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Food for thought: The meat industry - a threat to food security

Do consumers hold a moral responsibility to reduce meat consumption?

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Abstract

Food security exist when every human being is able to obtain adequate food and be free from hunger. This thesis sets out to explore the moral responsibility of individuals to enhance food security in the world by their consumer choices. More specifically, this research will investigate the negative impact of the meat industry on food security in the world and whether this impact entails a moral responsibility upon individuals to reduce their meat consumption in order to enhance food security. With the capabilities approach and utilitarianism as the theoretical tools, based on the evidence and the method of argumentation, this thesis finds that consumers hold a responsibility to reduce meat consumption as it is highly detrimental to global food security, not only on a moral basis but as a matter of social justice in the world. The emphasis of reduced meat consumption should ideally be of industrially produced sources, as they have the largest impact on both food security and environmental degradation.

Key Words:

Meat Consumption, Meat production, Food Security, Environmental Degradation, Capabilities Approach, Utilitarianism

Word Count: 13604

List of abbreviations

CA ..... Capabilities Approach

FAO ..... Food and Agriculture Organization of the United Nations

GHG ..... Greenhouse Gas

HDR ..... Human Development Report

WRI ..... World Resource Institute

Glossary

Biodiversity – Variations of plant and animal life in the world or in a particular habitat, a high level of diversity is often considered to be important and desirable

Climate change – Alterations in weather conditions and temperature on earth.

Environmental degradation – The deterioration of the natural environment through depletion of resources, the destruction of ecosystems, and greenhouse gas emissions.

Food scarcity – A shortage in the amount of food available for human consumption.

Food waste – Food intended for human consumption that is lost or discarded.

Fortified foods – Food in which additional nutrients have been added, e.g. vitamin B-12 and iron, to decrease the occurrence of nutrient deficiency.

Global warming potential – The potential effect of a greenhouse gas (see below) to contribute to the trapping of heat in the atmosphere, affecting climate change (see above).

Greenhouse gas – Any gas (e.g. carbon dioxide and methane) with the property of absorbing infrared radiation and therefore traps heat in the atmosphere, contributing to the greenhouse effect which affects climate change (see above).

Iron-deficiency anemia – Anemia, a condition of decreased in the number of red blood cells caused by a lack of iron in the body. It can lead to severe and sometimes fatal complications during pregnancy.

Mono-crop agriculture – The agricultural practice of growing a single crop every year on the same land, without rotating between different crops.

Smallholder farms – Smaller non-industrialized farms, often using the mixed-production system.

Soil degradation – A decline in the quality of soil due to improper use or poor management.

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1.0 Introduction

The Food and Agriculture Organization of the United Nations (FAO) predict that our world population will rise to nearly 10 billion inhabitants by the middle of this century. An alarming issue in light of this projection is the fact that we are already unable to feed everyone on our planet, as over 800 million people suffer from hunger and an additional two billion from micronutrient deficiencies.[1] We stand before a distressing reality where the need to reduce the effects of a growing world population on food security, and ensure future generations the means to obtain the necessary food, requires dramatic changes to our individual and collective lifestyles.

One of the largest opponents of food security, as well as environmental degradation, is industrial meat production. Global meat production has significantly increased since the 1960s, with a doubling of beef production, and a production of poultry which has increased almost tenfold.[2] The consumption patterns in the diet of our population have steadily followed, and a continually increasing demand for meat requires an immense expansion of crop areas for animal feed and pastures. This conversion of land has several consequences; first, it incites environmental degradation by e.g. deforestation and emissions leading to negative effects on climate change, second, the expansion of crop areas leads to an over usage of edible food for meat production which is a highly inefficient usage of resources, while the loss of edible food raises its prices[3], and third, the requirement of expanded land for pasture and animal feed crops leads to deforestation which in turn causes a large portion of the population to lose their means of income and food. [4] Therefore, with a drastically increasing global population, the need for securing food for everyone while preserving our natural environment will require dramatic changes to our food production and consumption patterns.

According to the FAO, we are currently producing more than enough food for feeding the world population, a substantial part of our population globally suffers from food insecurity. With 33 percent of agricultural lands used for livestock feed production and an additional 26 percent of the planet's ice-free surface used for livestock grazing and facilities, this elucidates the issue of food security as being caused by an inefficient food production system and poverty, rather than scarcity of resources.[5] Hence, the need for increased food production to match the expected global population growth is only required if our meat consumption continues to incite a growing meat

[1] Food and Agriculture Organization of the United Nations (2017) *The Future of Food and Agriculture: Trends and challenges*, p. X
[2] Thornton, Philip (2010) *Livestock production: Recent Trends, Future Prospects*, Philosophical Transactions of The Royal Society, p. 2854
[3] Rivers Cole, Jennifer and McCoskey, Suzanne (2013) *Does Global Meat Consumption Follow an Environmental Kuznets Curve?*, Sustainability: Science, Practice and Policy 9(2), p. 27-28
[4] Sunderland, Terry (2011) *Food security: why is biodiversity important?*, International Forestry Review. 13(3), p. 266
[5] Food and Agriculture Organization of the United Nations (2012) *Livestock and Landscapes*, p. 1

industry. Therefore, it is vital to examine whether it is morally right to continue the current rate of meat consumption, while millions of people suffer daily as a consequence of such actions.

1.1 Aim and research question

The prevalence of meat in our daily diet has in recent decades become the standard in the majority of households, with an almost threefold increase in consumption of meat products since the 1970s. Additionally, the FAO asserts that income growth in low- and middle-income countries will spur a transition towards even higher meat consumption.[6] Meanwhile, millions of people are suffering from a lack of adequate nourishment in many parts of the world as an indirect consequence of meat consumption. This becomes a question of morality and social justice on a global level, when the consumption patterns of affluent individuals indirectly affect the outcome of the lives of the poor members of the global population.

The aim of this thesis is to delve into the domain of the meat industry and its consequences on food security, to examine whether there is a responsibility not only for State actors and organizations but on an individual level, to address the issue of food security and diminish the effects that individuals have on food security, by their consumer choices. Equipped with the tools provided by the appropriate normative theories, the capabilities approach (CA), and utilitarianism, this thesis sets out to find an answer to the moral question of whether we as consumers have a responsibility toward the food insecure population in the world to change our eating habits. The thesis will be of an argumentative element and hence, it will be guided by the premises set out in the theoretical framework embedded in this thesis, the rules of argumentative research method, and the material chosen for this research.

The *research question* which will be studied in this paper is the following;

Is there a moral responsibility upon individuals to reduce meat consumption for the enhancement of food security in the world, from the perspective of the capabilities approach, and utilitarian discourse?

1.2 Delimitations

This thesis will certainly have its shortcomings; this is mainly due to the assigned size of the paper and the time allotted for research. In regard to the issue of food security, there are other factors which seriously affect food availability in the world. 'Food waste' encompasses an average of 650 million tons or roughly one-third of all food intended for human consumption going to waste owing to the entire food production chain, from harvest, transportation, and retailers, to consumer habits.[7] Another contributor is crops used in biofuel production, which in the United States alone

[6] Food and Agriculture Organization of the United Nations, *The Future of Food and Agriculture*, p. 46
[7] Food and Agriculture Organization of the United Nations, *The Future of Food and Agriculture,* p. 113

is produced in such quantities that it could feed over 300 million people annually.[8] Although these are enormous contributors to the issue investigated in this thesis, it is imperative to narrow down the subject as to adequately address the research problem. Further, meat consumption was chosen as the meat industry affects a variety of other issues, which has a detrimental impact on other areas of human security, such as environmental degradation and water scarcity, although as aforementioned, this thesis can only sufficiently elaborate on the issue of food security.

1.3 Relevance to human rights

1.3.1 Food Security

Food security is one of the items on a list of seven issues pertaining to human security, which was presented in the 1994 Human Development Report (HDR). [9] Human Security is an emerging paradigm broadening the traditional notion of security, it addresses vulnerabilities on a global scale at the human as opposed to the national level. The foundation of this multi-disciplinary understanding of security is rooted in the human rights paradigm among other fields of research. The notion of vital freedoms embedded in human security is underpinned in the universal declaration of human rights, leading scholars to argue that it is a subsection of human rights. The emphasis is on universal security, meaning it has global application, and it focuses on prevention from fear of want and fear of need, highlighting the need to encourage productive as opposed to destructive resources, which also is connected to the subject of the meat industry. Most importantly, human security, like the human rights paradigm is people-centered, meaning that human beings are the referent objective of security.[10]

Food security is further relevant in the subject of human rights as it is closely related to the right to adequate food, and the right to be free from hunger, which is recognized in the Universal Declaration of Human Rights, and the International Convention on Economic, Social and Cultural Rights. The description of this right is very similar to the definition of food security which will be presented in the following chapter, aside from the emphasis of rights on active state responsibility.[11] Hence, for as long as there are people suffering from food insecurity in the world, there exists infringements on individual's right to adequate food, and the right to be free from hunger.

[8] Sandler, Ronald (2015) *Food Ethics: The Basics*, New York: Routledge, p. 49
[9] United Nations Development Programme (1994) *Human Development Report 1994*, Oxford: Oxford University Press, p. 24-25
[10] Persaud, Randolph (2016) *Human Security*, in Collins, A (eds), Contemporary Security Studies, 4th edt. Oxford: Oxford University Press, p. 142
[11] United Nations Office of the High Commissioner for Human Rights (2010) *Fact Sheet No. 34, The Right to Adequate Food*, Geneva: OHCHR, p. 1-2

1.3.2 The Capabilities Approach

The CA is closely related to human rights and can be seen as an auxiliary framework that enhances the protection of freedoms which individuals enjoy under the rights paradigm. It involves similar entitlements encompassed by both so-called first- and second-generation rights, i.e. political and civil liberties, and economic and social rights.[12] There are two distinct elements of freedom which portray the difference between the two frameworks, that of opportunity, relating to what a person is able to do and be, and process, relating to the liberty of choice of one's actions, both of which hold vital importance. The former element is inherent in the capabilities framework whereas the latter is more connected to the rights paradigm.[13] Absence of freedom can derive from lacking voting privileges or other political and civil rights which relates to the aspect of process, whereas the aspect of opportunity may be impeded by an absence of vital opportunities such as the capability to avoid a premature death or starvation.[14] An example that might help elucidate the difference is that of work opportunities. Whereas providing the process freedom might enable everyone to pursue a career as a doctor without discrimination, it is unable to account for individual's opportunities where they may lack the means required to pursue such a career. At the same time, ensuring the opportunity freedom of providing every individual the means to pursue such a career will not ensure that the process freedom, i.e. equity is fulfilled. The capability approach cannot adequately address the process aspect of freedom, as capabilities are characteristic of individual opportunities. Hence, it acts as an auxiliary framework, to ensure the opportunity aspect of freedoms, whereas human rights address the issue of fairness or equity of the processes involved, and the freedom of citizens to utilize these procedures. Amartya Sen asserts that incorporating the CA better distinguishes whether a person has the ability to do the things personally valued and whether she possesses the means and permissions to pursue this. This helps identify fundamental differences in opportunities between individuals with the same means which the rights framework might fail to address, such factors might include; disability or chronic illness, access to public health care or societal cohesion, climate conditions or social position.[15]

1.4 Definition of concepts

1.4.1 Food security

Food security is defined in the 1994 HDR report and it illustrates a condition where everyone has continuous physical and economic access to food that can provide the required amount of nutrition

[12] Nussbaum, Martha (2007) *Frontiers of Justice: Disability, Nationality, Species Membership*, Cambridge: First Harvard University Press, p. 284
[13] Sen, Amartya (2005) *Human Rights and Capabilities*, Journal of Human Development 6(2), p. 152
[14] Sen, Amartya (2000) *Development as Freedom*, New York: Alfred A. Knopf, Inc, p. 17
[15] Sen, *Human Rights and Capabilities*, p. 154-155

and nourishment. This requires not only that there is enough food for everyone but that the food is readily accessible and that everyone is entitled to food by growing, harvesting or purchasing it.[16]

1.4.2 Meat industry

The meat industry can be divided into three different production systems, industrial, mixed, and grazing systems. In the first system, animals are separated from the land and their natural feed supply, i.e. grassland and therefore, the animals in this production system is dependent on other supplies of feed, i.e. grain and cereals which have to be imported. It also has a larger environmental impact as the demand for external feed requires vast resources, and a larger impact on food security as the animals require crops that are edible to humans. The second system integrates crop production and livestock agriculture on the same farm and therefore needs no external input in terms of animal feed. It has a smaller impact on the environment and food security as it does not diminish biodiversity at the same scale as the former system, and it requires no importation of animal feed. The third system integrates the animal with its natural environment, allowing the animals to graze, with over 90% of the feed coming from non-agricultural sources. It has a smaller environmental impact as it requires a low quantity of agricultural crops for feed and a lower impact on food security as it does not require food edible for humans.[17]

1.5 Previous research

Throughout the scholarly research in the field of food security, meat production, and meat consumption three elements have been identified as recurring themes; Dietary changes, sustainability in the livestock sector, and policymaking in food production systems. The themes identified are interrelated and converge at times, although the main difference is whether the focus should be on reducing meat consumption, transforming food production systems or emphasizing changes in food production policies.

1.5.1 Dietary changes

Dietary changes concern mainly the issue of increasing meat consumption and emphasizes reducing meat consumption to address the impacts on both food- and environmental-security. Most scholars agree that the reduction of meat in our everyday diet is an inescapable solution to adequately address food security while researchers such as Martine Helms note that the other alternative to addressing food security, expanding and intensifying food production, which is counterproductive as it will hasten the already existing issue of soil degradation and climate change, and consequently lead to a reduction of existing areas for agriculture.[18] Helms argues in her research

[16] United Nations Development Programme, *Human Development Report 1994*, p. 27
[17] Food and Agriculture Organization of the United Nations (2014) *Production Systems*, [website], para. 3-5
[18] Helms, Martine (2004) *Food sustainability, food security and the environment*, British Food Journal, 106(5), p. 384

that our current meat production and consumption causes immense harm to human welfare through both environmental degradation and food scarcity while proposing to partially replace animal proteins with plant proteins, and further arguing that 'western' countries are suitable for such dietary transition for ethical consideration of both animals and other humans.[19]

Hans Dagevos and Erik de Bakker gather and analyses data on consumer behavior to determine trends of meat consumption and 'meat-reduction' in diets, in their data they find a growing consumer group of 'flexitarians', individuals who abstain from animal protein in their diet occasionally as an ethical choice.[20] They use this to argue against strict coercion on consumers for mitigating meat consumption as it would negatively affect the view of consumers as the main adversary to the issue of sustainable food consumption. Instead, they propose various ways to approach the issue by including consumers as proponents of a transition towards sustainable food production.[21]

Jessica Johnston, Jessica Fanzo and Bruce Cogill in their article propose a transition towards sustainable diets by proposing the development of a holistic approach, encompassing a variety of actors apart from consumers. The authors emphasize that sustainable diets need to encompass not only what our diet consists of, but how and where the food is produced, its effect on our health and the economic viability for farmers, from smallholders to largescale industries. This would enhance food and nutrient security for individuals and alleviate health issues resulting from obesity and environmental degradation while ensuring economic sustainability for smallholders. The authors propose a variety of factors to be included for sustainability in diets to be fully comprehended, such as agriculture, health, socio-cultural norms, and economy.[22]

Perhaps the most comprehensive study, and the most aligned with this thesis is the research done by Ronald Sandler in his monograph. He assumes the position that in order to ensure global food security, a holistic approach must be embraced, which includes altering habits of meat consumption, reverting policies which redirect food from reaching dinner tables, such as subsidies on livestock agriculture and biofuel production, in addition to non-coercive population reduction policies, such as increasing the opportunity for women's education. He uses ethical argumentation based on human rights, moral duties, and social justice to forward his position, and one of his concerns is that affluent nations and citizens have historically been a major contributor to global

[19] Helms, p. 380, 385
[20] Dagevos, Hans and de Bakker, Erik (2012) *Reducing Meat Consumption in Today's Consumer Society: Questioning the Citizen-Consumer Gap*, Journal of Agricultural and Environmental Ethics, 25, p. 881
[21] Dagevos and de Bakker, p. 891
[22] Johnston, J, Fanzo, J and Cogill, B (2014) *Understanding Sustainable Diets: A Descriptive Analysis of the Determinants and Processes That Influence Diets and Their Impact on Health, Food Security, and Environmental Sustainability*, American Society for Nutrition, 5, p. 422-424

inequalities leading to food security, hence, they hold a moral responsibility to address food security issues facing the global population.[23]

1.5.2 Sustainability

The second view looks at food insecurity not as an issue of meat consumption, but of unsustainable food production. Researchers holding this view argue that the modern way of livestock agriculture is unsustainable and emphasize a shift is needed towards sustainable practices in the livestock industry. The issue of food insecurity needs to be addressed by increasing the amount of food produced, while the detrimental effects of current food production need to be carefully considered and avoided.

Charles Godfray and Tara Garnett in their article advocate for a framework called sustainable intensification, which is directed towards ensuring food security by a transition to, and intensification of, sustainable food production. The increase should chiefly concern existing agricultural lands and in livestock agriculture, paying attention to the animals and their welfare, in terms of health and appropriate animal nourishment, may assist in the goal of increased food production.[24] Martin Scholten, Imke de Boer, Bart Gremmen and Kees Lokhorst are also proponents of introducing animal welfare as a key aspect of sustainable livestock agriculture. They argue for the inclusion of a conceptual framework called 'livestock farming with care', which is founded in care ethics and based on four principles; 'One health', noting the interdependence of animal and human health, 'customized care', caring for, and respecting the integrity of individual animals, 'no nuisance', mitigating environmental degradation while maintaining biodiversity, and 'credible performance', ensuring responsible and trustworthy livestock production with viability for farmers in the entire production chain.[25]

Terry Sunderland offers a different approach in his articles, emphasizing that biodiversity has a vital role in ensuring sustainable practices in food production. A vital remark is that food insecurity is mainly of concern to the impoverished population, and an estimated one billion individuals globally rely on foraging wild plants and hunting wild game as their main source of nutrition and income. The introduction of commercial agriculture in such areas would reduce biodiversity by deteriorating the existence of other plants, insects, and animals and consequently leave a significant number of individuals without any means of feeding themselves.[26] Tony Weis is another author advocating biodiversity, arguing that "rising meat consumption on a world scale –

[23] Sandler, p. 49-50, 60
[24] Godfray, Charles, Garnett, Tara (2014) *Food security and sustainable intensification*, Philosophical Transactions of the Royal Society. 369, p. 4, 8
[25] Scholten, Martin, de Boer, Imke, Gremmen, Bart and Lokhorst, Kees (2013) *Livestock Farming with Care: towards sustainable production of animal-source food*, Wageningen Journal of Life Sciences. 66, p. 3-4
[26] Sunderland, p. 266-267

and its driving force, industrial livestock production – must be seen as a central, inescapable part of this deeper food crisis"[27]. He asserts that a large contributor to maintaining the industrial-scale food production is the subsidies provided by states towards industrial agriculture. This, in turn, gives the industry an illusion of efficiency, which is mainly based on the low prices of industrialized food. He notes that the industries depend on non-renewable resources and have detrimental effects on the environment, poverty and global inequality which need to be included in calculating efficiency.[28]

The last authors to propose a transition to sustainable food production, Zuhaib Bhat, Sunil Kumar, and Hina Fayaz, propose 'in vitro' meat production, the production of meat by culturing stem cells from farm animals through tissue-engineering, as a viable source of animal proteins in the future. This would remove the animal from meat production, which in turn releases grains and cereals to for human consumption while avoiding the demand for reduced meat consumption, and further, it will avoid the various problems associated with livestock agriculture, e.g. animal welfare, antibiotic-resistant bacteria, environmental degradation and depletion of fresh water sources, etc.[29]

1.5.3 Policymaking

The third view investigates policies on food production which may have a negative effect on food security. Researchers arguing for this view concentrate on policies which are put in practice to alleviate food production but are often counterproductive towards food security. The issue of food security needs to be addressed by critically analyzing policies of food production and providing the necessary information for policymakers to make the most efficient decisions.

Paula Arcari critically analyses policy-discussions and documents from a variety of Australian institutions and international actors, e.g. the United Nations Environment Programme, the World Resource Institute (WRI), and the FAO, and highlights themes recurring throughout the actors. Two of the themes that the author finds in her research include first, the discourse of animal food products as "natural and necessary elements of our food system"[30], reinforcing the view that meat consumption neither should nor can be reduced, and secondly, while discussing animals, the wording is structured as to de-animate the animal in the production industry to normalize animals as a source of food and a natural part of the food industry. This type of discourse encourages the

[27] Weis, Tony (2013) *The meat of the global food crisis*, The Journal of Peasant Studies, 40(1), p, 67
[28] Weis, p, 65
[29] Bhat, Zuhaib, Kumar, Sunil and Fayaz, Hina (2015) *In vitro meat production: Challenges and benefits over conventional meat production*, Journal of Integrative Agriculture, 14(2), p. 241
[30] Arcari, Paula (2017) *Normalised, human-centric discourses of meat and animals in climate change, sustainability and food security literature*, Agriculture and Human Values, 34, p. 83

continuation of practices which are well-documented to have detrimental effects on the environment, food security, and human health.[31]

Trevor Wilson highlights the importance of smallholder farmers in low-income countries and notes their value to food security and sustainability, in comparison to industrial livestock agriculture. The former relies mainly on livestock instead of fossil-fueled tractors for plowing fields, which diminish the contribution to environmental degradation, and further the livestock feed on plants, as opposed to grain and cereal, converting plants inedible for humans to a protein food source. The emphasis is that policymakers often miscalculate the benefits of animals in non-industrialized agriculture which leads to inadequate measurements of efficiency and hence, policies on food production.[32]

Mindi Schneider investigates the concept of 'meat grabbing', existing contracts on landmass negotiated for the development of industrial livestock agriculture, and critically analyses the occurrence of meat grabs in China. In her findings, she presents that the contracts emphasize land deals as an action for ensuring food security when in reality, the contracts are equally often related to commercialization and capital gain as they are to food security.[33] In light of this, she proposes developing a framework for analyzing meat grabs which emphasize sustainability, and this framework should include; 1) A clear illustration of complications on food security posed by the industrialization of livestock agriculture, 2) An account of harm, emphasizing how meat grabs affect social inequality and environmental injustice, and 3) An analysis of the relation between people and agroecosystems through reviewing the dispossession of land, food, and water from individuals and communities through land deals.[34]

The previous research undertaken by scholars reveals a part of the vast territory that surrounds food security in relation to meat production and consumption. Although every researcher presented agree that meat production in some form is an obstacle to realizing global food security, few authors agreed on the causes and solutions to the issue. Even fewer look at the moral implications of meat consumption on the large population who are unable to obtain adequate nourishment on a daily basis. Only one author presented, Ronald Sandler, examines this area and although his research is wide-ranging, it is not focused enough on the issue as to effectively explore this field. Therefore, it is the hope of the author that the research contained within this paper will assist in filling the gap of knowledge on the moral implications of meat consumption.

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[31] Arcari, p. 69, 73
[32] Wilson, Trevor (2009) *Livestock and Food Security with Special Reference to the Developing Countries*, in Amsel, L & Hirsch, L (eds), Food Science and Security. New York: Nova Science Publishers Inc, p. 233, 247
[33] Schneider, Mindi (2014) *Developing the meat grab*, The Journal of Peasant Studies, 41(4), p. 629
[34] Schneider, p. 629

1.6 Chapter outline

This paper consists of five main chapters with several subsections, followed by a glossary and the list of references. The first chapter introduces the research problem, the aim and research question, delimitations and relevance to human rights of the thesis, including a presentation of previous research within the field. The second chapter presents the theories which will be used in this paper and applied in the analysis. The third chapter introduces the reader to the method used in the thesis, with a brief description of the method. The fourth chapter contains the analysis, where the argumentation of this thesis, and the standpoint of the author, is presented. Additionally, this is where the theories are applied to the argumentation. The final chapter concludes the research within this paper by briefly outlining each step of the research process, including the findings of the research within this paper, in addition to some final remarks on future research.

2.0 Theoretical framework

The theories chosen for this thesis are the capabilities approach, which is a theory of social justice, and utilitarianism, which is a theory of ethics. Both approaches are normative, asking questions such as 'what ought to be?', 'what is the morally right action?' and 'what does social justice demand?' and hence, they align with the research question of this paper. The former is chosen as it is closely related to the rights regime as aforementioned, in addition to its characteristics of illustrating what social justice demands by asserting a minimum threshold of capabilities. The latter is chosen as it is an egalitarian theory which develops the notion of morality in actions, and further, it correlates with the research question of this thesis, determining whether a certain action is morally right or wrong. Additionally, the utilization of a theory triangulation, exploring a research problem from more than one source of information or viewpoint, further increases the validity of the results. The CA explores the minimum threshold of social justice, and utilitarianism examines the moral aspect of an action, hence, the two theories complement the findings of one another. The former assists in determining whether some individuals have the responsibility to help others, whereas the latter contributes in defining whether an action should be endorsed or not based on its moral value. The second theory is also chosen as it is contested by the proponents of the CA, and thus, it might add value to evaluate the results of opposing theories.

2.1 Capabilities Approach

The CA originated as an alternative to the utilitarian discourse on quality of life which, at the time, had been the main influential view within discussions on development and policy. Using the utilitarian approach, the quality of life in a given country was assessed by looking at the gross national product per capita of nations. This method of evaluation index has since become

discredited for not displaying disparities in the distribution of wealth and income.[35] The development of the CA has inspired innovative statistics and social indicators, and a new policy paradigm, the United Nations Human Development Programme, which encompasses the development in the entirety of human lives, emphasizing the individual as opposed to earlier measurements of economies.[36] The CA is a normative theory, and thus, it cannot explain notions such as poverty, inequality, or well-being, but instead assists in conceptualizing them. Nonetheless, the notions of functionings and capabilities can be utilized in descriptions of poverty, inequality, and social change or to engage in explanations of social phenomena[37] Ingrid Robeyns notes that the CA hold two core normative assertions; "first, the claim that the freedom to achieve well-being is of primary moral importance, and second, that freedom to achieve well-being is to be understood in terms of people's capabilities, that is, their real opportunities to do and be what they have reason to value".[38] The pioneer of the CA, Amartya Sen emphasizes the utility of the approach in investigating individuals' ability to pursue and be what they value when asserting that poverty can be better defined as capability deprivation rather than assessed by a standard of income, which he illustrates through three main points. First, the approach focuses on deprivations which are intrinsically significant, as opposed to income, which is only instrumentally important. Second, other factors may affect capability generation and deprivation, income is not the only means of generating capabilities. Third, the way in which income may have an impact on capabilities varies between different communities and individuals.[39]

Another scholar who significantly developed the CA is Martha Nussbaum who asserts that the approach focuses on the "conception of the dignity of the human being, and of a life that is worthy of that dignity", while rejecting the measurement of resources as the sole indication of well-being. She emphasizes Marx concept of the human being as a being "in need of a totality of human life-activities"[40], which marks the foundation of her approach. Nussbaum utilizes the CA to provide a philosophical foundation for the concept of core human entitlements, which portray a minimum threshold level of what respect for human dignity entails.[41] Sen is, however, reluctant to propose a canonical list of human capabilities, due to both the issue of specifying a list suiting a variety of peoples' in different contexts, as well as from a reluctance to weakening the domain of public debate. In his view, the capabilities framework strengthens this domain as it involves ethical and

[35] Nussbaum, *Frontiers of Justice*, p. 71
[36] United Nations Development Programme (2019) *About Human Development*, Human Development Reports, [website], para. 6
[37] Robeyns, Ingrid (2006) *The Capability Approach*, Stanford Encyclopedia of Philosophy, [website], para. 8
[38] Robeyns, para. 1
[39] Sen, *Development as Freedom*, p. 87-88
[40] Nussbaum, *Frontiers of Justice*, p. 74
[41] Nussbaum, *Frontiers of Justice*, p. 74

political issues.[42] In contrast to Sen's view of the entitlements inherent in the CA as subject to public debate, Nussbaum emphasizes that these entitlements are pre-political, not merely prescribed by policy-making and law, and the basis of the claim to these entitlements arise by an individual's very existence as a human being. Hence, she holds that a nation which does not recognize the entitlements inherent in the very characteristics of the human species is to this extent unjust.[43]

Nussbaum's list contains ten central human capabilities, although she notes that this is only a partial account of social justice, a minimum threshold of portraying the requirements of a life with dignity. 1) Life, the ability to live a full human lifespan, 2) Bodily health, the ability to achieve good health, nourishment and shelter, 3) Bodily integrity, the ability to move freely without fear of violence, including choices in reproduction, 4) Senses, imagination and thought, the ability to use the senses, imagine, think and reason, all in a 'truly human' way, 5) Emotions, the ability to build relationships and care, and emotional development without being blighted by fear and anxiety, 6) Practical reason, the ability to form a conception of the good and critically reflect on one's life plans, 7) Affiliation, the ability to live with and towards others, including equal treatment, 8) Other species, the ability to live in harmony with animals, plants and the natural world, 9) Play, the ability to enjoy recreational activities, laugh and play, 10) Control over one's environment, the ability to enjoy political participation and property rights.[44] The list provided by Nussbaum is quite abstract, and she proposes that the capabilities will be specified further by each nation and their constitutional laws or basic principles. Given the variety in culture and history, nations retain some space for variation in the capabilities, provided that the underlying purpose is not diminished. As aforementioned, the ten capabilities are a given minimum threshold of what is demanded by social justice, to be provided for one's citizens.[45] The author of this thesis has compiled a list of the following 'central human capabilities' which may be affected by food scarcity, and thus, relevant in the context of this thesis.

2.1.1 Life

The first capability of Nussbaum's list is 'life'. It encompasses not only to have the opportunity to live a normal human life-length, i.e. not dying prematurely, but it includes having the opportunity to enjoy a life worthy of human dignity.[46] Of course, a normal human life-span varies throughout different societies and cultures, etc., for example in Europe, the average life expectancy overall was

[42] Sen, *Human Rights and Capabilities*, p. 157
[43] Nussbaum, *Frontiers of Justice*, p. 285
[44] Nussbaum, *Frontiers of Justice*, p. 75-78
[45] Nussbaum, Martha (2011) *Creating Capabilities: The Human Development Approach*, Cambridge: Harvard University Press, p. 40
[46] Nussbaum, *Frontiers of Justice*, p. 76

in 2016 at just above 77 years of age, whereas in Africa the life expectancy lay just above 61 years of age at the same time.[47] However, many lives are ended much earlier due to lack of available food, resulting in malnutrition and death. Further, a staggering number of infants and children receive severe irreversible consequences due to micronutrient deficiency, resulting in stunting, brain damage, and blindness, depriving them of a life worthy of human dignity.[48]

2.1.2 Bodily Health

The second capability, 'Bodily Health' entails the opportunity to enjoy good personal and reproductive health, and to be adequately nourished.[49] The requirement of adequate nourishment and personal health is clearly and directly related to food security, although reproductive health may need some elaboration. As aforementioned, insufficient nourishment can have serious consequences on the infant, although it also has devastating effects on future mothers. The preventable disease iron-deficiency anemia alone is the cause of 20 percent of all maternal deaths, with roughly 50 000 women dying in childbirth annually from lack of iron in their diet.[50]

2.1.3 Emotions and Practical Reason

The fifth and sixth capability in the list are 'emotions' and 'practical reason'. Emotions encompass the opportunity to develop emotional attachments to things and people outside ourselves, as well as not having one's emotional development impeded by anxiety and fear. Practical reason involves the opportunity to form a conception of the 'good' and being able to plan and critically reflect on one's life and future.[51] The reason for combining the two capabilities is because they are similarly affected by food insecurity, as an absence of both capabilities induces negative consequences on an individual's mental condition. Children and adults who do not have access to continuous adequate nutrition often suffer negative consequences on their mental development, while suffering from fear and anxiety of economy and inadequate access to food often causes negative emotional symptoms and development.[52] Additionally, individuals or families worrying over whether they will have food for the next few days do not have a probable opportunity to adequately reflect over their future life wishes or prospects.

2.1.4 Other Species

The eighth capability, 'other species' regards having the opportunity to live with concern for and in relation with non-human species, i.e. plants, animals and the natural environment. This capability

[47] World Health Organization (2018) *Life expectancy and Healthy life expectancy*, [website], table
[48] Food and Agriculture Organization of the United Nations, *The future of food and agriculture*, p. 80-81
[49] Nussbaum, *Frontiers of Justice*, p. 76
[50] Food and Agriculture Organization of the United Nations, *The future of food and agriculture*, p. 81
[51] Nussbaum, *Frontiers of Justice*, p. 76-77
[52] Ogundele, Michael (2018) *Behavioural and emotional disorders in childhood: A brief overview for paediatricians*, World Journal of Clinical Pediatrics, 7(1), p. 17

in relation to food security is affected by the meat industry as aforementioned in the research by Sunderland. Rising meat consumption will inevitably lead to further industrialized meat production and expanded areas for furthering such practices leading to deforestation. This type of meat production diminishes biodiversity by removing other species, and as an estimated one in seven people globally rely on wild plants and wild animals for sustenance in form of income and nourishment, it will severely affect their food security and relation to other species.[53] Further, the natural environment is affected by climate change induced in part by meat production which leads to increased land degradation, reduced crop harvests and less available areas for agriculture in the future, enhancing the issue of food security.[54]

The approach designed by Nussbaum is more developed and detailed, presenting a clearer structure for implementing a framework on individuals' actual capabilities in varying life situations. Further, it is presented as a global rule, owed to every individual on the virtue of belonging to the human species, similar to the basis of entitlement of the rights regime. For these reasons, this thesis will utilize her perspective of the CA.

2.2 Utilitarianism

In the history of philosophy, utilitarianism has been among the most forceful and influential approaches in normative ethics. The theory is a form of consequentialism, meaning that an action is deemed morally 'right' or 'wrong' solely in terms of the consequences produced. Although there are differing views among utilitarian scholars, a general consensus is the view that morally right actions are the actions that produce an overall satisfaction, or 'good'.[55] One distinguished element of the consequentialist position is that an action which is generally deemed morally wrong, such as lying, can be morally right based on its outcome. For example, in Nazi Germany, it could be considered morally right to lie to the authorities regarding the presence of Jewish individuals hiding in your house, as the consequences of telling the truth would have a more severe outcome. Peter Singer asserts that two components are vital in the utilitarian narrative of satisfaction; 1) Higher satisfaction, must be measured through 'net satisfaction', ensuring the incorporation of negative consequences of an action, such a suffering and misery, into calculations of satisfaction, and 2) If two different actions would hold equal value of producing satisfaction, either of them should be endorsed.[56] The theory holds traits of impartiality and agent-neutrality, one person's good can never be valued higher than another person's good, therefore the reasons to promote the overall good is

[53] Sunderland, p. 266-267
[54] Food and Agriculture Organization of the United Nations, *The future of food and agriculture*, p. 5
[55] Driver, Julia (2014) *The History of Utilitarianism*, The Stanford Encyclopedia of Philosophy, [website], para. 1-2
[56] Singer, Peter (2011) *Practical Ethics*, 3rd edt, New York: Cambridge University Press, p. 2-3

the fact that the majority will benefit from it.[57] Utilitarianism further rejects moral codes and practices such as those based on customs, traditions or supernatural beings, as the moral rightfulness of an action is justifiable solely on the basis of its positive contribution to human (and non-human) beings.[58]

Utilitarianism can be applied in practice to evaluate a wide variety of decisions made by different actors, e.g. individual or group actions, laws, policy-making and moral codes, and determine whether the decisions are morally justified. However, utilizing this theory in practice require determining three elements of an action; 1) which consequences are considered good and bad, and how they should be weighed against one another, 2) whose good the action aims to maximize, and 3) whether the action or policy are measured as right or wrong by the actual consequences it produces, or the foreseeable consequences, i.e. the predicted consequences by an action endorsed.[59]

What is then considered good for utilitarian's? The pioneer of utilitarianism, Jeremy Bentham adopted a view now discerned as hedonism. His view describes the only thing that is good in itself as pleasure, or happiness. He distinguishes things such as food, friends, and freedom as instrumental goods in that they hold a causal role in producing pleasure or happiness, whereas pleasure and happiness are intrinsic goods in themselves, without producing further value. On the opposing end, a lack of food, friends, and freedom hold negative instrumental value as they produce suffering and misery, whereas suffering and misery are intrinsically bad. This emphasis on emotions has since been contested, as some philosophers have asserted there are many vital goods which are not related to emotion, e.g. good health and knowledge have been argued to be of intrinsic value in the pluralist view. A third approach endorsed by philosophers views desires or preferences as the valuable measurement, noting that whatever an individual desire hold value for that person. Where such desires come into conflict, the strongest preference is deemed good.[60] Whereas Bentham's work is admirable as it has led to a vast expansion of a theory of normative ethics, it has its shortcomings in emphasizing happiness and pleasure over other vital goods which are more easily quantifiable, and which may bring greater happiness through their incorporation in policies and actions. Hence, this thesis will utilize a pluralistic view, incorporating other vital goods apart from emotions, in the measurement of morality.

Whose good is to be considered when evaluating an action? Bentham and other utilitarians were proponents of social reform and thus mainly concerned with politics and law-making.

[57] Driver, para. 4
[58] Nathanson, Stephen (n.d.) *Act and Rule Utilitarianism*, Internet Encyclopedia of Philosophy, [website], para. 2
[59] Nathanson, para. 6
[60] Nathanson, para. 7-8

Therefore, their main focus involved public policies to determine which actions would maximize the good of the relevant group. The good of the group is determined by what would yield the greatest happiness regardless of personal interests, the greatest amount of people should be satisfied while evaluated whether that happiness outweighs the suffering of the minority of individuals.[61] Another approach which Peter Singer presents as 'the principle of equal consideration of interests' holds that the interests of all affected by a certain action needs to be given equal weight in determining the morality of the action. For example, if A and B are affected by a certain action, and the interests of A would suffer to a greater degree, or if those interests weigh higher than the benefits to the interests of B, then the action is morally wrong and should be avoided. Further, the evaluation takes no account for whose interests they are weighing, everyone's interests weigh equally.[62] The research problem in this paper involves neither politics, nor law-making, and although there is a specified affected group, food insecure individuals, the latter approach seems more appropriate as this thesis regards morality of actions on a global scale. Hence, the principle of equal consideration of interests is better applied to this thesis and will be used in the analysis.

Should an action be judged for its actual consequences or its foreseeable consequences? This is a problematic issue as an action can only be evaluated once the actual consequences of the action differ from the expectations. This can be illustrated through the example of a drowning person; If a person is drowning and you decide to save this person, this is widely considered as the right action. However, if the person who was saved had plans to murder a large number of people, and after being saved fulfills the plan, the moral judgment of this action might be contested by the actual consequences of saving the drowning person. Utilitarian's promoting the foreseeable consequences-view might defend the actions of the individual rescuing the drowning person as the expected positive good outcome of the action is very high, since the probability of saving a drowning person will lead to the deaths of many other people is extremely low.[63] Of course, this is a very unusual case and is a lot easier to illustrate than socio-economic consequences of global action. The importance is to thoroughly examine facts and measure the interests of all affected, in both weight and quantity, when promoting an action due to its foreseeable consequences. The research problem in this paper is far too comprehensive, and there is far too little data to suggest actual consequences of reduced meat consumption. Hence, this thesis will assume the 'foreseeable consequences'-approach.

[61] Nathanson, para. 13, 16
[62] Singer, p. 20
[63] Nathanson, para. 18-19

3.0 Methodology

The research which is being conducted in this paper seeks to answer a question of normative nature, and therefore, to be able to answer the question of what ought to be, the appropriate method to use is one of argumentation. The method will be utilized in the analysis in addition to the two theories aforementioned, to determine whether consumers have a responsibility to reduce meat consumption. To enlighten the reader of the specific method used, a brief description of the argumentative method will follow.

3.1 Argumentative method

Argumentation in different variations is the method used when writing a philosophical thesis. In scholarly research, the style of argumentation differs in very important ways from a general view of argumentation, where many people inaccurately assume that argumentation involves stating one's predetermined opinions, in a 'verbal fistfight'. To present an argument entails offering a set of reasons or evidence supporting a given conclusion. These arguments are used in strengthening a specific view by providing reasons, and at times, by defending against opposing views.[64]

Anthony Weston asserts that determining and providing a conclusion is the first step in argumentative research, and this is followed by asserting a set of premises presenting the reasons for the argumentation. It is suggested to state the conclusion and set out the premises and line of thought clearly so as not to confuse the reader while also making the claims more persuasive. To assure the reliability of the argumentation, it is important to present premises which are truthful, it is wise not to generalize an entire population while a certain premise might only fit the description of the majority, or at a certain time, for example, "Nobody in the world today is really happy" would show poor reliability when arguing that human beings are not cut out for happiness. [65]

Anne Thomson presents how to recognize arguments, noting that all arguments will consist of a main conclusion and one or several reasons provided to support the conclusion. Specific words, such as 'therefore', 'thus' and 'hence' are often used to introduce the conclusion, and at times, it is indicated more explicitly, as 'I draw the conclusion' or 'the reason for this is'. Words indicating reasons provided may include 'because' or 'since' which enable to reader to easily identify the arguments, although some authors present their arguments more implicitly, leaving it up to the reader to identify arguments. In the latter cases where an argument is more implicitly stated, it is helpful to consider whether any statement in the text can be used to support another statement. This can be done by reviewing each statement and examining whether any reason or evidence is provided in support of the statement.[66]

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[64] Weston, Anthony (2009) *A Rulebook for Arguments*, 4th edt, Indianapolis: Hackett Publishing Company, Inc, p. xi
[65] Weston, p. 2-4
[66] Thomson, Anne (2002) *Critical Reasoning in Ethics: a practical introduction*, New York: Routledge, p. 6-8

4.0 Analysis

In the following chapter, the research will be tied together in an analysis of material collected, through argumentation and application of the theories chosen for this paper. The analysis will follow the argumentative method presented above, with three distinct issues related to meat production identified and separated into different sections. The application of the CA will follow after the argumentation in its own section. It will determine whether the arguments for reducing meat consumption hold any solid ground for affecting individuals' actual opportunities to lead a life upholding the minimum threshold of what respect for human dignity entails, and thus, whether social justice demands that we as consumers reduce our meat consumption. In addition to the CA, a separate section will be used for discussion and argumentation in the utilitarian perspective, to determine the moral question of meat consumption and whether we as consumers have a moral responsibility to reduce our meat consumption. Finally, the analysis will end with a brief discussion of a common counter-argument to reduced meat consumption.

4.1 Food scarcity and prices

Meat production indirectly affects the amount of food available for human consumption, and its effects are two-fold for the least affluent global population. First, meat production requires extensive crop resources to produce far fewer food calories for human consumption, diverting the supply of food from humans to animals, and second, increased demand of grain and cereals for animal feed increases the prices of such foods, creating a scarcity of food for the impoverished population. Thus, to increase global food security in the future, reduced meat consumption is a necessary element of success.

To illustrate the former effect detrimental to food availability, I would first like to reiterate that at the current state, 26 percent of our planets ice-free surface is used for livestock grazing, with an additional 33 percent of our planets arable land being used for crop production used to feed the livestock industry. Meat production in its entirety accounts for roughly 70 percent of the entire world's agricultural land available for food production.[67] When looking into the actual energy-efficiency of meat as food, it illuminates the vast energy-losses inherent in the meat production industry. Beef which is the least efficient source of food when produced by grain- and cereal-fed livestock, converts only a staggering 1 percent of the gross energy input and 4 percent of the protein fed to cattle into edible food. Poultry on the other hand, which is the most efficient source of meat, provides roughly 11 percent of the gross energy input with 20 percent of the protein used as feed

[67] Food and Agriculture Organization of the United Nations (2006) *Livestock's Long Shadow: Environmental Issues and Options*, Rome: FAO, p. xxi

into edible food.[68] This means that vast amounts of resources, i.e. food edible by humans, are used extremely inefficiently by feeding to animals which in turn convert it into a mere fraction of its potential energy and protein utility. The fact that such a vast amount of edible food is used for feeding animals instead of utilizing the natural sustenance of cattle, poultry and other animals which is generally inedible to humans, entails that enormous amounts of potential food calories and protein is lost in the process of turning the crops into meat. When combining this with the reality that more than half of the earth's agricultural land is used for meat production, the issue of food security can no longer be explained as an issue of scarce resources, but of inefficient food production, inequality and poverty.

The second detrimental effect on food availability can be best illustrated by examining the global food crisis of 2008. Between 2006 and 2008, the commodity prices for grains such as corn, soybeans, and wheat more than doubled, causing worldwide concern and triggering food riots in over 50 countries, specifically low- and middle-income countries.[69] Sherry Mueller, James Anderson and Timothy Wallington in their research identified several major causal factors influencing the food crisis, in which three of them are directly or indirectly related to meat production. 1) Adverse weather conditions, such as extensive droughts between 2006 and 2007 contributed to decreased harvest and crop production, 2) Shrinking world grain reserves, an emphasis on lower stockpile reserves of grain in favor of 'just-in-time' delivery of grains, paired with an increasing demand for crops for animal feed led to a spike in prices as tight supplies are not as efficient in adjusting to sudden declining harvest yield, and 3) An increasing world population demanding more crops for human feed, paired with rising affluence in low- and middle-income countries, leading to a shift in consumer diets to higher consumption of meat.[70] Although the first causal factor may seem less convincing, this will be more clear in the following chapter. It should be noted that the global food crisis had the most intense effects on the least affluent world population, due to a diet consisting of a higher degree of plant-based food in addition to the lower income and higher expenditure of the daily budget on food, approximately half of the disposable income in low- and middle-income countries.[71] The fact that prices are elevated due to meat production further enhances the issue of food security as caused by poverty, inequality and inefficient food production. It must be noted that food does not automatically become available for those in need by reducing meat consumption, however it does assist in releasing a large amount of food from animal feed to

[68] World Resources Institute (2013) *Creating a Sustainable Food Future: Interim Findings*, Washington, DC: World Resources Institute, p. 39
[69] Mueller, Sherry, Anderson, James and Wallington, Timothy (2011) *Impact of biofuel production and other supply and demand factors on food price increases in 2008*, Biomass and Energy, 35, p. 1623
[70] Mueller et al., p. 1628-1629
[71] Mueller et al., p. 1623

humans, as well as holding potential for lowering the prices of grains in the future. Further, the emphasis of reducing meat should ideally be of industrially produced sources, as the animal diet in commercial livestock agriculture mainly consists of grains, rather than grazing livestock.

4.2 Environmental degradation

The meat industry indirectly affects the amount of food available for human consumption due to its detrimental consequences on the environment via three main causal factors, and further, the effects are most severe on the least affluent global population. First, the demand of the meat industry of crop harvest for animal feed and pasture areas leads to vast tracks of deforestation operations, second, it is one of the largest contributors to greenhouse gas (GHG) emissions, and third, the meat industry has detrimental effects on the environment, such as soil loss and erosion. The first and second causal factor are connected, as both are exacerbating the effects of climate change, affecting crop harvests through adverse weather conditions, whereas the third endanger future prospects of crop agriculture. Thus, to enhance the prospects of future global food security, reduced meat consumption is a vital element.

Jennifer Rivers Cole and Suzanne McCoskey in their article assert that the entire chain of production, distribution, and consumption of meat has the largest detrimental impact on the environment of all human activities. The first detrimental effect on the environment, deforestation, is brought about due to increasing demand for meat products and the consequent demand for animal feed and grazing areas for livestock. To meet these demands, five million acres of the Amazon rainforest is being cleared annually to make way for the meat production industry.[72] As a result, 70 percent of the Amazon rainforest have been converted into pastures whereas a large part of the remainder is used for crop production for animal feed. The rainforests have in the last three decades lost one-third of their total capacity to eliminate GHG vital to diminishing the effects of climate change, and by far the most influential contributor is livestock agriculture, responsible for 90% of the Amazon rainforest's deforestation.[73]

Second, the meat industry is estimated to contribute with 18 percent of the world's total emissions of GHG, although other estimates range up to 51 percent of total GHG emissions. Even at the minimum estimated level, livestock agriculture amount to around 40 percent higher emissions than all transportation vehicles, including airplanes, trains, and ships, in the world combined. This includes 37 percent of global methane emissions and 65 percent of global nitrous oxide emissions by human activity, which both have many times more efficient global warming potential than carbon dioxide, the gas emitted by driving a car.[74] Both of these consequences

[72] Rivers Cole and McCoskey, p. 29
[73] Food and Agriculture Organization of the United Nations, *Livestock's Long Shadow*, p. xxi
[74] Rivers Cole and McCoskey, p. 28-29

brought on by livestock agriculture have immense effects on our environment, exacerbating the effects of climate change which has disastrous consequences on many different areas. Regarding food security, it has a negative effect on crop agriculture leading to less yield and consequently lower food availability now and in the future. The FAO notes that the occurrence of natural disasters is five times higher today than five decades ago, mainly due to deforestation and the increasing global temperature.[75]

The third detrimental effect on the environment, soil degradation has enormous consequences for the future ability to grow crops on agricultural land. Soil degradation is mainly a result of acid rain and water erosion caused by acidification and which is brought on by ammonia emissions. Nearly 70% of the ammonia emissions induced by human activity come from the vast enterprise of livestock agriculture.[76] The vast areas of pastures in addition to the huge areas required for crop agriculture to produce animal feed are two of the major contributors to soil degradation. Soil degradation entails a vast reduction in yield of crop harvests and has severe consequences for the food available, which is estimated to have reduced yields by up to 40 percent in Africa and between 25 to 50 percent in parts of the European Union and North America.[77] The conversion of natural ecosystems to pastures include in most cases a number of animals exceeding the environmentally stable limit, which through the trampling and overgrazing of areas decreases soil quality and makes it less apt for agricultural purposes. The conversion to mono-crop agriculture, such as soybean and corn for animal feed diminishes the diversity of pests which attack the harvests although increases their numbers substantially. To counteract this, pesticides are heavily used, which degrade the soil quality and in the long run, have detrimental effects on future prospects of crop agriculture on the soil.[78]

As is evident from the argumentation, the three presented causal factors of environmental degradation have immensely severe consequences to both current and future prospects of food availability. Through increasing the occurrence of natural disasters and adverse weather effects causing vast amounts of food to be lost, meat production efficiently reduces the food available for human consumption. Additionally, the immense decline in the soil available for agriculture and the decreasing soil quality further enhances the issue of producing food and thus, the three presented causal factors effectively diminish food security. It should be noted that smallholder farms, carefully planned pasture activities and mixed-crop agriculture decreases the detrimental effects on the

[75] Food and Agriculture Organization of the United Nations, *The Future of Food and Agriculture,* p. 5
[76] Rivers Cole and McCoskey, p. 29
[77] Food and Agriculture Organization of the United Nations, *Livestock's Long Shadow*, p. 30-31
[78] Food and Agriculture Organization of the United Nations, *Livestock's Long Shadow,* p. 66, 71

environment, and thus, the emphasis of reducing meat consumption should ideally be of industrially produced sources, as their effects on the environment are more severe.

4.3 Source of income and food

The meat industry indirectly affects the amount of food available for human consumption, and the ability for a large number of people to earn an income and be able to afford food, due to a reduction in biodiversity through deforestation. The outcomes are mainly affecting the very least affluent, and most severely food insecure global population. Thus, meat production industries practicing deforestation on large scales effectively diminish food security and hence, reduced meat consumption is vital to counteract the detrimental effects to food security.

Biodiversity, i.e. variations in ecosystems, the species contained within them, and the genetic diversity of species are vital for the livelihood of an enormous amount of people in the world. As aforementioned, around one billion individuals or one in seven people globally, rely on wild foraged products and wild game as their main source of income and food, the value of which is estimated at around 90 billion U.S. dollar annually. For the impoverished global population, this is one of the only means of access to cash economy and must not be underestimated as a source of income as foraging and growing plants in many cases is not sufficient to ensure food security for individuals, and the ability to purchase food is vital to substitute the lack of actual food resources.[79] As aforementioned, livestock agriculture, both pasture and mono-crop agriculture for animal feed lead to extensive deforestation and the effects of this is an immense loss of biodiversity, and hence, a reduction in wild species, plants and insects[80] which are vital to a vast amount of individuals, who by no other means are able to safeguard their income, and thus, will not be able to afford the food that might replace their foraging areas, in addition to losing their main source of food.

The argumentation above has shown the value of biodiversity to hundreds of millions of people as a source of food and income, and how the industrialization of the meat production chain, in its demand for larger pasture areas and animal-feed crops has devastating consequences for their livelihood. Through extensive deforestation, the wild foraged goods and meat that nearly a billion individuals globally rely on as a source of food and income will be partially lost and hence, meat consumption affects the food availability for a large portion of our global population. Although it entails that more food is produced, there are enormous losses in the 'invisible' market of foraged non-timber goods. The result is that the food produced on deforested land is available for those with income, but the less affluent, those for whom the forests goods are so vital, become less food secure due to their loss of both source of income and food. Thus, the emphasis on reducing meat

[79] Sunderland, p. 266-267
[80] Sunderland, p. 267

consumption should ideally be of industrially produced sources, as their effects on food availability are more severe.

4.4 Food availability and the Capabilities Approach

The argumentation above described how meat production affects food availability and the following discussion will present how the capabilities of Nussbaum's list may be affected by food scarcity. The decision to separate the application of theories to the argumentation was made as all three arguments lean towards the same issues, that of food availability and lack of adequate nourishment and therefore, similarly affect the different capabilities and the utilitarian argumentation on morality. Hence, it was deemed appropriate to separate the sections for the application of theories to avoid a lengthy repetition. From Nussbaum's capabilities list, I have chosen five different capabilities which are relevant to the discussion on food security, and hence, only those five will be discussed in the following text.

The first capability, the opportunity to live a lengthy life worthy of human dignity, and the second capability, the opportunity to enjoy good personal and reproductive health, while being adequately nourished are closely tied together when discussing the subject of food security. The inability to enjoy the opportunities in the second capability affects the opportunities in the first capability, i.e. a lack of adequate nourishment and consequently the inability to enjoy good personal and reproductive health have an influence on whether an individual will reach normal life-expectancy. Thus, both capabilities may be infringed simultaneously by the three arguments presented, briefly reiterated as following;

1) By diverting food edible for humans into animal feed, people's opportunity to attain adequate nourishment is diminished as this type of food production reduces the number of available food calories. Additionally, the effects of meat production on the prices of the food further diminishes the opportunity for the less affluent population to secure their adequate nourishment.

2) The clearing of forests and rainforests, along with the substantial amounts of GHG emissions contribute to the effects of climate change and thus, have consequences on harvest yield the ability to grow food on a global scale due to adverse weather effects. The consequences of soil loss and erosion have detrimental effects on the ability to grow food efficiently in the future in the local area. Thus, the environmental effects of meat production effectively diminish the opportunity for individuals to obtain adequate nourishment.

3) The past, present, and future deforestation cause harm to millions of people due to its effect on food availability. The loss of biodiversity entails that those relying mainly on foraged non-timber products and wild game as their main source of food and income are unable to purchase or

otherwise obtain food. Thus, the effects of meat production diminish the opportunity for individuals to secure their adequate nourishment.

The issues presented causes a reduction in food available for human consumption and the inability to afford enough adequate nourishment, which in turn affect both capabilities negatively. As aforementioned, nearly one in nine people globally suffer from food insecurity, and millions suffer from malnutrition increasing the occurrence of irreversible diseases and conditions, e.g. stunting, brain damage, blindness, and even mortality during maternity, preventable by adequate nourishment. Hence, meat consumption entails that many individuals do not have the opportunity to obtain adequate nourishment, preventing them from living a lengthy life worthy of human dignity and attaining good personal and reproductive health by diminishing the availability of food, and as a consequence, effectively deteriorating the first and second capability.

Additionally, the three aforementioned arguments affect the fifth and sixth capability on Nussbaum's list, the opportunity of good emotional development, and the ability to plan and critically reflect on one's life and future. The former capability may be infringed by the lack of food available, and the increasing prices of food due to meat consumption, as both the lack of access to continuous adequate nutrition and the fear and anxiety of not being able to afford adequate nourishment often negatively affect the mental health and development of both children and adults. The latter capability may be infringed as individuals and families who live in constant fear over whether they will be able to afford adequate nourishment in the near future do not have a sincere opportunity to adequately reflect over their future life wishes and prospects. Hence, meat production effectively deteriorates the fifth and sixth capability.

The eighth capability, having the opportunity to live with concern for, and in relation with non-human species, i.e. plants, animals and the natural environment may be infringed by the second and the third argument, environmental degradation and loss of biodiversity. An increase in adverse weather effects and the occurrence of natural disasters cause significant losses in harvest yield and is especially impactful on smallholder farming systems which rely heavily on natural irrigation, i.e. rainfall and groundwater.[81] Further, the loss of biodiversity through deforestation has a severe impact on many individual's ability to secure their livelihood through foraging non-timber goods and wild game, as aforementioned. This impedes people's opportunity to live with concern for, and in relation to plants, animals and the natural environment and thus, meat production effectively deteriorate the eighth capability.

As presented, meat production and its driving force meat consumption generate conditions which creates a barrier for a very large population in the world to attain the minimum threshold of

[81] Food and Agriculture Organization of the United Nations, *The Future of Food and Agriculture*, p. 38

at least the five capabilities presented in relation to food security. Therefore, I argue that meat production, in particular of industrial sources, is an obstacle to social justice on a global level, and to improve food security and enhance the people's capabilities, we need to alter our eating habits. Thus, individuals have a moral responsibility to reduce meat consumption for the enhancement of food security in the world.

4.5 Food availability and Utilitarianism

In addition to the discussion on how meat production affects the capabilities of the CA, a discussion will follow on how one might view meat consumption from a utilitarian approach. As aforementioned, this thesis will take the view that the morally right action is the one that promotes not only direct pleasure or happiness, but that there are other vital goods unrelated to emotions, e.g. good health. Further, it has been established that the most relevant group to evaluate whether an action is morally right or wrong are those affected by the action, hence, the principle of equal consideration of interests will be applied. Lastly, as the actual consequences of an action are unlikely to yield any answer in this particular dissertation, I argue for the 'foreseeable consequences'-approach as the relevant measurement of moral action. The following discussion will be on how the utilitarian perspective appropriated in this thesis might measure the morality of meat consumption in relation to food security.

A utilitarian perspective would look at the consequences of the action, i.e. meat consumption, which induces an increasing meat production and its negative consequences to food availability and food prices which exacerbate the issue of acquiring sufficient food for the poorest global population. The ability to eat meat might fulfill a substantial satisfaction for people engaging in such activities as it is clearly in those individuals interests to do so, although the utilitarian approach requires one to look at the 'net satisfaction' as aforementioned. Therefore, one must consider and incorporate the negative consequences of a given action in its measurement of utility to determine the rightfulness of the action. The first argument, diversion of food edible for humans into animal feed diminishes the ability for people to obtain adequate nourishment while increasing the prices of food, exacerbating the issue. The second argument, contributions to environmental degradation in forms of inducing climate change and soil degradation reduces the possibility to grow food, and hence lowers the amount of food available for humans. The third argument, loss of biodiversity caused by deforestation deteriorate the ability to secure a source of food and income for people relying on foraged goods and therefore reduces their ability to acquire adequate food by economic or other means. All three issues are caused by intensive meat production and although the consequences differ, they all negatively impact food security by deteriorating the ability to purchase or otherwise attain adequate nourishment as they diminish food available for human consumption.

Current estimates show that over 800 million people suffer from food insecurity globally, whereas an additional two billion suffer from micronutrient deficiencies[82], and as earlier mentioned, this has severe implications on mortality rate and the occurrence of irreversible diseases and conditions. Hence, a considerable portion of our global population suffer dire complications from a lack of adequate nourishment despite, as established by the FAO, we are currently growing more than enough food to feed everyone.[83] The fact that meat production, and its driving force meat consumption, create a condition where we are unable to feed such a substantial portion of our population must be measured as a significantly heavy negative utility factor, both in the severity of consequences, and the number of individuals affected by them. I argue that the ability to sustain good health, and even avoid premature death are far more vital to an individual's interests than that of satisfaction to enjoy meat as a part of the everyday diet when measuring moral actions based on the utilitarian approach. Further, the right to adequate food, the right to be free from hunger, and the right to health are recognized as fundamental human rights, as aforementioned, whereas meat consumption is merely a preference. Improving food availability would enhance the health and reduce the mortality rate of those currently suffering from food insecurity and must weigh heavier in evaluating the moral actions of meat consumption, than that of satisfaction of interests of eating meat as a convenience. Thus, we have a moral responsibility to reduce our meat consumption, to enhance food security in the world.

4.6 Is meat necessary?

It has been established in this analysis that meat production has deteriorating effects on food security, and further, because of the effects on the substantial amount of people harmfully affected by insufficient nourishment, we as consumers have a responsibility to reduce meat consumption. There is one additional element which has not been established yet, whether a diet consisting of little or no meat can sufficiently substitute meat consumption and all the necessary nutrients it contains. If not, this might come into conflict with the former argumentation, and therefore, this will be discussed in the following argumentation.

Meat as a vital source of nutrients is often used as a counterargument against discussions on meat reduction and vegetarian diets, but is meat really a necessary part of our diet? As noted in the chapter on previous research, Paula Arcari outlined 15 reports from various Australian institutions and international organizations, in which all the included reports portray meat as a natural and necessary element of human nutrition. Thus, when faced with the issue of food security and environmental degradation, all but one organization notes that a focus on maintaining current levels

[82] Food and Agriculture Organization of the United Nations, *The Future of Food and Agriculture*, p. X
[83] Food and Agriculture Organization of the United Nations, *Livestock and Landscapes*, p. 1

of production is necessary while diminishing the negative qualities of the production, e.g. climate change.[84] The WRI however, while viewing meat as necessary, recommends reducing the 'excessive' demand for animal products which is notable, emphasizing that it is a highly inefficient use of resources, and that a large part of the global population consume more animal products than necessary, in many cases to the point of an unhealthy intake.[85] Voster Muchenje, Yonela Njisane, and Felicitas Mukumbo note that throughout history and all over the world, meat has constituted a vital role of the human diet as a source of protein, fat, and essential nutrients. The authors note that meat consumption has received an ill-deserved negative image due to linked health issues and the environmental impacts of meat production, instead, they assert that meat intake at an appropriate level renders several health benefits. They assert that it is a necessary component for our natural development, as it contributes as a source of essential amino acids, and of the vitamin B complex, in particular vitamin B12. Additionally, meat provides heme iron, which is exclusively found in animal food sources, and which is particularly essential for women and children as pregnant women require an additional intake to avoid iron-deficiency anemia.[86]

Studies undertaken by the American Dietetic Association on vegetarian diets have refuted the emphasis on meat as a necessary component of human nutrition. In their review of current data related to key nutrients in vegetarian diets, they have asserted that if well-planned, vegetarian and vegan diets can be nutritionally sufficient and even provide additional health benefits in the prevention of diseases linked to meat consumption.[87] A varied source of plant protein, such as beans and soy products meets the required daily intake of protein and essential amino acids, with soy protein being as efficient as meat protein in meeting the daily required intake. The study further elucidates that vegetarians can sustain their daily vitamin B-12 requirements through regular intake of dairy product, eggs, and fortified foods, whereas vegan diets consisting of a daily intake of soy milk, fortified cereals and other fortified foods are sufficient substitutes for meat sources.[88] Other studies have shown that dairy products and fish are a more efficient source of vitamin B-12 than meat and eggs, while fortified foods hold an even higher amount of the essential vitamin.[89] Vegetarian diets consist of non-heme iron, which is more sensitive to both inhibitors and enhancers of iron absorption, and for this reason, the recommended daily intake of iron for vegetarians is 1,8 times higher than meat consumers. While diets including tea, coffee, and calcium inhibit the

[84] Arcari, p. 73
[85] World Resources Institute, p. 3-4
[86] Muchenje, Voster, Njisane, Yonela and Mukumbo, Felicitas (2018) *Meat in a sustainable food system*, South African Journal for Animal Science, 48(5), p. 819
[87] Craig, Winston and Reed Mangels, Ann (2009) *Position of the American Dietetic Association: Vegetarian Diets*, Journal of the American Dietetic Association, 109(7), p. 1266
[88] Craig and Reed Mangels, p. 1268-1269
[89] Antinoro, Linda (2015) *Getting Enough Vitamin B12*, Harvard Health Publishing, [website], para. 12

absorption of plant-based iron, other sources of vitamin C and organic acids such as fruits and vegetables substantially enhance the absorption, while diminishing the effects of inhibitors. Long-term studies have shown that the body adapts to lower intakes of iron which increases the absorption rate while decreasing losses. Further, iron-deficiency anemia is equally occurring among vegetarians and non-vegetarians.[90]

Food security is the aim of the discussion on meat reduction and therefore, it is vital to examine whether people can receive sufficient nourishment and nutrition without the inclusion of meat in the diet. If it was found that meat is indeed vital to our development and health, then it would be safe to disregard the argument of reducing meat consumption as an element for enhancing food security. However, this is not the case as has been presented, vegetarian and even vegan diets adequately substitute the necessary nutrients, vitamins and protein required for a healthy development, hence, this is a poor argument in opposition to reducing meat for enhancing global food security.

5.0 Conclusion

This research set out to analyze empirical data from external sources, to determine whether individual's hold a moral responsibility to reduce their consumption of meat for the enhancement of food security in the world. The research question presented in the beginning of this paper is of a normative nature, and thus the methodology chosen for this thesis was that of argumentation. Further, the theories chosen, the capabilities approach and utilitarianism, are of normative nature asking questions of 'what ought to be?', and thus, in alignment with the research question presented. The two theories complement each other, as the former determines a minimum threshold for what social justice demands, whereas the latter determines whether an action is morally right and should be endorsed or not.

The argumentation presented, that the meat production industry has vast negative effects on food security, and therefore, individuals have a responsibility to reduce their meat consumption, was motivated by several premises. First, the research displayed that the meat production industry leads to severe losses on the amount of food available for human consumption, due to the requirement of crop agriculture to feed livestock, and further illustrated how inefficient in producing food calories this food production system is. Additionally, the research showed how a reduction in the quantity of food available for human consumption increases the prices of food. These two consequences in conjunction affect the ability and opportunity for individuals, especially less affluent ones, to obtain adequate food and nutrition. Second, the research illustrated how the

[90] Craig and Reed Mangels, p. 1268

meat production industry has detrimental effects on the environment which, through emissions and deforestation, enhancing the effects of climate change, in addition to soil degradation, diminishes the ability to grow food both globally and locally, and thus, affect the food available for human consumption currently and in the future. Third, the research presented that industrialized meat production requires extensive land leading to deforestation. This activity leads to a loss in biodiversity and thus, diminishes the ability for a large portion of the global population to secure their income and food by foraging non-timber goods and meat, and hence, affect the availability and opportunity for individuals, especially less affluent ones, to obtain adequate food and nutrition. Additionally, it was demonstrated that the lack of adequate food and nutrition leads to irreversible diseases and conditions, and in some cases loss of life, and further, that there currently exist a substantial number of individuals in the world who lacks adequate food and nutrition and consequently suffer from such conditions and diseases.

With the premises set, it was argued that the capabilities affected on Martha Nussbaum's list of the CA, which portray a minimum threshold of a life worthy of human dignity, and hence, a basis of what social justice demands, were not upheld. Further, by examining the premises through a utilitarian perspective, it was deemed that due to the consequences brought on by the meat production industry, meat consumption in the proportions existing today is morally wrong and thus, individuals have a moral responsibility to reduce their consumption of meat. The emphasis of reduced meat consumption should ideally be of industrially produced sources, as they have the largest impact on both food security and environmental degradation.

Lastly, to avoid providing a faulty argumentation on how to enhance food security, i.e. adequate food and nutrition to every individual on earth, a discussion and argumentation on the necessity of meat to the human diet was presented which found that vegetarian and vegan diets are able to sufficiently substitute the nutritional demands that meat consumption provides, thus refuting the counter-argument of meat as a necessity to humans.

5.1 Future research

Ensuring food security in the world is a complex issue which requires not only focusing on meat consumption, but other contributors which immensely influence the issue, such as biofuel production and food waste, as aforementioned. This paper should not be understood to offer a complete solution to the issue presented, for example, another causal factor that influences individuals ability and opportunity to obtain adequate food is also identified, namely that of poverty, which would require very different solutions to the issue of food security. Therefore, it is vital that further research be conducted into various fields that will assist in enhancing our

understanding of the obstacles, and ideally, provide solutions to ensuring everyone the ability and opportunity to enjoy adequate food and nutrition.

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