1. In the cells, you can find a small description of the finding to provide further context. With this table, we give a concise overview of our findings. It helps to answer our research question because we can quickly see the similar characteristics among food insecure groups around the world. In addition to that, we can cross reference this data with the data we gathered on food insecurity in the Netherlands and see if there are also similarities.

Country Affected groups 	United States (Nord et al, 2009)	Republic of Korea (Kim et al, 2011)	South-Australia (Foley et al, 2009)	New Zealand (Carter et al, 2010)
Gender	Single female-headed households (27.7%), Single male-headed households (16.3%)	Females (40.8% in food insecure HHs)		Females (19% vs. 12% males)
Age		Elder-only households	People younger than 18	Younger people
Income	Incomes below 185% of the poverty threshold (28.6%)	Lower income households (19.4% low food security, 6.3% very low food security)	Lower income	Receiving government benefits
Education		Lower education	Lower education	Lower education
Employment Status		Unstable job status (higher risk)	Unemployed	Unemployed
Marital Status		Single-person households		Never married (higher rates)
Ethnicity	Black, non-Hispanic (21.7%), Hispanic (17.2%)		Aboriginal households	Maori (men 21.7%, women 34.2%), Pacific (men 21.3%, women 33.0%), NZ/European (men 9.9%, women 16.6%), Asian (men 8.9%, women 11.4%)
Family structure	Households with children (14.8%), children under age 6 (15.3%)		Families with three or more children	Solo parents, individuals not part of a family nucleus
Disability status		Households with disabled persons		
Elderly		Elder-only households (higher risk)	Vulnerable older people (underrepresented in data)	

Because we did not specifically set out to look for income, this is perhaps the most interesting finding of section 3.2.

Will the Dutch case be the same as these countries? The United States, South-Korea, Australia and New-Zealand are different than the Netherlands. In terms of land area, they are (way) bigger, and some are emergent economies (South-Korea). New Zealand, and to a lesser degree South-Australia are also way more remote countries than the Netherlands. Population-wise the countries also have a larger population. The Netherlands is also a very connected country within a densely populated country in a rich area of Europe. That said, if women are at a higher risk of being food insecure in all studied countries, we expect this to be equally true for the Netherlands. The elderly were at a higher risk of being food insecure in New Zealand and South-Korea. The Netherlands has a lot of elderly people, however, their income has increased by 30% from 1995 to 2015^x. Keeping in mind that the Netherlands has a sophisticated social safety net. We don't expect elderly to be particularly high at risk in the Netherlands. Although we can't exclude the possibility completely. We expect ethnic minorities to be at a higher risk of food insecurity in The Netherlands. This was also the case for the United States, New Zealand and Australia and there are a lot of ethnic minorities in the Netherlands. Income has played a major role in predicting food insecurity in all country's studies. In New Zealand, it was the strongest predictor. We therefore expect the same for the Netherlands. Like mentioned before, the Netherlands is a very connected within a densely populated rich area in Europe. Because the Netherlands is very connected, we expect shocks in the food system to have very rapid real-time consequences. Additionally, if markets recover, we expect this to affect Dutch markets equally rapidly. The Netherlands has an accurate civil registry system and has a sophisticated social safety net. The Dutch are also world leaders in food innovation, most particularly coming from the Wageningen University. Therefore, we expect serious food insecurity to be rare. We also expect cases of food insecurity to be known because of sophisticated record keeping in the Netherlands. However, we do expect food insecurity to exist, and perhaps even on a bigger scale than expected. This is because in all studied countries listed above, food insecurity persisted, and researchers sometimes thought the true number of food insecurity may be even higher.

3. METHODOLOGY

3.1 TYPE OF RESEARCH

In chapter 1, we have demonstrated that war causes food insecurity around the globe. Often, this food insecurity occurs in places that are situated far from the actual battlefield. When investigating the topic of food insecurity, one notices that most of this research is done in poor nations with fragile economies. We want to shed light on this phenomenon in a wealthy, western country such as the Netherlands.

The question: *'Which public policies should the Dutch government implement to protect vulnerable groups when the Dutch food system is experiencing an exceptional crisis situation?'* is an exploratory question.

Essentially it seeks to investigate a topic where there is limited understanding and existing knowledge. They are also open-ended questions with the aim of gathering more knowledge and insight on the topic (Barroga & Glafera Janet Matanguihan, 2022). Therefore, we must decide what kind of review to perform for this study.

"A scoping review or scoping study is a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a

defined area or field by systematically searching, selecting, and synthesizing existing knowledge" (Colquhoun et al.)

Performing a scoping review here is imperative, as it allows us to extensively explore and delineate the current existing research. In addition to identifying gaps and provide a foundation for future studies addressing food insecurity in a wealthy nation under crisis.

3.2 RESEARCH DESIGN: A SCOPING REVIEW FOR THE NETHERLANDS

Why choose the Netherlands for this scoping review? There are several reasons for this. The first obvious reason being that the writer is Dutch and is studying at a Dutch University. Additionally, picking the Netherlands for the case study enables the usage of both English literature and Dutch. Also, as mentioned before in the introduction, prices in the Netherlands of food and energy are skyrocketing and inflation is currently very high. Meanwhile, we just found out that income plays a serious role in regard to food security around the world. Those two phenomena together give us reason enough to perform a scoping review for the Netherlands.

3.3 DOCUMENT ANALYSIS

In this paragraph, we elaborate on how the methods section of this thesis came about.

Studies were searched for in primarily three databases which overlap to a certain degree. These databases being the Scopus Database from the University of Twente, Elsevier Journal and Google Scholar, the most important keywords we used to find the article are: government, famine, actions, food-shortages, relief, prevention, causes, the Netherlands, food insecurity, scoping review, policy, vulnerable groups, mortality, manual. Dutch keywords included, hongersnood, hongerwinter, kwetsbare groepen, voedselonzekerheid, beleid, mortaliteit. Usage of Dutch literature was intentionally kept to a minimum for a couple of reasons. First, the study program is in English, for this reason, corresponding assignments and theses should be in English for all intents and purposes. Second, both supervisors don't speak Dutch, complicating the supervising process.

Screening of articles took place in two different dimensions. First, we screened potential articles for their title and abstract. When the article was deemed useful, it was included in the full-text review with a specific attention given to the parts of the paper that aligned with the topic of our thesis. The total dataset consists of 44 literary sources, 12 non-literary sources such as the website of the FAO, websites with statistics and more. Keywords provided us with the original literature. The papers by Dreze (1991), Devereux (2002), Neter (2020) are examples of this. Most literature, however, was found by reading the original literature and reading the papers that were cited in that article. the total time span covered in terms of publication date of the articles is 1946 – 2022 meaning 78 years.

Historical context is necessary when writing about a topic like this. The papers by Banning (1946) and Moran (1982) are examples of this and provide a valuable insight on historical accounts of famine. Thus, giving weight to the study and allowing the reader to put current findings into perspective. Furthermore, regional specificity and case-studies allow for a comparative analysis. Corbett (1987), Downing (1987), Devereux (2009b), Neter (2020) add to this body of research. Additionally, policy and governmental responses were examined by Deloitte et al (1986) and Cohen & Lewis (1987). Providing us with context of governmental policies in times of famine or food-shortages.

Below we present our findings for the Dutch case.

4. ANSWER TO SUB-RQ 1

We set out to answer the question: Who are usually vulnerable during food crisis situations? In the literature, we found that females were at a higher risk of being food insecure. This was true for almost all countries studied. In some countries, we found that elderly people were at a higher risk. In others, the young, the children, households with children or being an ethnic minority were at a higher risk. Income played a part in all countries and was the strongest predictor for New Zealand. Education also predicted food insecurity in some countries studied. In the Netherlands, expectations regarding food insecurity align with certain patterns observed in the studied countries. A higher risk for females, ethnic minorities and a role for income. However, due to the Netherlands unique characteristics (connectivity, strong social safety net, wealth and food innovation), we expect serious food insecurity to be rare. The presence of known cases is anticipated but the scale might be higher than we would have expected. Echoing the trends that we observed in the countries studied.

Research by Neter et al (2014) looked at 251 food bank recipients in the Netherlands to determine the level of food security. Of these 251 recipients, 93 were men and 158 were women. The inclusion criteria were the following. (1) at least 18 years of age, (2) sufficiently fluent in Dutch to participate in oral and written interviews, (3) recipient of a Dutch food bank for at least 1 month and (4) collect own food parcel at the food bank (Neter et al 2014., pp 1). Results indicated that households without children are less likely to experience low food security. Men were also less likely to face very low food security than women. Recipients with low education were more likely to experience very low food security.

Van der Velde (2020) studied the association between obesity and food insecurity. In this thesis, we don't research obesity, but the study by Van der Velde (2020) provides us with a lot of insights on the topic of food security in the Netherlands. Van der Velde performed a cross-sectional study among 250 participants who were living in a deprived urban area of the Netherlands. Questionnaires were used to retrieve data on demographic and lifestyle factors, food insecurity status and diet quality. In their results they showed that the overall prevalence of food insecurity was 26%. Of that, 18,2% experienced low food insecurity, 7,8% experienced very low food insecurity. In comparison to food secure participants, food insecure participants were more likely to have an income below the basic needs budget, they had a lower educational level, and were less likely to be employed. Furthermore, food insecure participants were more likely to have a non-western migration background, were more likely to be Christian, and less likely to be Islamic when compared to food secure participants. Food insecure participants were also more likely to be single parents and were more often smokers. Their self-reported health status was also more often worse than for food secure participants.

Janssen et al (2022) performed a cross-sectional analysis with the aim to identify determinants of food insecurity within three domains. Personal, social and the physical environment. They selected eligible participants on the basis of 4 characteristics. One, they lived in or near the six predetermined disadvantaged neighbourhoods in the city of The Hague. Second, they were older than 18. Third, they had at least one child who was younger than 18 years and was living at home. Fourth, they mastered the questionnaire language enough to complete the self-administered questionnaire.

Van der Velde used the 18-item USDA (United States Department of Agriculture) to assess food security status. The Dutch translation of this 18-item questionnaire was based on the same translation of Neter et al (2014) which used the back-and-forth translation method. The questions were related with the physical & economical access and dietary intake to food for the past 12 months in regard to the household in general and specific experiences of adults and children in that household^{xi}. Data was

collected from 307 persons and the following personal environment determinants predicted food insecurity.

- Higher BMI
- Having an income below the basic needs budget
- Low educated
- Current smokers
- Lower PCS (physical component summary) and MCS (mental component summary) scores
- Lowest diet quality scores



The following social environment determinants predicted food insecurity.

- Individuals who were currently not employed
- Living in a single-parent household
- Having a non-western migration background
- Being Christian (in comparison to Islam)

About a quarter of the sample experienced food insecurity. Personal environment determinants explained most of the variance in food insecurity (20,6%) whereas social environment explained 14% of the variance. There has been previous research done in the United Kingdom (Nelson M, Erens B, Bates B, et al. 2007) which also came to the same conclusion on prevalence of food insecurity.

4.1 CROSS CASE COMPARISON

The three aforementioned studies about food insecurity in the Netherlands reveal numerous similarities, though they differ on certain determinants. Some determinants were left out of the table below, for instance, lower PCS and MCS scores, religion and smoking status. This was done because there was no mention of this in the studies in the rest of the world. Gender emerged as a significant factor across the papers. However, unlike the pattern observed among famine victims, we did not find a correlation between old age and food insecurity in the Netherlands. Households with children were more likely to be food insecure. Consistent with global findings, we find a correlation between educational level, employment status and ethnicity on the one hand, and food insecurity on the other hand. We find strong correlations between income and food insecurity, in addition to household composition and food insecurity.

Paper  Affected groups 	Food bank recipients Neter et al (2014)	Dutch disadvantaged neighbourhoods (van der Velde et al 2020)	Dutch disadvantaged neighbourhoods (Janssen et al 2022)
Gender	Very low food security more prevalent in women (37.3%) than men (16.1%)	The study population consisted predominantly of women, no further gender differences explored due to uneven distribution.	Majority of participants were female (87.3%).
Age	Not associated with food insecurity. However, significant interaction: older participants who are recipients for a shorter period less likely to experience low food security.	Not associated with food insecurity.	Not associated with food insecurity.
Income	Receiving government benefits	Lower income households (19.4% low food security, 6.3% very low food security)	Lower income
Education Level	Low education associated with very low food security.	FI participants had a lower educational level.	Low education increases risk of food insecurity.
Employment Status	Not associated with food insecurity.	FI participants less often currently employed.	Currently unemployed participants at increased risk of food insecurity.
Ethnicity/Migration background	Not associated with food insecurity	FI participants more often had a non-Western migration background.	Non-Western migration background increases risk of food insecurity.
Household composition	Households without children less likely to experience low food security	FI participants more often single parents.	Living in a single-parent household increases risk of food insecurity.

4.1.1 The Netherlands, a typical case?



In terms of food insecurity, there were some striking similarities between the Dutch population and the populations of other countries. In the table below, we listed whenever a determinant was associated with food insecurity. Important to note, the determinants were associated with food insecurity in different ways. For example, for gender, Carter (2010) found that the prevalence of food insecurity was a lot higher for females than for males. Whereas for Kim, likelihood for household food insecurity was increased if the head of the household was female. The research overlaps for a great

part but sometimes differs a little bit in the details like demonstrated here. Therefore, we decided to simplify this in the final analysis.

X = association found in the literature

- = No association found in the literature

Cell left open = No mention of determinant in the literature / invalid because research was not conducted to study this determinant

Country 	Netherlands			United States	South-Korea	South-Australia	New-Zealand
<u>Author</u>	<u>Neter (2014)</u>	<u>Van der Velde (2020)</u>	<u>Janssen (2022)</u>	<u>Nord et al (2008)</u>	<u>Kim (2011)</u>	<u>Foley (2009)</u>	<u>Carter et al (2010)</u>
Affected groups 							
Gender*	X	-	-	X	X	-	X
Elderly >65	-			-	X		
Young <18						X	X
Lower Income	X**	X	X	X	X	X	X
Lower Education	X	X	X		X	X	
Employment Status	-	X	X		X	X	X
Ethnicity				X		X	X
Migration background	X	X	X				
Household Composition***	X	X	X	X	X	X	X

* If being female was associated with higher rates of food insecurity

** No specific mention, however, the literature was conducted on low-income food bank recipients. The entire paper is also written around the problem that many people can't afford sufficient nutritious food.

*** Either a family with three or more children, or a single-parent household, or a child as head of the household

Interestingly enough, income seems to be the most determinant of food insecurity. Income, together with household composition is consistently associated with food insecurity around the world. The relation between income and food insecurity is stronger than that of household composition and food insecurity. It was the strongest predictor in New Zealand, in the United States, the highest percentages of food-insecure households were found in households with incomes below the official poverty line and in South-Australia, food insecurity was strongly linked to economic disadvantage. It was a major player in every literary source used in the table above. We expected elders to be more food-insecure around the world but that was not entirely the case. The only strong association was found in the paper by Kim (2011). Because most of the literary sources specifically excluded minors, we cannot make definitive comments on the topic of minors being more susceptible to food insecurity. However, households with children were way more likely to be food insecure in these papers listed above.

We see that two out of three Dutch papers do not find an associated between gender and food insecurity. Whereas three out of four foreign papers do. We also found that migration background was

associated with food insecurity in the Netherlands, whereas ethnicity was associated with food insecurity in the foreign countries except South-Korea, where it was not mentioned. Ethnicity was mentioned in the paper by Neter (2014), and they defined it closely to how it was defined in the other two Dutch papers. Therefore, we listed it under migration background.

5. SUB-RQ 2: WHICH PUBLIC POLICIES SHOULD GOVERNMENTS IMPLEMENT DURING EXCEPTIONAL CRISIS SITUATIONS IN THE FOOD SYSTEM?

In this chapter, we ask the question which public policies governments should implement during exceptional crisis situations in the food system. The recent research of the impacts of the Russia-Ukraine war highlights that war can cause substantial declines in agricultural production, even in locations far from the battlefield. This may lead to socioeconomic consequences such as labour shortages and population displacement. All of this is happening while still recovering from the consequences of COVID-19. This, in turn, may threaten the achieving of SDG 1 (No poverty) and SDG 2 (zero hunger). Systematic weaknesses in the global food system are also revealed by the war. Which urges the adoption of stringent measures to make the system more shock-proof.

Understanding which public policies governments should implement during an exceptional food crisis situation is crucial. We looked at famine prevention in the past and discovered trends that worked across country and across time. The policies are divided up into four categories. Subsidies, incentives, capacity-building and system-changing.

5.1 POLICY TOOLS

First, we define policies that can be used by a government in situations like these. For this, we use the four generic classes of instruments as defined by McDonnell and Elmore (1987) and Schneider and Ingram (1990), mandates, inducements (or incentives), capacity-building and system changing.

Mandates, or subsidies, are defined as rules that govern the actions of agencies and individuals. They require compliance without the exchange of money and require enforcement. Mandates can yield significant benefits to vulnerable groups during a famine.

McDonnell and Elmore (1987) described inducements as: *“Inducements transfer money to individuals or agencies in return for certain actions.”* (McDonnell and Elmore., 1987., pp 134). Schneider and Ingram (1990) described it as follows: *“The incentive category includes tools that rely on tangible payoffs, positive or negative, to induce compliance or encourage utilization. Incentive tools assume individuals are utility maximisers and will not be positively motivated to take policy-relevant action unless they are influenced, encouraged, or coerced by manipulation of money, liberty, life, or other tangible payoffs. Inducements offer positive payoffs to encourage participation in policy preferred activity. The underlying assumption is that individuals respond to positive incentives and that most will choose higher-valued alternatives. Economic development policy uses tax credits or waivers, grants, relaxation of standards or requirements, provision of land, and so forth to induce firms to move to particular locations.”* (Schneider and Ingram., 1990; pp 515)

Capacity-building is the transfer of money for the purpose of investment in material, intellectual, or human resources (McDonnell and Elmore., 1987., pp 134). *“Capacity tools provide information, training, education, and resources to enable individuals, groups, or agencies to make decisions or carry out activities. These approaches assume incentives are not an issue, but there may be barriers*

stemming from lack of information, skills, or other resources needed to make decisions or take actions that will contribute to policy goals. Barriers often are found during the early part of the decision-making process or are created because individuals rely on decision heuristics rather than strictly rational, utility-maximizing, decision strategies.” (Schneider and Ingram., 1990; pp 517)

System-changing transfers official authority among individuals and agencies in order to alter the system by which public goods and services are delivered (Mcdonnell and Elmore., 1987., pp 134). System-changing is the transfer of official authority among individuals and agencies. The expected effect of system-broadening or -narrowing is a change in the institutional structure by which public goods and services are delivered and often a change in the incentives which determine the nature and effects of those goods and services. System broadening, as a policy instrument, is best understood by imagining a constant budget for a given public service—education or health care, for example—and then imagining some dramatic change in policy toward the provision of that service—allowing private schools to receive general public aid, for example, or nationalizing the provisions of health care. (Mcdonnell and Elmore., 1987., pp 139).

5.2 WHAT WORKED IN THE PAST

There is a lot of literature on successful policies that were implemented during crisis times. Lessons can be learned from what happened in the past. During the twentieth century, famines were apparently eradicated from Europe and Asia. The same cannot be said for Africa where three countries (Ethiopia, Niger and Malawi) have suffered massive casualties because of famine since the year 2000 (Devereux, 2010). We will utilize our framework of the policy-tools; subsidies, incentives, capacity-building, system changing and study past famines to check which have been implemented.

5.2.1 Subsidies

Declines in food production do not necessarily lead to famine. An example of this is Cape Verde. Cape Verde is perhaps the worst drought-affected country of all African countries. More recently, Cape Verde has experienced a period of basically uninterrupted drought between 1968 and 1986. Domestic food production had virtually gone extinct because of this. However, not only was famine averted in spite of this long period of drought. Significant improvements in the living conditions for the people of Cape Verde occurred during this period of drought. A policy was put in place that ensures adequate and predictable food supply by using food aid in a planned, competent manner even when domestic food supply is completely decimated. This food aid is bound to be sold wholesale in the open market. One of the destinations for this food aid were the vulnerable groups as described below.

Cape Verde has an entitlement protection system set up to protect vulnerable groups during times of food insecurity. Cape Verde is a very drought-prone country. It suffered an uninterrupted drought for almost twenty years between 1968 and 1986. One of the measures included providing unconditional relief to selected vulnerable groups. Which are pregnant women, undernourished children, the elderly and the invalid (Dreze, 1991).

The history of Kenya is also full of devastating droughts and famines just like the history of Cape Verde (Dreze., 1991). There is even an ongoing drought in Kenya during the writing of this thesis^{xii}. Back in 1980-1981, a drought of moderate intensity hit Kenya which led to a famine in the country. However, a couple of years later in 1984, a much more severe and widespread drought hit the country, but the Kenyan government managed to prevent this disaster situation into becoming a famine. The Kenyan government received a lot of praise for this. It has also been intensely studied in papers by Ray (1984), Deloitte et al. (1986), Cohen and Lewis (1987), Corbett (1987), J. Downing et al. (1987). Zimbabwe also suffered from a severe drought from 1982 to 1984 with the highest intensity in 1983. The government implemented an ambitious drought relief program in response to the disaster. Famine prevention

measures were implemented in early 1982 which also received a high degree of financial and political priority. Measures included take-home rations for adults and supplementary feeding for the children under 5 years of age. Most studies cite that over 50 percent of surveyed households were receiving free maize during the period of 1982-3 and 1983-4 (Bratton 1987). We see similar results for Burkina Faso (Kelly, 1987), Maharashtra (a state in India) (Dreze, 1991), Botswana (Dreze, 1991) and many more African countries.

5.2.2 Incentives

Botswana has also used incentives to combat food insecurity. One of the strategies used in its comprehensive Relief Manual is to provide unlimited employment to the able-bodied. Thus, making sure that everyone can earn wages or food even if they lose their job. (Gooch and Macdonald., 1981). The crisis in Cape Verde, as described in the previous paragraph was averted for multiple reasons. Not only the protection measures for the vulnerable. But also because of a large-scale relief program by Portugal who setup a program of makeshift work employment for cash wages (Dreze., 1991). Perhaps the most profound use of incentives to prevent famine was seen in the state of Maharashtra in 1972-3. During those years, a severe drought hit the state, but successful measures prevented it from turning into a massive famine. Massive public works programs were organized. At one point, as much as five million men and women were employed in these schemes. (Dreze, 1991)

Burkina Faso also set up a Food for Work program in response to the 1984 drought. Besides providing people a steady food source, they wanted to reduce the likelihood of dependency for its citizens if they kept only providing free food supplies. Migrants from other countries were also permitted here and received the same rations as Burkinabe (a citizen of Burkina Faso). (Kelly., 1987)

5.2.3 Capacity-building

In Cape Verde, the income generated by the food aid sold wholesale would go to the National Development Fund. Then, the resources of the National Development Fund will be used to put in place labor intensive public works programs with an orientation on 'development'. During the drought in 1983, up to 29,3 per cent of the population was involved in these labor-intensive public works. Examples of projects undertaken include afforestation (planting of trees), soil conservation, road building, soil conservation and more. These results of these projects were evaluated as positive. In Burkina Faso, some activities for capacity-building took place after the drought of 1984. In Ouagadougou, the capital, a project was undertaken to pump water from one dam to another. This was to extend the water supply for the capital. In addition to this, some other water resource management projects were performed including wells, dams and so called 'boullies' (a small tank or a depression that catches the first rains). (Kelly., 1987).

5.2.4 System changing



Botswana is a sparsely populated land-locked country which possesses many features that make it vulnerable to famine. It is prone to experience droughts, has experienced rapid population growth, suffered massive ecological deterioration and has seen its food production shrunk by a large margin. Additionally, economic growth has followed a somewhat unusual pattern in Botswana. Much of the growth can be attributed to diamond mining which barely benefits the rural poor. In the seventies, rural employment and wages were both going down even though the economy was experiencing growth. 1981 marked the beginning of a severe drought which would last until 1987. The rural economy which was already in bad shape suffered a recession during this period. Livestock mortality increased substantially, and crop yields decreased as well. Drought relief has been a high political priority in Botswana for a long time. Opposition parties also make promises to improve this if they get elected. Therefore, having sufficient entitlement protection schemes is necessary if the ruling political party wants to stay in power. By the time the drought hit the country. Botswana had already set up an

entitlement protection system. This system was the result of long processes of experimentation, evaluation and learning. Lessons were learned from droughts just before, in 1979-80, and from droughts in the 1960's and early 1970's. The drought in the 1979-80 did not develop into a large-scale famine. However, malnutrition, excess mortality and even starvation deaths were not completely avoided. The lessons learned from this crisis were not forgotten though. Detailed evaluation done by Gooch and MacDonald (1981) contributed greatly to the development of Botswana's entitlement protection system by making certain recommendations. The first of which included a Relief Manual providing comprehensive guidelines to drought relief. The drought lasted for 5 years and severely stress-tested Botswana ability to prevent famines. In the entitlement protection scheme were measures such as: (1) restoration of adequate food availability. Both by allowing food aid to enter the country, but also by buying up food in foreign markets. (2) setting up large employment schemes for cash wages. (3) Food distribution to selected groups (vulnerable groups) mentioned above.

For Kenya in 1984, it seemed that there was a very little role played by early warning systems. The detection of failure of rains in early 1984 and subsequent crop failure in addition to unusual increases in food purchases by the National Cereals and Produce Board was the call to action. Cohen and Lewis argued that political commitment made it possible that an early and adequate response to crop failures was implemented. Others were more skeptical. They said that the government was concerned that widespread famine would lead to political unrest and therefore took immediate action. Anyways, the government's first step to deal with the threat of a famine was to import massive amounts of food. There was a high availability of food stocks at that time. Therefore, the time lag involved in importing food did not result in a disaster. Additionally, Kenya had made a lot of earnings on the export of tea and coffee since the price of those products was very high at that time. This resulted in Kenya having a lot of foreign exchange reserves making importing food possible (Dreze., 1991).

5.3 CROSS-CASE COMPARISON

In analysing past governmental policies in combating famine, we have found that some policy tools worked effectively. Subsidies are the most effective policy, proving useful in protecting vulnerable groups within a short term. We see subsidies successfully being implemented on a large scale in every literary source. However, subsidies are a reactive policy and do not protect vulnerable groups for possible future crisis situations in the food system. Incentives also proved to be effective. As seen in Botswana, where they provided unlimited employment to the able bodied which ensured a steady income and thus, access to food. Also, capacity building, implemented by both Cape Verde and Zimbabwe with their large-scale public works and relief programs had positive effects. Lastly, system changes were made in Botswana with success, where a comprehensive manual for relief was made that encompassed many measures to combat famine. System changing was implemented to a lesser degree in Zimbabwe and Kenya, with the political system being committed to combat famine. Below, you can find a table with the policies implemented.

Country 	Cape Verde	Kenya	Zimbabwe	Burkina Faso	Botswana	Maharashtra (India)
<i>Author</i>	<i>Moran (1982), Dreze (1991)</i>	<i>Cohen and Lewis (1987), Dreze (1991)</i>	<i>Bratton (1987)</i>	<i>Kelly (1987)</i>	<i>Gooch and Macdonald (1981)</i>	<i>Dreze (1991)</i>
Policy 						
Subsidies	X	X	X	X	X	X
Incentives	X			X	X	X
Capacity building	X			X		
System changing		X	X		X	

5.4 POLICIES OF THE DUTCH GOVERNMENT TO PROTECT VULNERABLE GROUPS

The Dutch government has a lot of policies in place to protect the underprivileged but there are no direct governmental organizations providing food. The best-known place in the Netherlands to go to in case one cannot obtain sufficient amounts of food is the food bank. However, this organization relies on donations of supermarkets, organizations and individuals for its day-to-day operations^{xiii}. While Dutch government may not have policies in place specifically to provide food, the social safety net is one of the best in the world. Individuals with a very low income can apply for a welfare pension at their local county^{xiv}. Individuals with a disability can apply for a gift in the form of a disability allowance at their local municipality^{xv}. Parents can apply for childcare benefits^{xvi}. Since food-insecurity is mostly predicted by income, household composition, gender and other determinants as we see in chapter 3, we argue that this existing infrastructure that has already identified vulnerable groups, can be utilized in times of crisis situations in the food system. We know this because previous crises have already stress-tested this system. During the last winter where the energy prices skyrocketed, the Dutch government provided people with a low income who were already receiving welfare a €1300 allowance to cover their energy bills^{xvii}. Local municipalities could add to this and an example of this is the municipality of Arnhem with an additional €250^{xviii}. Another example is the TOZO-regeling by the Dutch government that financially helped entrepreneurs that had to close down their business because of Covid-19. Many more examples exist like TONK or NOW. Additional welfare is possible for high, incidental costs like a refrigerator or costs of moving^{xix}. The local municipalities also offer ways for people to get out of debt^{xx} and in certain municipalities, people with a low income can apply to receive a gift card with a certain credit on it that refills every year^{xxixxxiii}. They can use this card to receive huge discounts or full refunds on gym-subscriptions, going to the cinema, visit the zoo, puppy training and way more. Historically, the Dutch government has also effectively utilized incentive schemes in order to get people to work and stimulate economic activity during times of crisis. A notable example of this is the construction of the Afsluitdijk^{xxivxxv}. Which was an ambitious infrastructure project that provided immediate employment during times of economic turmoil, but also long-term benefits because of land-reclamation and flood defence. Another example of this are the Melkertbanen^{xxvi}. Which were employment positions created during economic recession. Other examples include the Crisis- en herstelwet^{xxvii} and the NOW^{xxviii}. Capacity-building projects have also played a part in strengthening the Netherlands' crisis resilience. A recent example we see here are the national vaccination campaigns^{xxixxxx}. Showcasing the country's ability to deploy resources to quickly resolve the crisis at

hand. Lastly, in regard to system-changing. We see the house of representatives in the Netherlands calling for changes in medicine legislation following up on an ever-greater shortage of medicine for local drug stores^{xxxixxxxii}. The current chip-crisis and changes in the geopolitical landscape caused the government to reduce valuable export to China for ASML^{xxxiii}.

Because of the sophisticated civil registry system and its corresponding welfare system that is already in place in the Netherlands, we expect it would be very easy to identify vulnerable groups during times of crises. This system has already been stress-tested during previous crises and help in the form of subsidies can reach the targeted vulnerable groups in the population. Historically, we see numerous successful implementations of policies during crisis situations in the form of incentives, capacity-building and system-changing. Because of all of the above, we believe the Dutch government can identify vulnerable groups during crisis situations in the food system and effectively implement policies in order to help them.

6. DISCUSSION

In this thesis, we have looked at historical accounts of famine, and recent research on food insecurity to identify vulnerable groups. We also looked at successful policies implemented during famine and categorized these policies into four categories. We then analysed the policies of the Dutch government during previous crises along these same four categories. Our results show that certain determinants predict food insecurity in a rich, western country such as the Netherlands. The strongest predictor we found was income. This was a predictor we did not expect to find beforehand. Meanwhile, we learned that the Dutch government already has a sophisticated civil registry system in place with a corresponding welfare system for low-income individuals. Therefore we have made the argument that; 1) vulnerable groups are easy to identify, 2) the Dutch government can easily implement policies in this already existing infrastructure to protect these vulnerable groups in times of crisis.

We add to the existing body of research in the following ways. First, by identifying the similarities between famine victims on the one hand, and food insecure groups on the other hand. Second, by categorizing the policies implemented during famines in the past into four distinct groups; subsidies, incentives, capacity-building and system-changing. Third, by identifying that income is the strongest predictor of food insecurity across multiple countries and studies. Fourth, by making an argument that the critical infrastructure to implement policies to protect the vulnerable is already in place in the Netherlands. Meaning, vulnerable groups are already on the governments radar. Low-income individuals can apply for welfare in the Netherlands, disabled persons can receive an allowance for their disability status and (single) parents receive childcare benefits. In addition to that, previous crisis situations have already stress-tested this system as we have seen during the extra allowances given to low-income individuals during the energy crises of the recent winter. Another example is the NOW-policy put into place to prevent employers from having to let go of employees because of corona.

One of the major limitations for this study is the limited research on food insecurity in the Netherlands. In addition to this, some of the papers had the same researchers working on them. Another limitation is the uncertainty regarding the impact of this war on global food security in the long term (>2 years). Additionally, many literary sources were written in books or journals but have not been (fully) digitalized. This is because there was a surge in droughts on the African continent in the eighties, leading to famines shortly thereafter and its corresponding coverage in the literature. In those years, digitalization was by far not as commonplace as today. Furthermore, there is a discrepancy in comparing literature about vulnerable groups during famine with literature on food insecurity. Many literature regarding food security is performed on households. Whereas many literature on famine and its vulnerable groups takes individuals as the baseline instead of households. Also, the limited

knowledge and skills of the researcher will most definitely have been a limitation. On an academic level, the researcher only speaks Dutch and English, potentially missing critical research conducted about this topic in other languages. For example, the war is predicted to cause the most problems in the MENA-region (Middle East & North Africa)

Gaps remain in a multitude of ways. First of all, it is not certain that the aforementioned critical infrastructure will remain in place if the crisis in the food system becomes too disastrous. In our introduction, we mentioned papers who delve deeper into the relation between war and food insecurity. They mention that chronic food insecurity can intensify violent conflict and lead to a ever greater vicious cycle of violence and hunger (Kemmerling et al 2022). We don't know if the critical infrastructure in the Netherlands will remain functional in case of serious violent conflict within our borders or violent uprisings. Second, the current median age of a Dutch citizen is a lot higher than its African counterparts in the countries we studied. This will make incentive schemes less effective if implemented in the Netherlands for two reasons. First, incentive schemes usually rely on demanding labour like soil-irrigation or road building which is not suitable even for all citizens under 65. Second, a large degree of the population has already retired and will be harder to convince to work in incentive schemes. This forces the Dutch government to rely more on policies in the form of subsidies, which is expensive and will be harder to maintain if this crisis lasts for years. Further researchers could delve deeper into the topic of food insecurity in rich, western countries and simultaneously check for policies adopted by these countries in order to mitigate this. It could be possible that research conducted in these countries have already pinpointed effective policies to mitigate this. Third, there is a large time-gap between the literature about famines that we studied in the past on the one hand, and the current situation we have right now on the other hand. Most of the historical occurrences of famine we studied happened in the eighties. Technology in multiple domains has advanced significantly in the intermittent time. Because of this, we now have technologies such as precision farming, genetically modified crops, drone technology or smart irrigation systems. Perhaps if the situation gets dire enough, we could rapidly employ these technologies and mitigate effects further than before. Also, to get back to our point made earlier in this paragraph about incentive-schemes perhaps being hard to put in place. With this modern technologies, these incentive-schemes can be designed in a way that would be way more accessible to an older, highly-educated population. If instead of road-building and soil irrigation, people need to learn how to genetically modify crops or fly drones over agricultural land, it would open up a lot of opportunities. Fourth, the political situation in the Netherlands is vastly different from that of the countries we studied. Political stability, robust democratic institutions and effective mechanisms for governance are all really helpful in executing the policies discussed in this thesis. In that regard, the Netherlands has an edge over the countries we studied. One could also make the case that the Netherlands has not faced a situation like this before and therefore, would actually perform worse on that regard. Although there was a famine in the Netherlands, this was not like the famines we studied. During this famine, the Netherlands was being occupied under German rule and the German government that was installed on Dutch soil actively blocked food entering the country. Therefore this is not a good comparison. A research gap therefore exists in analysing whether policies as described in this thesis would work under a Dutch political system, ingrained in the European Union.

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7. CONCLUSION

This research aimed to identify the groups in the Netherlands who are most at risk of food insecurity during crisis situations and to recognize useful policies to address this. By examining historical crises and recent data, the following key points emerged. In regard to vulnerability; Vulnerability to food insecurity has consistently affected the same groups during historical famines. These groups include: young children, the elderly, pregnant women and to a lesser degree women in general, the disabled and individuals in a dependency relationship. Food insecurity in western countries seems to follow the same trends in regard to vulnerability per group. Some notable differences were that income played the most important role in predicting food insecurity and the elderly were not as food insecure. In regard to policies; Historically, we see the same policies being successfully implemented by governments to combat famine. We decided to categorize these policies under subsidies, incentives, capacity-building and system-changing. Subsidies are grants in food or money, mostly provided to vulnerable groups. Incentives are work-schemes so that the able-bodied don't lose their income and can work in return for cash or food. Capacity-building are projects undertaken to mitigate the negative effects. Examples of this are: road building, soil irrigation and construction of water depressions. System-changing are policies implemented in the long-term to prevent future crisis from happening. Subsidies proved to be the most universally implemented policy and yielded great benefits to the targeted population. Examples of the Dutch government dealing with crisis situations show that the Dutch government already has a sophisticated social safety net put in place to protect vulnerable groups during crises. We see this in the welfare system which has already been stress-tested during the energy crisis in recent winters. Also, this welfare system also provides parents with childcare benefits and the disabled with an allowance because of their disability. We also see the Dutch government historically setting up employment schemes during times of unemployment. More recent examples of incentives by the Dutch government are the crisis- en herstelwet and the NOW. The same is true for capacity-building with its vaccination campaign and system-changing with legislation changes to mitigate current crises or prevent future crises from unfolding.

8. APPENDICES

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