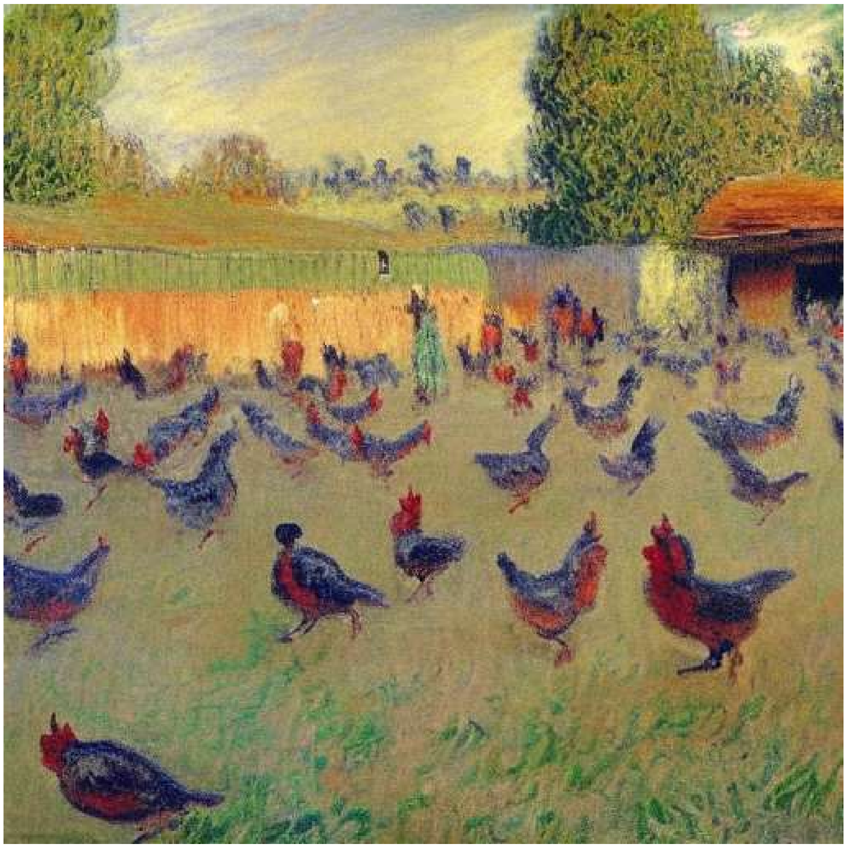
Designing a degrowth pathway to transform the global meat industry



Backyard Poultry Farming (AI Generated Image)

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Summary

There is a growing interest in applying new economic paradigms to transition the global food system to a more sustainable one. For this transition, it is crucial to understand the state of affairs, and whether the underlying assumptions that we make are correct: 1) Economies of high-income countries (HICs) appropriate resources from low and middle-income countries (LMICs) and, 2) HICs supply local markets in LMICs with cheap food products, rendering local production uncompetitive. This report aims to address this second assumption specifically for the Netherlands (HIC) and Sub-Saharan Africa (LMICs) by asking: *What is the position and the impact of the Netherlands (NL) with regards to exports of meat products to Sub-Saharan Africa (SSA)?* We address this question by using a case study of the export dynamics in the poultry sector between the Netherlands and Ghana. To answer this question, we conducted literature research, interviewed one expert in African livestock production, performed a stakeholder analysis, and developed maps of the system. This led us to find some evidence that could suggest that the Netherlands (HIC) contributes to supplying local markets in Ghana (LMIC) with cheap poultry products, rending local production uncompetitive.

List of Abbreviations

- High Income Country HIC
- Low and middle-income countries (LMICs)
- Netherlands (NL)
- Sub-Saharan Africa (SSA)
- Gross Domestic Product (GPD)
- European Union (EU)
- Sustainable Development Goals (SDGs)
- World Trade Organization (WTO)
- Organisation for Economic Co-operation and Development (OECD)
- Food and Agriculture Organization (FAO)
- Gross National Income (GNI)
- Economic Community of West African States (ECOWAS)
- Economic Partnership Agreement (EPA)
- Highly Pathogenic Avian Influenza (HPAI)
- Value Added Tax (VAT)
- Ghana Broiler Revitalization Project (GHABROP)
- Greater Accra Poultry Farmers Association (CAPFA)
- Dutch West India Company (WIC)
- Dutch Africa Poultry Platform (DAPP)
- Day-old Chicks (DOCs)
- Netherlands Enterprise Agency (RVO)
- Civil Society Organizations (CSOs)

1. Introduction

The current economic system, based on growth ideology, is simultaneously affecting and affected by environmental and socio-economic activities. The economic paradigm our societies are embedded within has led to immense wealth and income inequalities, both within and between countries ((Chancel et al., 2021). The economic inequalities are reflected in environmental inequalities, with "*the richest 5% globally being responsible for over a third (37%) of the total growth in emissions*" (OXFAM, 2020)). The causes of existing inequalities have been attributed to institutional political choices informed by the neoliberal ideology (Polacko, 2021) as well as to the historical colonial legacy (Bhambra, 2020).

Stuart & Gunderson (2020) have referenced the most recent human era as the *Capitalocene*, and argue that it has reshaped our human-animal relationship, citing that the drivers of animal agriculture are related to the mentality associated with the current economic paradigm. This has led to the pressures associated with the climate crisis, like the endangerment of food nutrition and security and potential impacts for future food production (FAO, 2023; Committee on World Food Security, n.d.) Importantly, nearly 60% of greenhouse gasses within the agri-food system have been attributed to the production of animal-based food (Xu et al., 2021). Meanwhile, biodiversity loss, habitat loss, and widespread degradation of land and water are perpetuated by the current animal production systems (Ipbes, 2019). The call for transformation of the global food system is consistent throughout the scientific community (Rockström et al., 2020; Webb et al., 2020), policymakers. (Alliance of Champions, 2023; European Commission, 2020) philanthropists (Global Alliance for the future of food, 2021and civil society (organisations) (UN, 2021) eventually leading to a circular or climate-neutral and socially just society (Bodirsky et al., 2022).

Since the 1960s, the production and consumption of meat have drastically increased (Figure 1) (OECD, Food and Agriculture Organization of the United Nations, 2023) driven mainly by the Global North. More recently, production and consumption have experienced a drastic rise in low and (lower and upper) middle-income countries and are expected to rise further (Figure 2) (FAO, 2023).

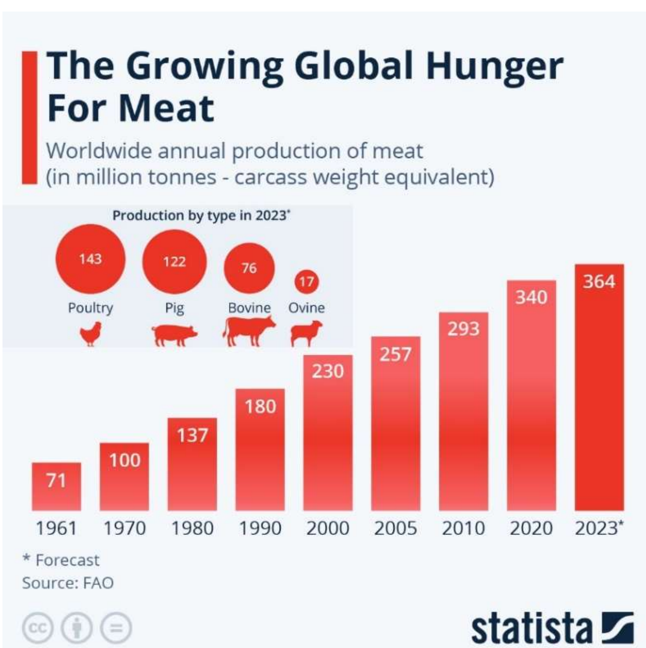
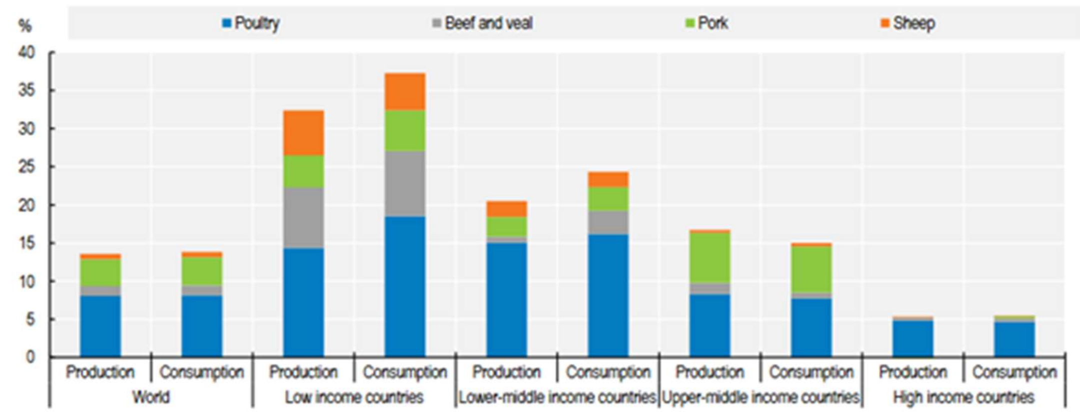


Figure 1: The Growing Global Hunger for Meat (Armstrong, 2023)



Note: The 38 individual countries and 11 regional aggregates in the baseline are classified into the four income groups according to their respective per-capita income in 2018. The applied thresholds are: low: < USD 1 550, lower-middle: < USD 3 895, upper-middle: < USD 13 000, high > USD 13 000.

Figure 1: Growth in meat production and consumption on a protein basis, 2021 to 2030 (OECD/FAO (2021), "OECD-FAO Agricultural Outlook", ("OECD-FAO Agricultural Outlook," 2012)

The increase is commonly attributed to a growing population, the rate of urbanisation, and higher income (Bodirsky et al., 2015; Godfray et al., 2018; Milford et al., 2019;). Other drivers for increase include female labour participation, western culture, and social globalisation (Milford et al, 2019), while rising prices are contributing to a decrease in meat demand. The overall trend has been framed as "The Next Food Revolution" (Delgado et al., 2001) and made possible through technological advances in farming and livestock farming. These global changes endanger the health of humans, non-humans, and the environment (Tilman & Clark, 2014). At the same time, livestock production is vital for the livelihoods of 1.7 billion smallholder farmers in the Global South. It plays a crucial economic role for approximately 60% of rural households in developing countries (IPES Food, 2022). The global meat sector faces several uncertainties, including increasing disease pressure, inflation and the climate crises. Similarly, to agricultural production in general, the livestock sector has become increasingly industrialised and is currently dominated by ten companies (Sharma, 2021). The sector attracted large-scale investments, precisely 478 billion US dollars between 2015 and 2020, more than the EU spent on its Common Agricultural Policy (CAP) budget for seven years (Chemnitz, 2021). Bearing in mind that this figure excludes investments undertaken by China, one of the largest meat-producing countries. None of the leading companies is situated on the African continent.

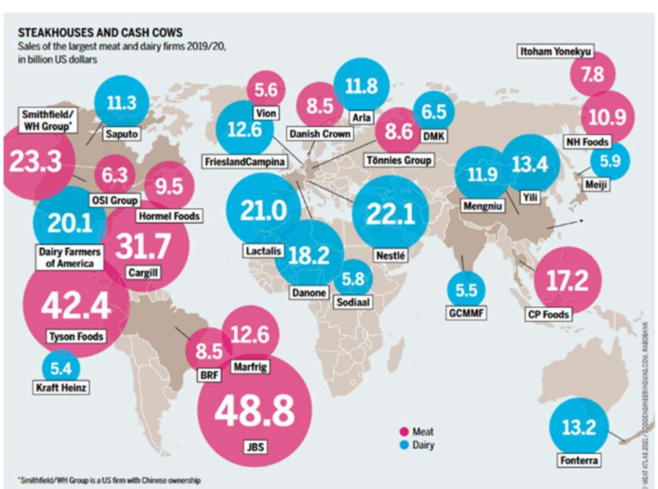


Figure 2: Sales of the largest meat and dairy firms 2019/2020 in billion US dollars (Meat Atlas, 2021

1.1 Purpose of project

The call for transforming the food system reverberates with the call for a new transformative economic paradigm. Several new economic paradigms have received growing interest in recent years. Most of these new paradigms are constructed and informed by the need to meet humanity's necessities while staying within the planet's boundaries.

However, there are contestations about whether that is possible holding on to the growth ideology. While green growth is based upon the assumption that technological change allows the decoupling of material use to carbon emissions (Berkhout, 2023 a) concepts such as the doughnut economy (Raworth, 2017) are agnostic to growth. The focus lies on changing the political economy of growth, aiming to actively shrink some sectors while stimulating others. For degrowth, as an alternative economic paradigm, the only option is to de-grow economies in high-income countries. Degrowth is understood as "a democratically deliberated absolute reduction of material and energy throughout, which ensures well-being for all within planetary boundaries" (Barlow et al., 2022). Furthermore, several scholars have argued that demands by the degrowth community are of decolonial character (Barlow et al., 2022; Hickel, 2021). Therefore, it presents a possible transformative pathway to a circular or climate-neutral and socially just society. Degrowth policy proposals have been brought forward from different societal actors, however trade is considered to be the "least elaborated theme" (Fitzpatrick et al., 2022) within those proposals and remains a topic of concern for degrowth scholars, policymakers and activists.

The assumptions to be tested, in order to understand the current state of affairs and the call for degrowth and decolonisation, are the following:

1) Economies of high-income countries appropriate resources from low and middle-income countries and,
2) HICs supply local markets in LMICs with cheap food products, rendering local production uncompetitive.

This research aims to address these assumptions, specifically for the Netherlands (HIC) and Sub-Saharan Africa (LMICs) utilizing the following research question and sub-questions:

> ***What is the position and the impact of the Netherlands (NL) with regards to exports of meat products to Sub-Saharan Africa (SSA)?***

a. According to market values/size/volumes, what is the most relevant export destination for meat products in SSA from the NL?
b. What are the export-related dynamics of poultry products between the NL and Ghana?
c. What are the power dynamics in the meat export landscape from the NL to case study country?
d. What leverage points for a degrowth pathway can be identified within the export landscape with the case study country?

The report is structured in the following way: first, we will contextualize and describe the meat sectors in the Netherlands and in Sub Saharan Africa. Second, we will scope down the focus on the case study of the interrelations between the Netherlands and Ghana within poultry production and trade. The poultry sectors in the Netherlands and Ghana will be characterized, followed by the relationship between the two countries and markets. The second part of the report contains the analysis of the characterised food systems with a specific focus on degrowth and leverage points for change within the system. Finally, we conclude by summarizing and reflecting on the main findings as well as recommendations for future research.

2. Meat in The Netherlands

Based upon the commissioner's interest and our team's experience in the Netherlands, we decided to scope our project there. The Netherlands is seen as a High-Income Country. A HIC is defined by the World Bank when the Gross National Income (GNI) is higher than $13,845 (Hamadeh et al., 2023). As of 2022, the Netherlands had a gross domestic product (GDP) per capita over €53 thousand, which ranks the Netherlands to be the 4th highest GDP per capita country within the European Union (EU) (CBS, 2023). Not only does it have a high GDP, but also a high knowledge transfer. The Netherlands is ranked as the 3rd most educated country in the world by the World Economic Forum (International Trade Administration, 2023). Moreover, the Netherlands is a big player in the meat industry, according to the Central Bureau of Statistics, the Netherlands was the biggest meat exporter of the EU in 2020, with in total 3,6 billion kg of meat exported (CBS, 2021a). The Netherlands is the 1st largest exporter of beef (€ 2,5 billion), the 2nd largest of poultry export (€ 2.3 billion) and the 4th largest in pork meat export (€ 2.6 billion) (CBS, 2021a). The Netherlands' livestock production has grown due to the Netherlands economic and technological development, combined with its geographical location (Van Selm et al., 2023). The three biggest production systems are the beef sector, the poultry sector, and the pork meat sector. In 2022, the total amount of livestock was 1.3 million head cattle, 97.5 million head poultry and 11.3 million head pig (Berkhout et al., 2023 b).

While production is expected to increase throughout Europe, the share of livestock from Western Europe compared to Eastern and Central Europe is predicted to decrease. The Netherlands' position is outstanding with its current high density of livestock in Europe (3.4 livestock units) compared to 0.7 in the EU (Eurostat, 2023). Livestock units are a standardized metric used to measure across species using specific coefficients based on the nutritional or feed requirement of each type of animal (Eurostat, 2023). The Netherlands plans to radically reduce livestock numbers, slashing the Netherlands' 118 million farmed animals by 30% by 2030 (Boztas, 2023). Not only are the livestock numbers are intended to decrease, but also meat consumption. EU meat per capita consumption is expected to drop from 69.8kg in 2018 to 67kg by 2031(European Commision, 2021). Additionally, the Organisation for Economic Co-operation and Development (OECD) / Food and Agriculture Organization (FAO) presumes an influence on the EU's demand trends, trade flows, competitiveness, and production growth due to the farm-to-fork strategy with its vision of a fair, healthy, environmentally friendly, and sustainable food system. Moreover, meat consumption has started to decrease after 2019, this trend is predicted to continue in the future (WUR, 2023). Furthermore, there was an increase in consumers' purchases of more sustainable foods and animal products with a better welfare quality, as for example meat with the 'Beter Leven Keurmerk' (Ministerie van Landbouw, Natuur en Voedselkwaliteit, 2022). The 'Beter Leven Keurmerk' was created by the Animal Protection Service. The label is presented on meat, dairy and egg products with stars and "3" being the maximum and the best animal welfare. Other labels are more specific for the type of meat, for example the label 'Beter voor Kip, Natuur en Boer' for poultry meat (Milieu Centraal, n.d.) . Another NGO that made a big impact was 'Wakker Dier', they made sure that there is no 'plofkip' (fast growing broilers that live until 42 days) sold in supermarkets from 2023 onwards (Neilson, 2022).

2.1 The Dutch governance landscape regarding trade relations with SSA

It is important to consider that the Netherlands is situated within the European Union. This has specific influences on how the Netherlands engages in trade with SSA. The first area to consider is the position of the Netherlands as a member state of a supranational institution; the European Union. The EU has a main purpose of fostering economic cooperation within Europe (European Union, n.d.-a.). The EU is a supranational institution, meaning that authority over certain policy areas is transferred from member states to EU decision-makers (European Union, n.d.-b). These areas, exclusively reserved for EU legislative decision-makers, are called "exclusive competences" (Waibel, n.d.). This is important to the case of the Netherlands, because the area of trade (and international agreements) falls under one of the exclusive competences of the EU. This means that trade of the Netherlands falls under EU legislation. The nature of meat export products however lies in the agricultural sector. The agriculture sector, unlike trade, is not one of the EU's exclusive competences, but rather a shared competence between the EU and its member states. In our case, this means that the Netherlands is able to assert its own authority over its agricultural sector's functioning and legislation, as long as the EU chooses not to intervene whereas for trade, the Netherlands is not able to do so.

One of the most significant agricultural related policies of the EU is the Common Agricultural Policy. A big part of the CAP pertains to funding the EU's agricultural sector in order to increase sufficient food supply. Moreover, the CAP is also responsible for funding the promotion of agricultural food exports (Iloh et al., 2020). Through agricultural subsidies, the EU's agricultural sector produces a surplus of products, which are presumably exported to SSA to suffice in their food security (Arenas & Grobusch, 2021).

Another relation between SSA and the Netherlands is the "Africa Strategy". This strategy is an economic and political cooperation effort between the Netherlands and Africa. Its main focus is on supporting economic development, reducing poverty, promoting equality and human rights and limiting irregular migration (Ministry of Foreign Affairs, n.d.). On top of these efforts, the Netherlands is also trying to make the continent of Africa more climate resilient and strives for the objectives of the UN's Sustainable Development Goals (SDGs). One of the SDGs is on food security, this section of the strategy is the most important for the meat trade between the Netherlands and SSA (Ministry of Foreign Affairs, n.d.). Many African countries want to be more independent on food security and wish to become less dependent on global food trade. Many African countries have vocalized a desire to lower their food imports, and to create a bigger focus on domestic food production. The Netherlands has agreed to help achieve these goals by knowledge provisions to local farmers (Ministry of Foreign Affairs, n.d.).

On a global scale, there is the institution of the World Trade Organization (WTO) which serves as a forum where member countries establish and enforce international trade rules among themselves (WTO, n.d.). The WTO agreements are collectively negotiated, endorsed and ratified by its member states, and its primary objective is to facilitate smooth-flowing, predictable and unrestricted global trade. The EU and the Netherlands are members of the WTO, and most of SSA as well. All member states of the WTO abide by the same WTO rules and regulations when it comes to global trade. Since agriculture and food security are considered very important by the WTO, the organization established the Agreement on Agriculture as one of the outcomes of the Uruguay Round (European Commission, 2023). This agreement established rules that are applicable to all members of the WTO with the aim of ensuring significant and gradual reduction in support and protection for agriculture (European Commission, 2023).

3. Meat in Sub-Saharan Africa

Sub-Saharan African is a region on the continent of Africa comprising a total of around 48 different countries (*Open Knowledge Repository*, n.d.) As of 2022, low-middle income countries are characterized by a per capita GNI of up to $4,465 USD (*World Bank Country and Lending Groups – World Bank Data Help Desk*, n.d.). This GNI threshold places all SSA countries in the category of low-middle income countries, which then fall under the scope of the assumptions that we are trying to address in this report. Therefore, based on Sub-Saharan Africa's characterisation as a LMIC region and the commissioner's interest in the region, it serves as a relevant focal point for this report.

The region of SSA is expected to experience rapid growth in population size over the coming decades. (Cleland & Machiyama, 2017). Despite the population increase, the rate of urbanisation is the slowest and income levels are the lowest globally (OECD/FAO, 2023). The region also faces severe challenges in reducing hunger and food insecurity, as it has the highest concentration of poor and undernourished people in the world.

One of the challenges that follows out of this prediction is the need for food security. This is where we see the relevance of livestock production. The demand of animal-sourced food is expected to grow by 70% (2005-2050) with poultry and eggs having the highest share (121%) (Erdaw & Beyene, 2022). Coupled with demand, the net value of livestock production is also projected to expand by 26% over the next ten years, with the fastest increases coming from poultry and milk production. The region will add 2.9 Mt of meat output by 2030, comprising almost 1.3 Mt of poultry, 740 Kt of bovine meat, 650 Kt of bovine meat, and 260 Kt of pig meat (OECD/FAO, 2023). This trend has implications for the environment. Based on production projections, Sub-Saharan Africa will account for 62% of the global increase in direct emissions from agriculture and will reach a share of 16% of global direct emissions by 2030 (OECD/FAO, 2023). Despite these predictions of increased productivity, demand is growing faster, meaning that import dependence is expected to grow (Erdaw & Beyene, 2022).

3. 1 Production

Sub-Saharan Africa's livestock production is comprised of a total population of approximately 2 billion poultry, 438 million goats, 384 million sheep. However, there are other species as well, namely cattle, pigs, camels, and horses (Erdaw & Beyene, 2022). The distribution of dominant livestock species shows that in Eastern Africa, mostly dairy production occurs, while in Central, Southern, and Western Africa, there is major reliance on poultry and beef production (Erdaw & Beyene, 2022). The highest livestock densities are mostly found in heavily populated areas and remain a very important contributor toward sustainable food security in low-income areas and marginal lands (Erdaw & Beyene, 2022). In addition, livestock significantly contributes to the livelihoods of SSA populations, and serves as an economically valuable asset (Gregory, 2011; Phillipsson et al., 2017). The trend of increased meat production and consumption is mirrored in predictions for Sub-Saharan Africa (Figure 4).

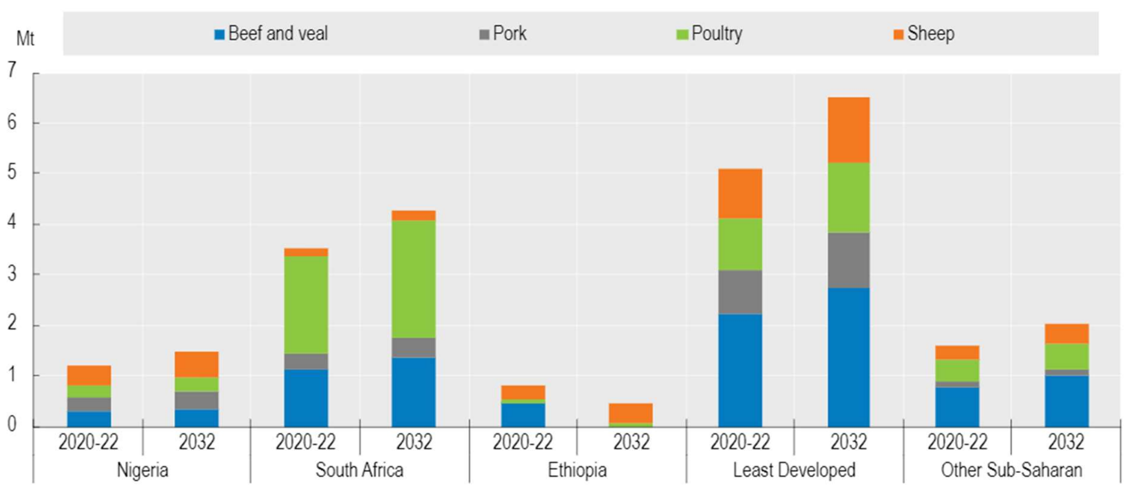


Figure 3 Livestock production in Sub-Saharan Africa. Source: OECD/FAO (2023), "OECD-FAO Agricultural Outlook", (2012))

Gregory (2011) has described twelve different major farming systems within Sub-Saharan Africa. According to this categorization, the farm systems that take most of the land area include sparse (arid) systems that integrate irrigated maize and cattle, pastoral farm systems with ruminants, cereal-root crop mixed systems with poultry, and maize mixed farming systems that incorporate cattle, goats, and poultry. These farming systems comprise large land areas and make up a significant amount of the agricultural population within SSA. When specifically focusing on livestock in SSA, Ayantunde et al (2018) present four categories that characterize production systems: pastoral, agro-pastoral, mixed-crop livestock, and peri-urban. The majority of livestock production systems in Sub-Saharan Africa remain extensive, incorporating pasture-based ruminant production (Erdaw, 2022). Importantly, livestock are often the primary source of phosphates and other nutrients for crop production, especially in mixed crop-livestock systems (FAO, 2001)

Even though 20-25% of the world's ruminants are found in SSA, levels of productivity are often inconsistent due to the influence of negative factors like disease, poor feeds, inadequate breeds, and climate (Millar & Photakoun, 2008).

4. Scoping and Justification of the Case

The chosen research approach for our paper is a case study methodology, one of the most common research strategies in qualitative research. (Aberdeen, 2013) defines a case study as "an empirical enquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident." Since the aim of this study is to address the assumptions and explore that phenomena to either prove or debunk those assumptions, the approach of this case study is exploratory (Aberdeen, 2013).

As mentioned, SSA is a large area comprising 48 countries. In terms of feasibility, we found it necessary to scale down our initial focus to West Africa. The justification for this scoping mainly lies in prevalent trade relations and livestock production suitability. As previously mentioned, the Netherlands is situated in the EU, and according to the European Commission, the EU is the biggest trading partner of West Africa (European Commission, 2022). As previously mentioned, the Netherlands is situated in the EU, and according to the European Commission, the EU is the biggest trading partner of West Africa (European Commission, 2022).

This trading also entails many food product imports into the region of West Africa. The Economic Community of West African States (ECOWAS) is a customs and trading union of fifteen West-African states. To further highlight this tight relationship, under supervision of the WTO, there is a bilaterial trade agreement between the EU and ECOWAS. This agreement is called the Economic Partnership Agreement (EPA) and is focused on enhancing, liberalizing and fostering economic trade relations between the two regions. (European Commission, n.d a).

Aside from trade relations, another factor weighing in, is the fact that region of West Africa is particularly well-suited for livestock production, and is comprised of 60 million heads of cattle, 160 heads of small ruminants, and 400 million heads of poultry (Erdaw, 2022; Claude Saha, 2008). However, most studies and policy documents claim that in West Africa, livestock farming operates far below the optimum while aiming for a higher self-sufficiency rate (Eeswaran et al., 2022; MOFA Ghana, 2024). Meanwhile, investment plans from European countries are on its way (Netherlands Enterprise Agency (RVO), 2019).

Therefore, this particular region is interesting to look into under the current predictions of increasing livestock product demand in SSA. These factors showcase to us how a further narrowing of the scope towards West Africa still holds relevance for the Netherlands in terms of HIC to LMIC relations. Scoping down to the region of West Africa allows us a further focus on a sector of livestock production. From the analysis of the meat sectors in the Netherlands and in Sub Saharan Africa, it is clear that poultry plays a major role in both areas, in terms of production, consumption and traded volumes. Currently, the EU is the leading supplier of poultry meat to West Africa (Figure 5) (Zamani et al., 2021).

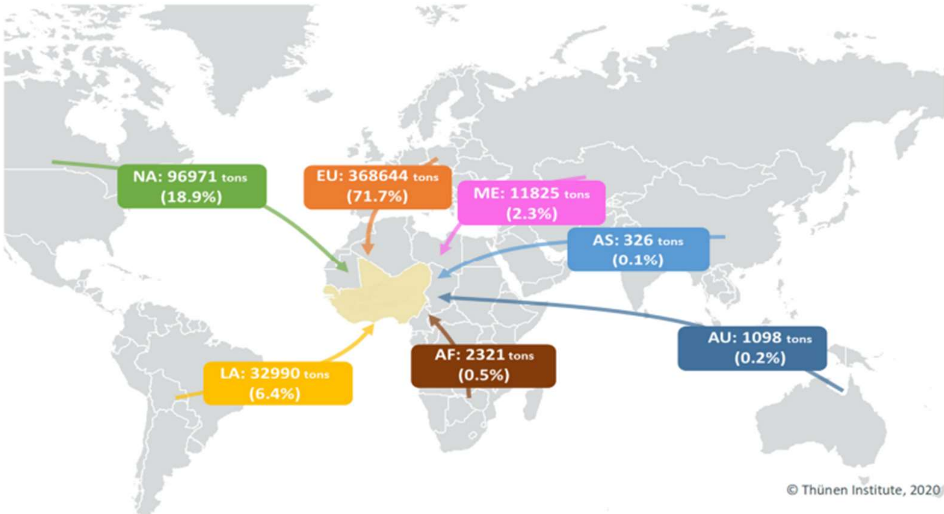


Figure 4 Global Poultry Trade Flows to West Africa in 2017 (Zamani et al., 2021)

Additionally, the OECD-FAO Agricultural Outlook 2021-2030 predicts that "poultry meat will continue to be the primary driver of meat production growth" (OECD/FAO, 2023). The favourable conditions for growth, such as meat-to-feed ratios and the short production cycle, are the foundation of that development.

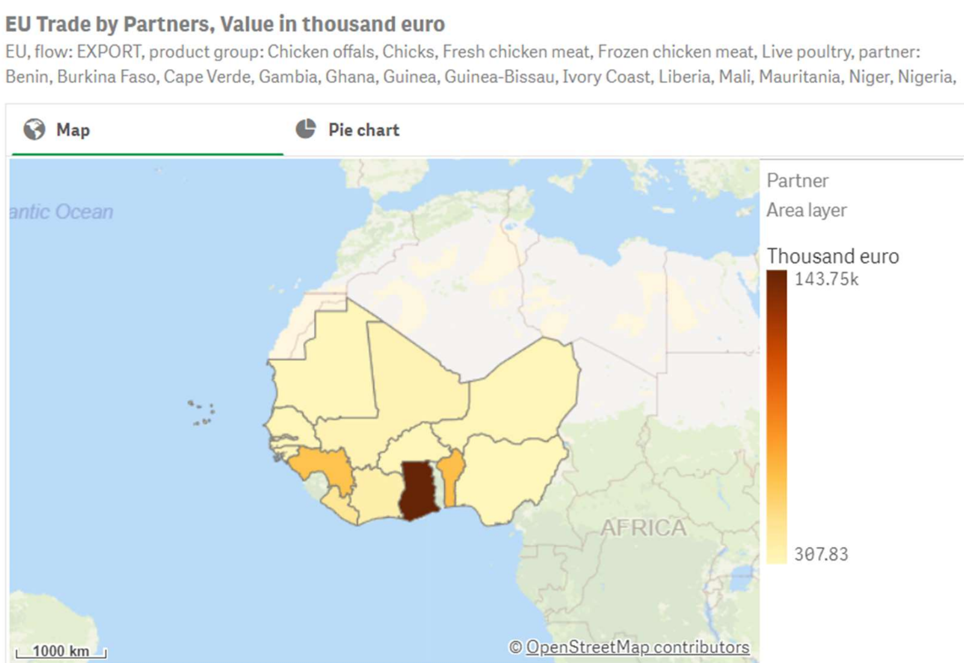


Figure 5 West African countries importing EU poultry products. Adapted from: European Commission (2024)

Figure 6 showcases how three West African countries are between the major destinations for European exports of poultry, Ghana, Benin and Guinea. In terms of carcass weight, they respectively received

4%, 2% and 1% of all exported European poultry meat as of 2022 (Expert Group for Agricultural Markets & European Commission, 22 C.E.).

Ghana is clearly the top destination in West Africa for poultry products exported by the EU. Additionally, the Netherlands is the top exporter (figure 7) with around 62 million euros in exported poultry. Coupled with the relevant volume of imports from the Netherlands, Ghana has also developed over the years ties and relations (Section 6.1-6.2) with the European country that make the Sub-Saharan country an interesting and relevant case study.

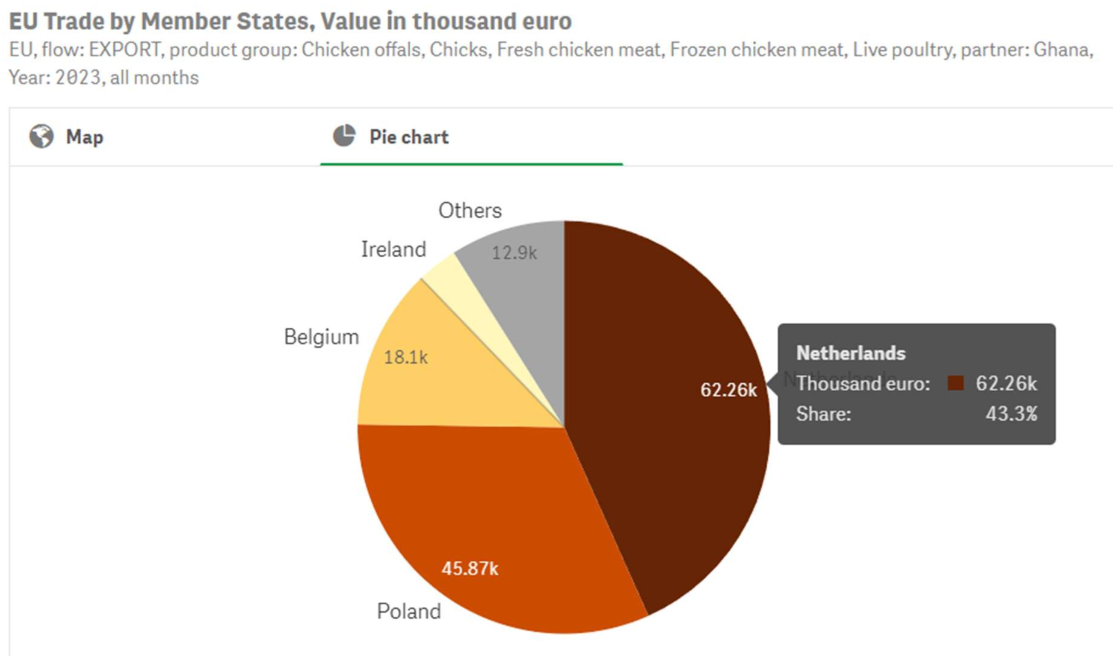


Figure 6 EU countries exporters of Poultry products to Ghana. Adapted from: European Commission (2024)

This analysis allows us to scope down our case study even further: selecting the export of **poultry** from the **Netherlands** to **Ghana**.

5. Poultry (Chicken) Production Systems

To understand the relationship between the two countries, it is important to understand the poultry production systems of each country. This section will describe the current state of affairs within poultry production systems in the Netherlands and Ghana. Background information on how poultry is produced is mentioned in Appendix A.

5.1 Dutch Poultry (Chicken) Production

The Dutch poultry sector serves as a relevant model of an industrialized animal production system. In figure 8, a graph depicts an overview of the number of farms, the number of broilers, and the average number of broilers per farm throughout the years in the Netherlands (Wageningen University and Research, 2023a). As seen from the figure, the poultry sector has decreased over 2018-2022. One reason for the decrease of the poultry sector is due to the decrease in fast-growing broilers (CBS, 2021b). As already mentioned, fast-growing broilers are not sold in supermarkets anymore, but they are still produced for export (Hilhorst, 2023). Another reason is due to the rising of Highly Pathgoenic Avian Influenza (HPAI), a zoonotic disease present in the Netherlands. This means that the disease can be transmitted from animal to humans. For example, during the period of October 2021 until October 2022, there were 98 cases of HPAI on poultry farms and hobby farms with more than 50 birds. There are strict rules made by the European Union and the Netherlands itself, when HPAI is detected. Regarding trade and transport of poultry, the EU regulations state that they must include health requirements to prevent disease spread (Ministerie van Algemene Zaken, 2023). As a result of these strict rules regarding zoonotic diseases, and especially the HPAI outbreaks, more than 8.8 million birds were culled in 2022, of which more than 1 million were culled preventively (Overig, 2022).

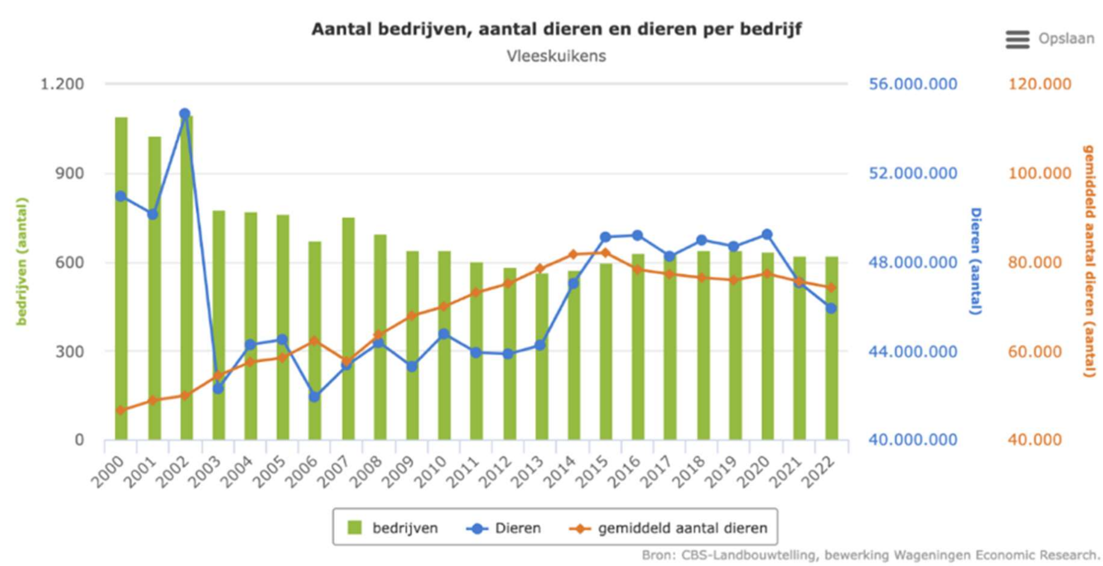


Figure 7 Number of farms (green), broilers (blue) and average number of broilers per farm (orange) throughout the years in the Netherlands. (Wageningen University & Research, 2023b)

Consumption patterns

Overall, the Netherlands eats a lot of chicken meat. Dutch people consume around 23 kgs of poultry per capita per year with a level of self-sufficiency in production of 160% (Avec, 2022). In a questionnaire, people were asked to rank chicken, fish, pork meat, beef and meat replacers to different categories and placed into a Radar chart. Chicken meat is especially considered the most 'lekker' meaning tasty, 'eenvoudige bereiding' meaning easy to prepare and 'past bij veel gerechten', meaning it is suitable for different dishes compared to the other meat products (*Consumptie van Kip - Kip in Nederland*, 2024). Moreover, when Dutch eat chicken meat, the Netherlands prefers breast fillet and chicken thigh fillet (*Consumptie van Kip - Kip in Nederland*, 2024).

Supply Chain

The Netherlands has 16 actors in the broiler meat supply chain, which an overview is given below in figure 9. The numbers in the schematic overview are from 2020 (Hao et al., 2020). There are three main *breeding organizations:* Aviagen; Covv-Vantress Inc. and Hubbard, which provide the genetics of the most producing chicken species. *Broiler parent breeders* produce hatching eggs which hatch to become broiler chicks. *Hatching firms* are places where the hatching of the eggs takes place. *Broiler farms* are where day old chicks (DOCs) are transported to and are kept there for different time periods depending on the market. For example, for conventional chicken meat, the chickens stay at the broiler farms for 5-7 weeks whereas for organic chicken meat the chickens stay there for 10 weeks. *Slaughterhouses* receive chickens with a live weight of 1.8 kg to 2.6 kg. *Processors* receive the semi-finished products and labels and package them, they also intertrade relations between processors and slaughterhouses for over-and under supply. *Retailers* receive the packaged meat and sell it to *consumers*, which are both private and commercial. Some by-products from the processors come back to the farms as animal feeds. Then there are factors involved in export and import, for example *feed producers, live broiler transport* and *broiler meat transport*. This supply chain mirrors the description of a typical industrialized system.

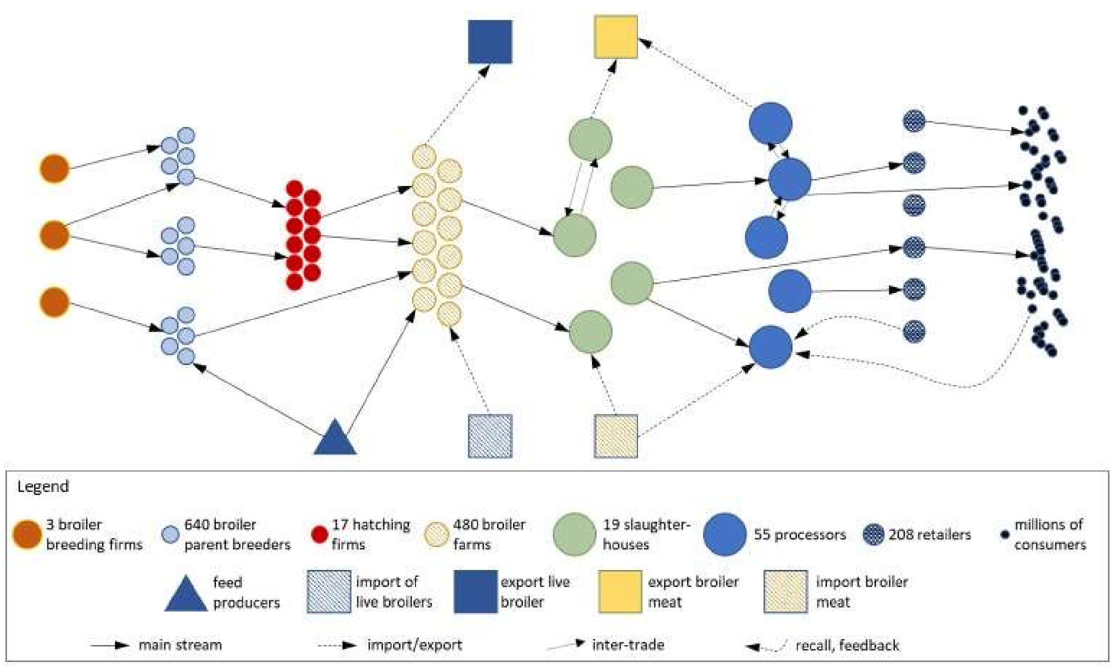


Figure 9 Schematic representation of Dutch broiler meat supply chain network (Hao et al., 2020).

Challenges for the Sector

As the Netherlands is relatively small but with a big intensive livestock sector, it is vulnerable to animal diseases including zoonotic diseases. Due to the proximity of the farms, pathogens can spread which poses a risk for animal as well as human health (Government of the Netherlands, 2022). Another challenge is to minimize the particulate matter the poultry system emits, aiming to decrease 50-70% in the coming 10 years (*Ontwerpen Voor een Gezondere Pluimveehouderij*, n.d.). Furthermore, the paper (De Olde et al., 2020) described the general sustainable challenges regarding the egg production system, however, some of these are still relevant for the poultry meat sector. These were mostly focused on emissions (particulate matter, carbon dioxide and ammonia) some animal welfare aspects (feather pecking, feed conversion ratio, housing systems), human consumption/health (disease outbreak, protein resource, food safety) and economics (feed origin, working conditions and farm income).

5.3 Ghanaian Poultry (Chicken) Production

Overview

From the 1960 until the early 2000s, poultry production in Ghana flourished, being among the leading exporters to neighbouring countries. The commercialised poultry industry mainly consisted of Pomadze, Darko Farms, Afariwaa Farms, and Akate Farms setting the pace and creating jobs for thousands of Ghanaians (Kusi et al., 2015). However, in the early 2000s, Accra reduced its import tariffs for poultry to 20 per cent, with frozen chicken imports exploding. In 2006, the Ghanaian parliament passed a law to increase taxes up to 40% on the importation of frozen chicken. However, that law has never been implemented. Even though poultry production in Ghana increased by 119% from 2006 to 2018, the EU remains the leading exporter of poultry meat and the market share has increased strongly (Zamani et al., 2021). Interestingly, as of 2019, the high cost of broiler production (US$ 2.07 per kg) compared to US and Brazil (US$ 0.52 and US 0.55 per kg) creates a challenge for Ghana in an international setting. Moreover, the cost price of $7 per 2.5 kg broiler carcass compared to $2 per kg eggs makes layer production more favourable. Due to these circumstances, as of 2014, Ghana supplied less than 10% of its chicken meat demand (Etuah et al., 2019).

Consumption Patterns

As of 2022, the population of Ghana was 33 million people, with a growth rate of 1,92%. 71.3% of the population is Christian, 19,9% Muslim and others. Poultry meat is a common part of the Ghanaian diet, presently, it holds the top spot in national meat consumption, followed by beef, goat, and sheep meat (Partners in Transformation, n.d.)

Between 1999 and 2021, poultry meat consumption increased from 1.6 to 13 kg per capita (USDA, 2024), which is more than double the average for sub-Saharan Africa. This rapid growth was accompanied by or, respectively, due to the strong increase in imports during the observed period. A study from 2020 on the perception of imported versus domestic chicken consumption in Ghana (Asante-Addo & Weible, 2020) assessed that drivers such as food safety concerns, availability, price, convenience positively influence the consumption of imported meat, while sensory quality and ethnocentrism positively affect the consumption of domestic chicken.

Ghanaian Policies

Due to increasing population, urbanization, food insecurity and the need for more jobs, the Ghanaian government has set in place multiple policies to govern, defend, and support its poultry sector. When it comes to current Ghanaian poultry trade policies, these are aligned with the ECOWAS policies. The Union is trying to enable more liberal trade between its members, and to strengthen political bonds. According to the ECOWAS regulations, poultry imports originating from countries outside the customs unions are subject to the Common External Tariff. This tariff is currently at 35% for poultry products, since the adoption in 2015 (Zamani et al., 2019). Furthermore, there is no Value Added Tax (VAT) applied to food products originating from Ghanaian production, even final products in butcheries are excluded from the VAT. Only finalized meat products in supermarkets are subject to a 12.5% VAT rate (*Country Analysis Ghana*, n.d.).

When it comes to domestic policy strategies, the Ministry of Food and Agriculture introduced the Ghana Broiler Revitalization Project (GHABROP) in 2014. The goal of this project is to safeguard the domestic poultry industry, and to increase national poultry production together with the Greater Accra Poultry Farmers Association (CAPFA). On top of that, the GHABROP is also involved in setting import requirements. The aim of this project is to ultimately stop the import of poultry all together in the coming five years (Euromeatnews, 2024). However, there seems to be an internal discussion on whether ending poultry imports completely is desirable. The president of the CAPFA is in favor of a 50:50 ratio of imported poultry products and domestically produced poultry product on the Ghanaian market (Zamani et al., 2019)

Another domestic policy was introduced in 2019. This project is called the Rearing for food and jobs campaign and focusses on how to make the Ghanaian livestock industry resilient and competitive. It strives for an increase in domestic livestock production, to create more jobs within livestock farming, and to reduce Ghana's current reliance on poultry imports (Bagbara Tanko, n.d.). The main goal of Ghanaian policy makers seems to focus on increasing domestic poultry production, as well as guarding its internal market from relying on cheap poultry imports. As of 2023, The minister for Food and Agriculture introduced the Planting for Foods and Jobs campaign 2.0 in order to ensure food security, especially relating to poultry. Currently the self-sufficiency of Ghanaian poultry production is merely 5%. However, with this new five-year plan, the minister wants to increase this rate to 13%. He indicated he intends to focus on the intensification of the Ghanaian poultry market by scaling up 300 poultry farms all over Ghana (User, 2023).

Something specifically related to the Netherlands was the partial ban on a poultry imports. Poultry imports from the Netherlands, Germany, Russia, Denmark and the United Kingdom were banned in 2020 (Oloso et al., 2020). The Ghanaian ministry of Food and Agriculture wrote an official letter stating that Ghana is considering an import ban According to the ministry, the Ghanaian ban was justified by European outbreaks of the Avian Influenzas subtype H5N8 (Zamani et al., n.d.). However, this ban was rescinded in 2021.

Figure 10 List of import restrictions 2023, Source: Ghanaian Parliament

The latest development regarding poultry regulations was seen at the end of 2023. The Minister of the Ministry of Trade and Investment, in cooperation with the Minister for Food and Agriculture, stated that he is considering restricting imports on twenty-two products including poultry, as seen in figure 10 (Wodenya, 2023). Instead of banning poultry products, the minister wants to leave room for enough poultry import that would suffice food security, together with the objective to boost domestic Ghanaian poultry production, and to encourage Ghanaian consumer to purchase more locally produced poultry products.

Ghanaian Poultry Farming

Much of the aforementioned trends have a direct effect on the trends for poultry production and the practices used to farm poultry in Ghana. In order to understand the dynamics between poultry production in both countries, this section aims to provide an overview of different poultry farming systems in Ghana. To start, poultry farming can be separated into commercial farming systems, and small and medium-scale farms.

Commercial Farming

In Ghana, approximately 20 percent of the total poultry sector is large-scale commercial poultry production. Enterprises can be described as small-scale (10,000 birds), medium-scale (10,000 – 50,000 birds), and large-scale (more than 50,000 birds) (Netherlands Enterprise Agency (RVO), 2019). The Ashanti region has the most large-scale commercial farms, followed by Brong Ahafo, and the Greater Accra region. In total, there are 29 commercial poultry farms, producing mostly eggs (Netherlands Enterprise Agency (RVO), 2019). Meanwhile, meat production is mostly from small scale backyard farmers. Large scale farms are known to have stricter biosecurity practices and to manage their own feed mills and hatcheries (Etuah et al., 2019). Poultry production starts with stocks of day-old chicks (Aboah & Enahoro, 2022). Although there are local hatcheries that produce day-old chicks, these are often low-quality and encounter failures to thrive. In these commercial systems, birds are fed on composition feed. Large-scale farms will supply their own feed, while medium and small-scale enterprises rely on external suppliers for both feed and day-old chicks. This garners a tendency to import day-old chicks from the Netherlands and Belgium (Netherlands Enterprise Agency (RVO), 2019). In addition, within these systems, broiler and layer birds are kept indoors and poultry farms use deep litter and sometimes battery cages (Etuah et al., 2019). The age of broilers at harvest varies depending on various factors, such as access to slaughter and consumption markets. This is a contested problem in relation to the cost price of broilers, as after 7-8 weeks the feed conversion ratio incurs losses to the farmer, since the birds are no longer growing and still eating feed (Etuah et al., 2019; Chibanda et al. 2022). Access to slaughtering and processing facilities is limited, and these processes mainly happen at the household level or via community actors that prepare food. There are only two modern poultry processing facilities in Ghana (Netherlands Enterprise Agency (RVO), 2019). Due to these factors, broiler and village chickens are often sold live at an enterprise's farm gate, or in an open market to wholesalers, retailers, caterers, and household consumers (Etuah et al., 2019). Some commercial farms process the birds themselves and sell fully dressed carcasses at the farm gate (Etuah et al., 2019). Notably, according to Etuah et al. (2019), it is not mainstream practice for chicken to be processed into cut portions (Etuah et al., 2019).

Non-Commercial Farming

Medium and small-scale farms comprise the other 80 percent of the poultry sector (Ministry of Foreign Affairs, 2018). Importantly, this 80 percent also includes farming systems that contrast with commercial systems, like mixed-crop livestock systems, backyard farms, and farming practices within indigenous communities. To get an idea of what small-scale backyard farms look like, Blackie (2014) describes small-scale farms from the Accra region. Here, backyard farms have an average flock size of 13.4 chickens (Gallus domesticus), with a 5:1 hen-cock ratio. The birds are mostly managed by women, and mostly scavenge as it is a very low input system. Chickens mainly feed on harvested remains from the field, household waste, vegetation, and insects from the soil. On small farms in Ghana, chickens may also be fed termites, which can be a risk for disease (Asem-Bansah et al., 2011); (Boafo et al., 2019)). Within these backyard farms, chickens are reared alongside crops, like maize, cassava, and vegetables (Blackie, 2014). In addition to a source of food security, chickens are also used in festivals and customary rites. Many chickens are lost annually due to Newcastle disease, and housing is often made from mud or wood with thatched straw roofing (Blackie, 2014).

Overall, farming commences by growing an average of 4-layer chickens that are often received as a gift from relatives (Asem-Bansah et al., 2012). According to Asem-Bansah et al. (2012), main actors for inputs can include vendors of basket cages, starter chickens, and veterinary drugs. Basket cages are hand woven and used to transport live chickens (Asem-Bansah et al., 2012). Local traders may be involved in the supply of chickens and sale of chickens. There are two relevant types: itinerant traders, or traders who travel outside the locality to sell and source chickens; and local traders at the market centre who source and procure chickens directly to the local community (Asem-Bansah et al., 2012). Occasionally, itinerant traders may supply starter chickens that have been obtained from commercial poultry farms (Asem-Bansah et al., 2012). At the farms, there is usually a variety of layer hens, broiler hens, and cockerels; most often there is always a layer chicken on farm (Okantah et al., 2005). When these birds are ready to be consumed, they are traded at the local market and are sold live to local restaurants specialized in preparing local dishes, grilled meat sellers, and households purchasing for home consumption. In addition, these chickens may be purchased for ritualistic sacrifices (Asem-Bansah et al., 2012). Importantly, backyard poultry meat harbours unique qualities preferred by some consumers. Some of these attributes are toughness, suitability for traditional rituals, and taste (Asem-Bansah et al., 2012).

Challenges for the Sector

Farming-related challenges

There are several challenges experienced at the farm-level in Ghanaian poultry production. In the commercial sector, there are a variety of challenges that may be addressed related to animal husbandry, feeding and health, availability of inputs, information, and credit (Yaw Kusi et al., 2015). Specifically, as outlined by the Netherlands Enterprise Agency (2018) (Netherlands Enterprise Agency (RVO), 2019), there are specific challenges related to Ghana's underdeveloped hatchery sector and the ability of day-old chicks to thrive. In part, this is due to challenges related to feed quality, and the ability of local feed mills to meet demand. The supply gap for local feed in general also leads to high costs for feed. Moreover, the hatchery sector is not effectively regulated (Netherlands Enterprise Agency (RVO), 2019). In parallel, producers face challenges with the quality of vaccines and access to veterinary services, as well as problems caused by poor bio-security practices. For backyard farmers, issues related to disease also relate to the wildlife-livestock interface, and the feeding of scraps and/or insects to birds which can transmit disease and/or lack efficiency for the amount of meat harvested from the chicken (Aboah & Enahoro, 2022); (Netherlands Enterprise Agency (RVO), 2019).

Supply chain challenges

Beside farming practices, there are several challenges that the supply chain faces in the poultry sector. Regarding intensification of poultry production, there are limited processing facilities (Etuah et al., 2019). Specifically, there are only two major meat processing facilities in Ghana (Netherlands Enterprise Agency (RVO), 2019). This can pose some risk related to food safety, as meat is often informally slaughtered at the household level, at local restaurants, and by local grilling stands. In addition, recall that due to limited local resources and reliance on inputs, the cost of production is high. This has serious implications for the ability of medium and small commercial poultry firms to be competitive in the market, and therefore thrive. Furthermore, the cost price of broiler production is often higher than that of layer production, causing farmers to see layer production as a more attractive sector (Etuah et al., 2019). Finally, the lack of infrastructure contributes to this high cost, as the lack of infrastructure creates reliance on the purchase/import of international materials. Moreover, the lack of infrastructure creates challenges related to access to materials and equipment because it can be difficult to transport the materials where they are needed (Asem-Bansah et al., 2011) & (Kusi et al., 2015).

6. Relationship between the Netherlands and Ghana

6.1 Historical Relationship

According to Kessel (2022), Dutch presence in the Gold Coast (a portion of contemporary Ghana) first dates to over 400 years ago when the Dutch established a trading post in Moree, Ghana. The Dutch administered the Dutch Gold Coast from 1637 until it was ceded to the British in 1872. David van Nyendael, envoy of the Dutch West India Company (WIC), first traveled to the royal court of King Osei Tutu of Ashanti in 1701. This visit is known as an important historical landmark event that enabled close relations for centuries to come. During the times of the WIC, Dutch-Ghanaian trade focused on the exchange of Ghanaian gold, ivory, slaves, and cocoa for Dutch textiles and weapons (Kessel, 2022). The Dutch also played a significant role in Inter-African trade. Further, the WIC had a goal of establishing a monopoly over its West African trading partners, but African states continued to welcome in new trading partners. As rivalry between the Dutch and British grew for trade influence in West Africa, the Dutch "used dumping practices known as 'cladden,' to undercut the English merchants and squeeze them out of the West African markets" (Kessel, 2022). It is important to note that the Dutch-Ghanaian relationship during this time consisted of more aspects than trade of commodities alone. The Dutch were major players in the transatlantic slave trade, contributing to the forced migration of millions of Africans to all parts of the world.

Today, the Netherlands is one of the top five importers from Ghana, primarily due to cocoa, gold, and oil (Kingdom of the Netherlands, 2021) Moreover, the main exports from the Netherlands to Ghana include "used cars, electrical machinery, textiles, mineral fuels, oils and processed food products, notably dairy products and salted pig feet" (Kessel, 2022). While this is a simplified and brief overview of Dutch-Ghanaian relations, the transfer of knowledge, culture, commodities, and worldviews has continued to this day.

6.2 The Netherlands' role in Ghana's poultry industry

There are several ongoing relational strategies that are driving the Ghanaian-Dutch relationship today. First, on the EU-level, the Global Gateway Africa-Europe Investment Package works to financially support projects falling under jointly determined focus areas, one being agri-food systems. The investment package aims to support African agri-food system by "creating a conducive and transparent policy environment for sustainable private investments, enhancing investments in support to agri-food and fish-processing, facilitating innovation and boosting improved nutrition" (European Commission, n.d b.). Additionally, The Netherlands' African Strategy aims to create more "effective trade agreements, stronger economic ties and improved access for Dutch businesses to the African market in combination with support for African partners to gain enhanced access to the European market" (The Government of the Netherlands, n.d.).

In 2014, the poultry sector in Ghana became a focus area of collaboration between the Dutch government, the Dutch private sector, and the Embassy of Ghana (Embassy of the Kingdom of the Netherlands, 2014). There are numerous Dutch companies that are involved in the supply chain on a global level to increase the production and welfare quality of the animals. One program that stands out is the Dutch Africa Poultry Platform (DAPP), a platform of Dutch companies that are working in in every part of the poultry supply chain in Africa (The Netherlands-Africa Business Council, 2024).

Table 1 *Overview of Dutch companies involved across various areas of the poultry supply chain in Ghana, as represented within DAPP (The Netherlands-Africa Business Council, 2024).*

Area of Poultry Supply Chain	Dutch Companies Involved

Breeding, hatching, and day-old chicks	A. Angel Eggs B. Hendrix Genetics C. Pas Reform Hatchery Technologies D. Verbeek Hatcheries International
Feed (manufacturing) and feeding	E. Cagemax F. Champrix G. Darling Ingredients H. Koudijs Animal Nutrition I. Ottevanger Milling Engineers
Animal health and biosecurity	J. Royal GD K. The Schippers Group
Slaughter and (egg/meat) processing	L. Foodmate M. Marel Poultry Processing N. MOBA Group
Housing and equipment	O. Bincx P. Elpress Q. Impex Barneveld R. VDL Agrotech S. Vencomatic Group
Education, practical training, and poultry management software	T. Aeres U. Champrix V. I Grow Chicken

Additionally, Wageningen Livestock Research is involved in multiple aspects of the value chain including breeding/hatching, animal health, biosecurity, housing and equipment, and education.

6.3 Poultry Imports from the Netherlands to Ghana

In 2023, Ghana imported 270,000 MT of chicken products, 20% of which came from the Netherlands, for a value of 62m euros (USDA, 2024). One paper (Zamani et al., 2021) interestingly mentions the Rotterdam Effect as one possible cause of the high number of exports coming from the Netherlands to Ghana. The Rotterdam effect refers to the fact that there may be discrepancies in the statistics regarding trade from the Netherlands, since there may be a portion of products that are actually produced in other countries and re-exported via the port of Rotterdam. The value of these discrepancies is difficult to gauge, so for the sake of this analysis we assume that all the poultry exported from the Netherlands is produced within the Netherlands. It is relevant to point out that the imports differentiate between consumer products, which are put in the Ghanaian market for immediate consumption, and producer products, which are inputs for chicken production.

Consumption-Related Imports

The value of the imports of consumer poultry products from the Netherlands reached over 57 million euros (Figure 11). These products consist of fresh and frozen chicken meat and offals, frozen chicken meat consists of more than 95% of exports.

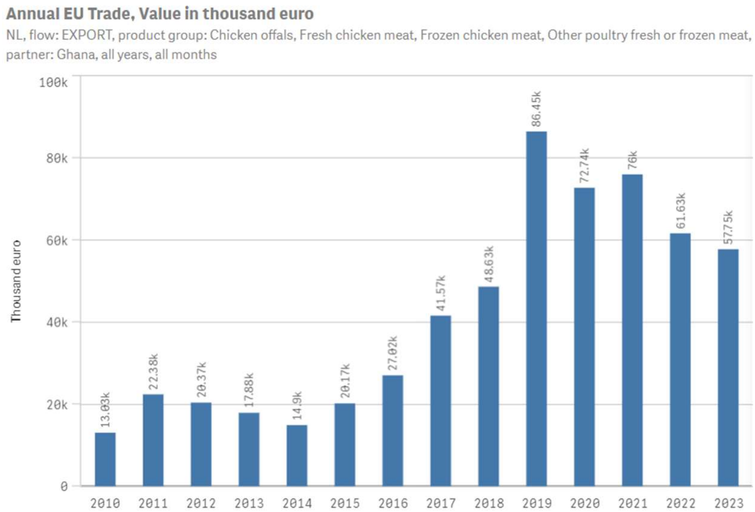


Figure 11 Poultry imports from NL to Ghana, yearly data, value in thousand euros. Adapted from: (European Commission, 2024)

The price of imported poultry is significantly lower than the price of domestically produced poultry, a kg of leg quarters costs GH¢35.00 ($2.92, €2.56) for the imported frozen product, while the domestically produced costs GH¢52.00 ($4.33, €3.80) (USDA, 2024).

Production-Related Imports

Overall, there are three relevant types of exports into Ghana to support production and consumption reported by the Netherlands:

- fowls of gallus domesticus (domestic chicken), or chickens that will be further matured in Ghana for meat consumption,
- grandparent and parent chicks that will be matured to reproduce laying hens for egg consumption,
- and grandparent and parent chicks that will be further used to produce chicks for meat production.

In total, this accounts for 159k kilograms and 4.5m Euros (Table 2). It is important to point out that the first two types of inputs account for 84% of the total production related imports but they are used for producing meat and eggs for consumption. Instead, the third one accounts only for the remaining 16% and it is the only input that would concretely aid the poultry production in Ghana.

Table 2 Types of Input. Adapted from: (Statistics for International Trade Analysis (SITA) system, WUR

Types of Input	Quantity (Kg)	Price (EUR)
Fowls of gallus domesticus, <= 185 g, excl. turkeys and guinea fowls	85189	2352989
Grandparent and parent female chicks of fowls of gallus domesticus laying stocks, <= 185 g	49097	1413188
Grandparent and parent female chicks fowls of gallus domesticus, <= 185 g (excl. laying stocks)	24714	733823
total	159000	4500000

A Note on Feed

De Heus is a large Dutch animal nutrition company that is recognized worldwide. Ghana was the first country in Africa where they created a compound animal feed factory called Koudijs which is a subsidiary company of De Heus. The presence of a Dutch company in Ghanaian feed production exemplifies the reach that the Netherlands has over the poultry production in the African country.

Maize and soybeans are crucial components of poultry feed, but local production faces some challenges. While Ghana is self-sufficient in maize production, it also represents a staple in the Ghanaian diet (African Union, n.d.) meaning that the local production is not able to meet the needs for poultry feed, resulting in imports of maize from South America and Romania (Andam et al., 2017).

Another important feed element is soybean, which is also produced locally, but because of the limited processing capacity of the country, only 10-20% of the produced volumes are processed for oil extraction and animal feed (African Union, n.d.), this also results in considerable imports, importing 40% of its soybean, 35% of its soybean meal, and 70% of its soybean oil (Martey et al., n.d.).

6.4 Vision of future relations

Moving toward the future, the Dutch Ministry of Foreign Affairs mainly focusses on addressing Ghana's need for the improvement of their domestic poultry production. The ministry recommends the Dutch private sector to start joint ventures or wholly owned foreign enterprises in Ghana or to set up a training institute for poultry farmers. Additionally, they encourage investments in poultry feed production facilities and broiler slaughtering and processing facilities. They also recommend exports of 1) Hatchery technology, DOCs, fertilized eggs, parent stock, 2) Laboratory and animal health technology, 3) Equipment: drinking and feeding systems, climate control systems, manure drying, 4) Animal feed inputs: concentrates, pre-mix and pelletized feed, 5) Feed production equipment, 6) Vaccines and drugs, and 7) Slaughtering and processing technology (Embassy of the Kingdom of the Netherlands, 2014). These efforts also resonate with the ambitions of the Netherlands-Africa strategy, to support Ghana's wants in reducing its reliance on foreign poultry imports.

The Embassy of Ghana has shown to be receptive to supporting Dutch private investment in Ghana's poultry sector. According to a 2019 Analysis of the Poultry Sector in Ghana (Netherlands Enterprise Agency (RVO), Ghana offers agribusiness the lowest cost in Africa for export markets, five-year tax holidays for agro-processing businesses, and location-based tax rebates for agribusinesses engaged in "manufacturing and custom duty exemptions for agricultural and industrial machinery and equipment imported for investment purposes." The Netherlands Enterprise Agency (RVO) and The Embassy of the Kingdom of the Netherlands in Accra, Ghana are the main drivers of facilitating private sector investments by Dutch companies in Ghana (Netherlands Enterprise Agency (RVO), 2019).

6.5 Main Takeaways

Trade relations over the last 400 years have played a significant role in developing what we know now as the close relationship between Ghana and the Netherlands today. It is relevant to consider whether the colonial history of the Netherlands in Ghana has resulted in the Netherlands having a higher level of power in their position within the Dutch-Ghanaian relationship. With the recent shared focus on the Ghanaian poultry sector over the past decade, we have witnessed increased investments by Dutch companies in about all areas of the poultry supply chain in Ghana, as well as increased exports of poultry products to Ghana. While the intention of this shared vision is to bolster the Ghanaian poultry sector, concerns remain regarding the impact of imported poultry products rendering local production less competitive and contributing to cost-cutting tactics which ultimately reduce quality. Additionally, its relevant to examine Ghana's increasing reliance on Dutch investments in hatchery and feed and consider how this may impact local production systems.

Much more than just poultry products are being transferred from the Netherlands to Ghana. Also being transferred is knowledge in the form of technologies, practices, processes, and beliefs. As we move toward analysis in the following section, we will further characterize what form this knowledge takes, what power dynamics influence whose knowledge counts, and the influence of this knowledge transfer on stakeholders in Ghana.

7. Analysis

7.1 Methodology

This analysis is informed by systems thinking, mapping, and change in food and agriculture (Dentoni et al., 2023). For this paper specifically, the focus lies on the mapping of the system to gain a deeper understanding of the interrelations between actors, how they relate and share resources, and problems, and how they are entangled with each other. Visualised systems mapping is considered to be an adequate tool to build collective understanding by multiple societal actors for intended system change and shows potential to challenge power structures in agri-food systems (Dentoni et al., 2019) To support our analysis, we approached the complex issue at hand by:

1. Conducting a stakeholder analysis to establish an understanding of the power and relationships between relevant stakeholders in the systems,
2. Performing system mapping using a causal loop diagram to map connections between complex problems between the systems, and
3. Utilizing the development of a rich picture to identify leverage points.

Stakeholder Analysis

We started our analysis by using a stakeholder power vs. interest grid to stakeholders relevant to the poultry sectors in Ghana and the Netherlands who have interest and power as it relates to degrowth in the Netherlands and post-growth in Ghana. This type of grid has been applied in various contexts (i.e. policy, business, development) to map stakeholders based on their levels of power and interest in given situations (Brugha, 2000).

To do so, we first researched which specific local, regional and global stakeholders (organizations, institutions and groups of people) might have interest and power in this relationship between Ghana and the Netherlands (Chapter 6). Based on this information, we plotted stakeholders on a power versus interest grid. Power and interest can have many interpretations depending on the context. We interpreted "power" as the ability or capacity to influence change within the system, and we defined "interest" as a stakeholder's likelihood of being directly or indirectly impacted by changes made within the system. To determine the exact position of each stakeholder, we ranked them on a scale between -10 and 10: -10 being low, and 10 being high. This stakeholder analysis process served as a backbone for our system mapping process.

Next, we created a value network map to better understand the system landscape by mapping the actors within the system and demonstrate the interrelationships and resource flows between them (Dentoni et al., 20223); Allee, 2008). This value network map helped us better understand the system landscape so that we could go further in our next stage of analysis.

System Mapping

We chose a system mapping process to help answer our third research question, "What are the power dynamics in the meat export landscape from the NL to case study country (Ghana)?" Causal loop diagrams are "graphical representations of assumed interactions between causes and effects of the multiple elements of a complex problem" (Dentoni et al., 20223). We used this system mapping tool to better understand the presence of positive or negative feedback loops within the Dutch-Ghanaian export landscape.

To support our ability to make assumptions on the nature of actors and exchanges within this complex system, in addition to our findings for research questions 1 and 2, we conducted one semi-structured interview with an expert in African Livestock production. The interview lasted about one hour and fifteen minutes. The information provided by this expert is referenced anecdotally as personal contact to maintain their anonymity. Interview transcriptions can be provided upon request.

Identifying Leverage Points

In the next stage of our analysis, we used a rich picture to visualize the system (Barbrook-Johnson and Penn, 2022). This rich picture was informed by the stakeholder power vs. interest grid, value network map, and causal loop diagram, but also was informed from our previous findings, assumptions, and creativity. Throughout the process of drawing the rich picture, system lock-ins became apparent. We identified several points in the system that work to maintain the growth-metabolism. From there, we considered what leverage points we could use in a degrowth pathway. For the purpose of this report, leverage points are defined as places to intervene in a system towards a specific goal, or how Meadows phrases it: “where a small shift in one thing can produce big changes in everything.” In her piece on leverage points, Meadows defines the second most effective places to intervene in system as: “2. The mindset or paradigm out of which a system arises” (Meadows, 1999). Since the aim of our fourth research question is to identify leverage points for a degrowth pathway within the export landscape between the Netherlands and Ghana, we found it to be helpful to have principles to follow related to degrowth and/or post-growth. McGreevy et al. (2022) outlined five principles by which growth and post-growth metabolisms operate in an agri-food context (see table 3).

Table 3: Principles by which growth and post-growth metabolisms operate arranged by category (McGreevy et al., 2022)

	Economic principles	**Social-ecological principles**	**Allocative principles**	**Institutional principles**	**Relational principles**
Growth metabolism	Efficiency	Extraction	Accumulation	Private ownership	Control
Post-growth metabolism	Sufficiency	Regeneration	Distribution	Commons	Care

While several leverage points could be identified during this process, we narrowed down our focus to elaborating on three leverage points based on two main criteria: 1) our areas of expertise on the subject matter, and 2) our perception of how influential the leverage point would be in driving degrowth in the poultry sector in the Netherlands. Next, we identified two mechanisms for change per leverage point, or the “tools” to enact change. Lastly, we wrapped up each leverage point with implications on the Netherlands. In the discussion, we reflect on the implications of the degrowth pathway in the Netherlands on Ghana.

7.2 Results

Value Network Map: The Netherlands and Ghana Poultry Sector Relationship

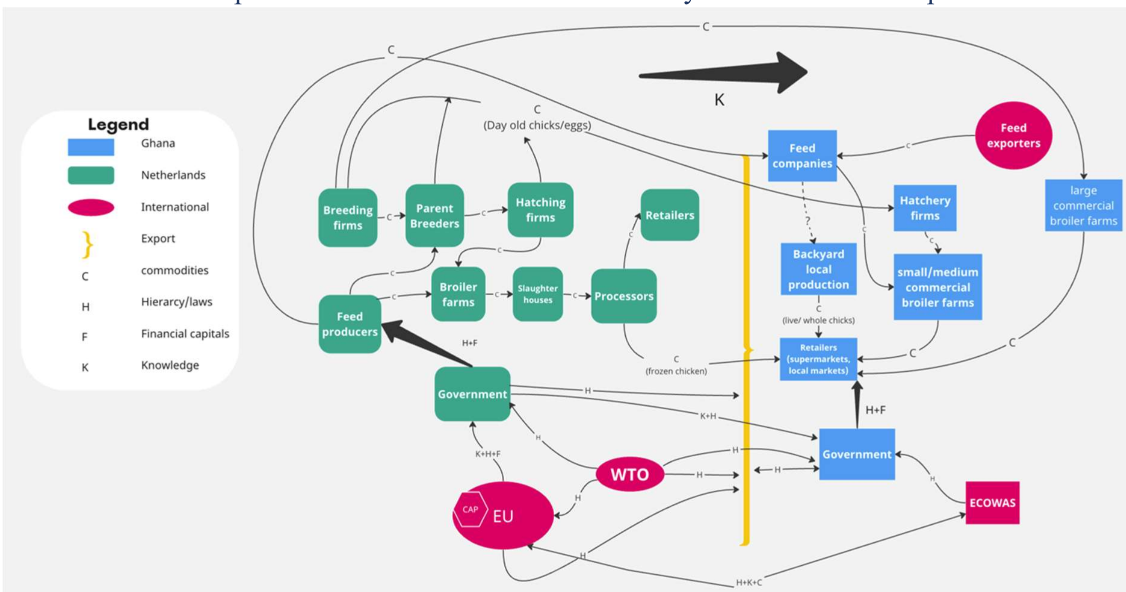


Figure 12 Value Network Map of the Netherlands and Ghana poultry sector relationship.

The map depicts the interdependency and path dependency of the production and trade of poultry between the Netherlands and Ghana. The actors involved in this process are depicted along with the flows of commodities (C), hierarchy/laws (H), financial capital (F) and knowledge (K). The understanding of these flows comes from the previous analysis of both markets. The green boxes represent Dutch actors, while the blue boxes are Ghanaian. The red boxes represent the international players in the system, which have an influence on the two governments and the trade as a whole, depicted as the yellow bracket.

On the left side of the map, the Dutch actors in the poultry supply chain are represented. We can observe the relationships and the trade of inputs starting from:

- the Breeding Firms,
- then Parent Breeders,
- Hatching Firms,
- Broiler Farms,
- Feed Producers,
- Slaughterhouses,
- Processors and Retailers.

The Dutch government has an influence on all of these actors through laws, regulations and financial investments. The European Union oversees these relations, but it is important to point out that the agricultural sector is a shared competence between the EU and its member states, so the capacity of the EU is only partial.

Moving into the Ghanaian side of the value network map, Ghanaian actors are presented on the right side by the blue boxes. Describing the Ghanaian poultry sector without pointing out the inputs coming from the Netherlands would be insufficient for the understanding of the system as a whole. The industrialized poultry system in Ghana receives inputs from the Netherlands from the beginning of the chain. Day old chicks and eggs come from Dutch breeders and hatching firms and reach the large commercial broiler farms. In these farms the slaughtering and processing is internalized, and they sell their final product either directly on site or through local retailers. Small and medium commercial broiler farms receive day-old chicks from the hatchery firms, but since they struggle because of poor feed quality, they are also supplemented by Dutch breeding firms.

Another important part of the chain is the traditional backyards producers, which are not industrialized and sell poultry to local markets usually as whole chickens that are slaughtered locally. The retailers are supplied not only by local producers, but the bulk of the products comes from Dutch processors in the form of frozen chicken. The feed used in the production is partly locally produced and partly is imported from Dutch feed producers such as de Heus and other foreign producers. In trade as a whole, indicated by the red boxes, the players are the Dutch and Ghanaian government, but also the ECOWAS, the EU and the WTO, of which both Ghana and the Netherlands are part.

Stakeholder Grid defining power and interest related to degrowth in NL

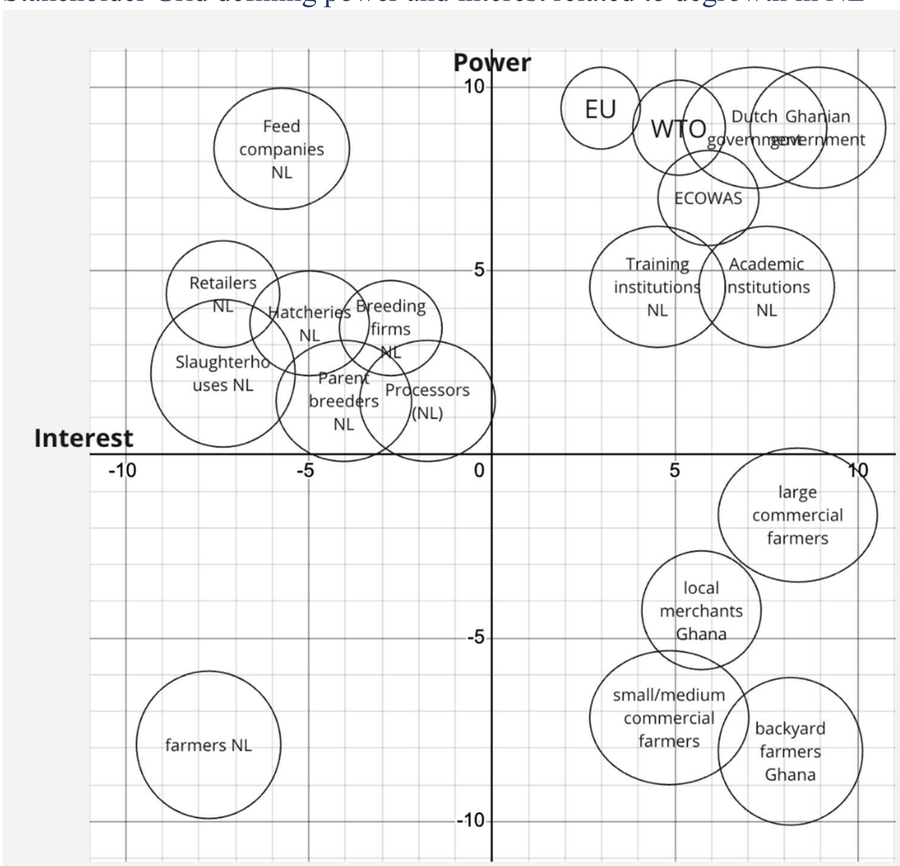


Figure 13 Stakeholder analysis.

Figure 13 shows the Stakeholder grid according to the aforementioned methodology. Here, we see significant power held by Dutch entities, with varying levels of interest in a Dutch degrowth pathway. Meanwhile, Ghanaian stakeholders, such as large commercial farmers, local merchants, small/medium commercial farmers, and backyard farmers are all characterized with high interest and low power in the system. The details into these power and interest characteristics are described in Appendix B.

Causal Loop Diagram: Mapping Interrelations and Challenges between NL and Ghana

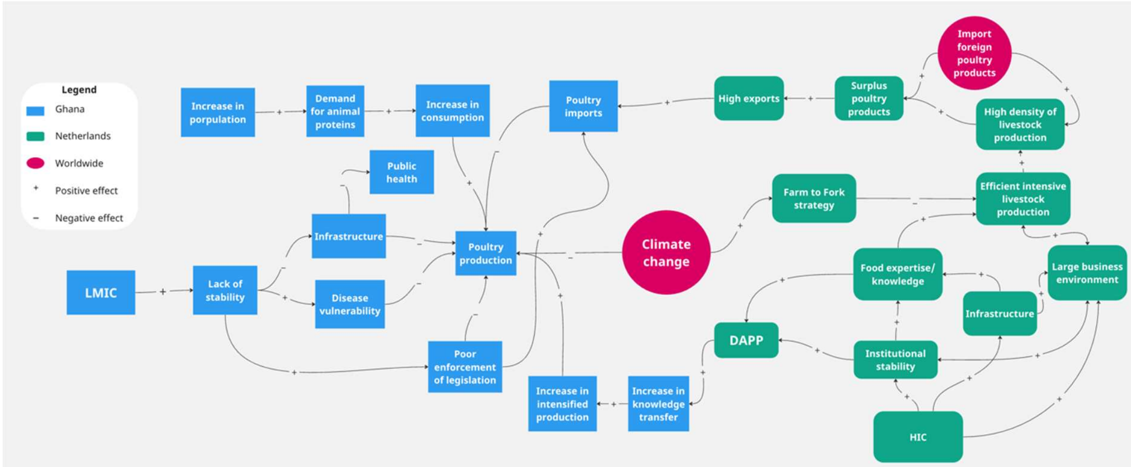


Figure 14 Causal loop diagram of the challenges between Netherlands and Ghana.

The causal loop diagram includes positive (+) and negative (-) relationships between each element. Positive (+) or direct relationships, for example, indicate that "more of this means more of that," and negative (-) or indirect relationships indicate that (less of this means less of that).

Focusing on the Netherlands, the high exports are a result of the surplus poultry production. Industrialized livestock production and high volume of trade both result in this surplus that is then traded with other countries. The production environment in the Netherlands is influenced by many factors such as the businesses, food expertise and knowledge and infrastructure. All these factors contribute to efficient and intensive poultry production. While there are efforts in reducing this intensive production, such as the Farm to Fork strategy, as an effort to reduce the impact of climate change, self-sufficiency rate in poultry production is at 160% in the Netherlands, meaning that there is room for an additional reduction of production. All these factors in the Netherlands are dependent on the institutional stability of the country, which is also an outcome of the wealth of the nation.

In Ghana, the exponential population increase of the last 40 years resulted in an increase in demand for animal proteins and an increase in consumption. These factors contributed to an intensification of poultry production. However, production is not able to meet the local demand because of a variety of reasons. The growing population coupled with the fact that Ghana is a low-income country, contribute to the lack of stability in the government. The latter negatively impacts production infrastructures and intensifies public health concerns. Poultry production capacity is also diminished by climate change, disease vulnerability and poor enforcement of legislation. The presence of the DAPP, the Dutch initiative to enhance knowledge transfer of intensive poultry production to Ghana, adds another point of connection between the two countries beyond the exports of poultry. Our insights on the poultry production in Ghana were also informed by our expert interview.

Rich Picture: Identifying Leverage Points (categories)

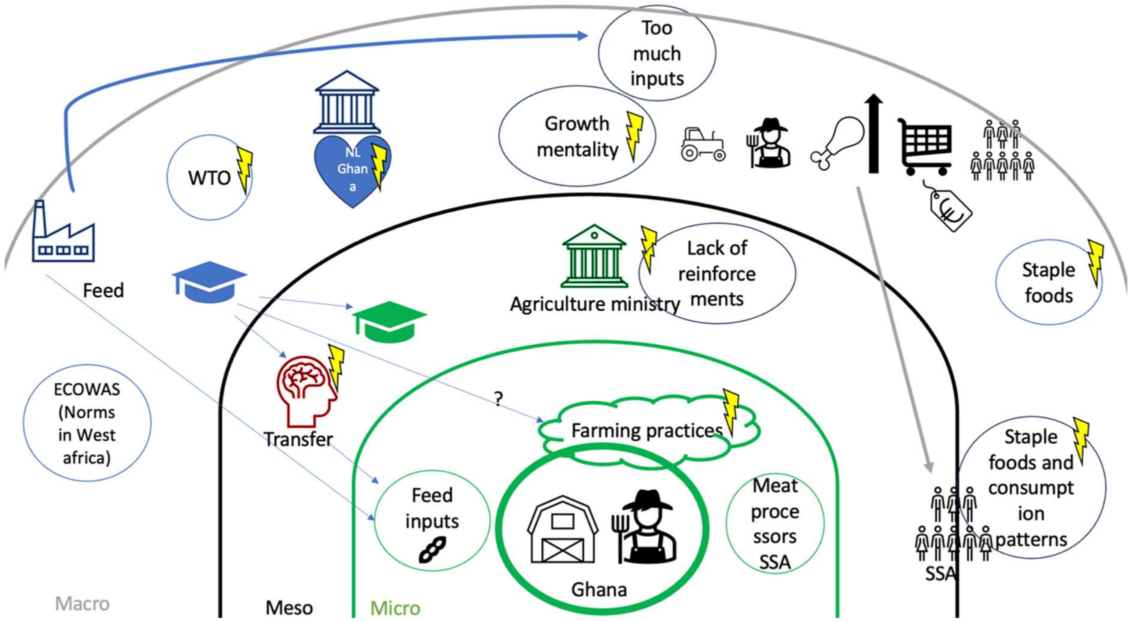


Figure 15 Rich picture to identify leverage points; blue being the Netherlands and green being Ghana. The lightning bolts are the identified leverage points

To bring together the relationships identified in the value network analysis and the problems identified in the causal loop diagram, a rich picture was made. Within this rich picture, we centred the Ghanaian poultry chain, as they are the receivers of poultry imports from the Netherlands and, based on the information collected in Chapter 6**,** are also receivers of knowledge from the Netherlands (among other things). Moreover, the Ghanaian poultry sector is also faced with challenges related to food security and self-sufficiency (Chapter 5.1). In bringing these elements together in the diagram, we were able to identify specific overarching dynamics at the micro-, meso-, and macro- levels of the Ghanaian poultry system, placing the Netherlands and the Dutch poultry system between the macro- and meso- "operating space" in the system. Though, there are several influences on the system at the micro level, for example in the context of feed imports and day-old chicks or fertilized egg imports. Through a group discussion using our individual educational backgrounds, we identified the following leverage points for a degrowth pathway in the Netherlands:

- Consumer behaviour in the Netherlands
- Knowledge transfer to Ghana from the Netherlands
- Historical and cultural relationship between Ghana and the Netherlands
- Regulation of poultry production in the Netherlands and Ghana
- Farming practices in the Netherlands and Ghana
- Trade mechanisms at the regional and national levels within each country
- Supranational trade agreements

However, we further prioritized 4 categories of leverage points to fit the scope of the timeline of this project. This resulted in a focus on consumer behaviour in the Netherlands, regulation mechanisms at the regional and national level in the Netherlands, supranational trade agreements, and knowledge transfer from the Netherlands to Ghana.

7.3 Leverage Points in the Netherlands

The following chapter of the report is focused on the aforementioned four leverage points: Knowledge Transfer, Consumer Behaviour and Trade and Regulation (National and Supranational level). For each leverage point we explore the system lock-in, followed by the mechanisms implemented to tackle the lock in, with references back to the Degrowth Principles. Finally, we investigate the implications of these mechanisms in the Netherlands production, consumption and trade system.

Knowledge Transfer

System lock-in:

The first system lock-in we identified is the dominant concentration of knowledge related to the growth-metabolism, for example, intensification of farming practices. This lock-in can result from both various institutions, but we see this most clearly represented in businesses and academic and/or research institutions. For businesses, this lock-in can result from leadership and internal decision-makers prioritizing goals of efficiency for the sake of competitive advantage. Additionally, academic and research institutions tend to face pressures in terms of funding for research. When and if these institutions become more tied to funding from the businesses, then there is a tendency to perpetuate the dominant knowledge based on the growth-metabolism. A leverage point we identified are shifting the goals of these institutions towards the degrowth-metabolism. To shift institutional goals away from increasing intensification of production (growth), we propose two mechanisms to change: 1) the goals of Dutch agribusiness in the poultry sector and, 2) the decision-making processes of academic institutions.

Mechanisms:

<u>Changing the goals of Dutch agribusiness in the poultry sector</u>

The private sector often possesses the resources and incentives to make investments in R&D for the sake of new innovations that can improve efficiency and reduce costs. Within the Dutch poultry sector, the DAPP program and Wageningen Livestock and Research are two platforms that can be utilized to both collaborate with cutting-edge research and industry best case practices to gain competitive advantages. These platforms, and the shared goals they ascribe to, are especially relevant in forming the common accepted knowledge regarding the sector. However, if the actors within these platforms were to orient their primary goals toward the degrowth-metabolism, we could anticipate a shift in larger network goals. For example, chicken breeding companies could transition from the goal of breeding for the sake of intensification to creating more options for dual-purpose breeds and disease-resilient breeds. Feed companies, who rely on seed companies for specific types of productive seeds, could shift toward a goal of creating a composition of feed ingredients that is more diverse, moving away from cost-cutting quality sacrifices. Meat processors aim to control where, to whom, and which type of meat is relevant to distribute. Instead, meat processors could communicate directly with the farmer that they are supplying to regarding quality. Retailers also aim to control where meat goals, to whom, and which cuts are relevant. With their position of influence in the value chain, retailers could work to stimulate new standards of quality upstream. Lastly, farms (as businesses) could transition from the goal of intensification and maximization toward new ways of keeping animals with a higher priority on welfare as well as fostering human-animal connection.

Examples of these shifts in business goals already exist in the Netherlands, however, mostly at a small scale. For example, a small feed company in the Netherlands called Nijsen processes wasted food into "high-quality feed for pigs and poultry." While these practices exist at a small scale today, it is predicted that with "continued innovation in processing techniques and expansion to other food chain sources, the European Former Foodstuff Processors Association estimates the sector could grow up to 7 million tonnes by 2025" (Nijsen, 2021).

Lastly, we envision the role of the board of directors and top management being especially relevant for driving these changes in business goals from within. There is relevant recent research regarding top managers' long-term orientation and decision-making processes (Lin et al., 2019), the role of boards in driving sustainability (Heidrick and Struggles, 2023), and sustainability institutionalization as a control mechanism for change within companies (George et al., 2018).

<u>Decision-making processes of academic institutions</u>

Academic and research institutions in the Netherlands play a major role in driving mainstream narratives around what type of knowledge counts in the poultry industry and food systems at large. These institutions tend to have significant cognitive resources, spaces for collaboration, and the reputation to influence. For this reason, the focus of research topics taken up by these institutions is critical and subsequently, so are the factors driving which topics are prioritized.

There are a growing number of examples of recent research related to more specifically to degrowth in agri-food systems (Gerber, 2020); (Nelson and Edwards, 2021); (Bartkowski 2017; Gomiero 2018). There are also growing contributions from participatory and activist practices in the degrowth research on agri-food systems (De Molina, 2015); (Bogadóttir and Olsen, 2017). Examples of more bottom-up initiatives also exist, for example, a group of 35 academics, city-planners, students, and artists, with the support of Maastricht Sustainability Institute, initiated a journal called "The Degrowth Daily." This journal has the aim of offering "perspectives on degrowth and urban society in opinion pieces, essays and articles on projects and citizens' initiatives" (Maastricht University, 2021).

Careful attention needs be paid to the potential conflict of interests present when academic institutions receive significant funding from the private sector. Corporate interests can influence public policy depending on how they influence the research agenda (Fabbri et al., 2018). Subsequently, decision-making processes in academic and research institutions should balance corporate interests and societal interests. In a degrowth pathway, this would look like decision makers taking a proactive stance to further research that takes a degrowth perspective and limiting research that furthers the growth-metabolism. Further research on specific mechanisms to influence decision-making processes is encouraged.

Implications for the Netherlands:

If Dutch agribusinesses in the poultry sector shift their main business goals away from the growth-metabolism, we can anticipate that the goals of business networks might also shift. For example, the most common reasons for business collaboration include increasing efficiencies, enhancing market power, access to new and critical resources, and entering new markets (Kale & Singh, 2009). If businesses reflect this change at their highest level of decision making and collaboration, the objectives of engaging in business networks may shift as well. Objectives for collaboration may shift from increasing efficiencies to maintaining sufficiency and from access to new and critical resources to strategic partnerships for waste stream byproducts. Business networks, such as DAPP, can influence what knowledge becomes dominant in the poultry industry of the Netherlands. By shifting the goals of collaboration, this could lead to a leverage point for degrowth on a larger scale. Similarly, academic and research institutions focusing on promoting research that fits outside of the typical growth-metabolism could influence Dutch agribusinesses to develop innovations based on the post-growth principles and encourage further participatory and activist practices in the degrowth research space in the Netherlands. Lastly, the people who work in these businesses and academic institutions do not exist in silos; they and their knowledge are part of the larger Dutch and global community. This has potential far-reaching implications for shifting the mainstream culture surrounding growth.

Consumer Behaviour

System Lock-in:

Economic factors, natural endowment factors and globalization have been identified as drivers for meat consumption, but there are also social factors to consider (Milford et al., 2019). We argue that decreasing the demand for poultry products and shifting it towards "planetary diet" (UN-Nutrition Journal. Volume 1: Transforming Nutrition", 2022)could have a considerable impact on the industry at large and put the Netherlands on a path of degrowth metabolism via consumption patterns. We have identified the lock-in for high meat consumption in the consumer behavior and culture around food, coupled with the growth mindset. We will focus specifically on education and community, and how these can shape and inform consumers decision-making and consumption patterns.

Mechanisms:

Educational programs

Education has a large impact on the way consumers perceive food and the environment (Bruckner & Kowasch, 2018). Early scholarly education is particularly important in forming conscious and active members of society. Introducing large-scale educational programs that teach children a culture of food and consumption based on *Care* and *Sustainability (*McGreevy et al., 2022) could significantly impact consumption patterns. While these kinds of initiatives are still being developed in the Dutch educational system, there are some examples of efforts in shifting the culture around food. For example, "Smaakmissie Avontuurlijke eiwitten" (*Smaakmissie Avontuurlijke Eiwitten*, n.d.),which familiarizes students with alternative sources of proteins. Another example is 'Boederij Educatie Nederland', where primary classes, secondary classes as well as special education classes visit farms to learn about farming. This farm school is part of a bigger initiative called 'Initiatief Jong Leren Eten' which is funded by the LNV (Landbouw, Natuur en Voedselkwaliteit) (*BoerderijEducatie Nederland*, n.d.), (*Stimuleringsbijdrage Lekker Naar Buiten! | Jong Leren Eten*, n.d.). Additionally, trips to slaughterhouses or butchers could support students in understanding how the meat comes to their table and what the current intensive production looks like, encouraging students to close the gap in the perception of animal versus food (Bruckner & Kowasch, 2018).

Community farms

Another important aspect of poultry consumption is the commoditization of animal products. In the industrialized and intensive meat production, consumers become detached from the animals being used for the production, basing their decision making not on human instincts of morality and empathy, but based on prices and availability (McLeod-Kilmurray, 2012) Creating a system of small scale animal husbandry, communal gardening and farming could be an opportunity for applying the degrowth principles of *Sufficiency, Regeneration, Distribution, Commons* and *Care* (McGreevy et al., 2022).

One example of an initiative that is already taken place in the Netherlands on a small scale is called 'Herenboeren'. Herenboeren is a cooperative that has multiple farms throughout the country whereby one farm is run by people in the area. This way, they are closely involved in food production and shortens the supply chain to local production and consumption. Throughout the EU, 22 countries are involved in an initiative called the Community Supported Agriculture (CSA). This initiative also fosters community through farming, aiding small scale production and a circular economy (Volz et al., 2016).

Implications for the Netherlands:

Even though many factors are at play in the production and consumption of meat products, tackling the problem of high demand will necessarily have an impact on the volumes of meat produced and the kind of production, specifically the intensive production (Parlasca & Qaim, 2022). However, other elements such as label visibility (Annunziata et al., 2019), willingness to pay for animal welfare friendly products (Harvey & Hubbard, 2013) or carbon footprint premiums (Feucht & Zander, 2017) are also important to examine when taking into consideration the choices of consumers. Both educational programs and community farms could contribute to transforming the perception of consumers around meat, specifically poultry. Building awareness around the culture of meat production and consumption is critical to foster connectivity between people, their food and the land they inhabit. The shift towards the principles of Degrowth (McGreevy et al., 2022) largely depends on changing the knowledge and the attitude of consumers.

Trade and Regulation

1. National level: Netherlands

System-lock-ins:

Within current policy making, the economic growth principle underlying capitalism is continuously strived for. The lock-ins regarding regulations and policy are most visible in their aims to maintain the current status quo by solely wanting to address market failures, for instance in the EU and the WTO. Currently, governance is primarily focused on economic growth indicators, for instance, the ever-increasing GDP, profit, income and growing purchasing power. In our current governance system, sociological and ecological indicators are left out of the paradigm (Joutsenvirta, 2016).

Other lock-ins pertaining to governance are democratic issues. Existing institutions have created technocratic-infrastructures and centralized bureaucracies (Kallis et al., 2018), making it difficult to access and create opportunities for people to become more engaged in decision-making. Furthermore, policies could serve as a leverage point in dismantling institutional hierarchies, regulating lobbying, and reforming international organizations currently undermining democratic principles.

Mechanisms:

Redesign of food policy

One mechanism could entail a redesign of the **food policy** on the Dutch scale by moving away from top-down interventions. A practical approach to this could mean creating a **Food Systems Dialogue** as the foundation for the new food policy. This ensures the inclusion of various layers of society (i.e. (Civil Society Organizations (CSOs), NGOs, Dutch Government, consumers, businesses, research institutions, investors, philanthropic funders as apolitical facilitators) and to address for power imbalances by the creation of an equal playing field. With this effort, certain distorting power-relations could be addressed by regulating, for instance, poultry or meat sector lobbying. Examples of a dialogue approach can be seen in the Wageningen University "Bridging Science policy dialogue on climate & food". This dialogue session aimed at creating a common consensus on sustainable food systems and to overcome the gap between science and policy. Furthermore, as of 2023, in Switzerland, there has been a citizens' council for food policy and committee of scientists that have been able to participate in the revision of the Swiss food system summit by dialogue. In this case however, the results of the dialogue were turned over to Swiss politicians (
(Wageningen University and Research, 2021; Ernaehrungszukunft Schweiz, 2023).

Diversification of agri-business board constellations

A second mechanism could be a governmentally steered strategy to facilitate civil society actors to become more involved in existing institutional settings. An example of this could be the **diversification of agri-business board constellations**. By changing the type of ownership by including actors with expertise on social equity, socio-ecological aspects, and gender equality, could be an entry point into transforming current political, business and market structures. As Buch-Hansen (2014) states, degrowth transitions will realistically take place as a hybrid version between implementing degrowth aspects and maintaining the current institutional structures. But this approach can lead towards the dismantling of business hierarchies, and to move away from privately owned companies to a more commonly shared business approach. One initiative of diversifying institutions is visible in the Milan Urban Food Policy Pact. This pact is an international agreement of mayors for local governments and demonstrates on how policy making can include collaboration with different urban stakeholders, and to "support local and grassroot initiatives" (Milan Urban Food Policy Pact, 2023).

Implications for the Netherlands:

For the Netherlands, this would mean that they would have to take on an active role in facilitating regulatory frameworks in which the concepts of degrowth could embedded, thus moving away from certain ongoing policy aims. This would mean creating dialogue to propel bottom-up initiatives and to make room for CSO and NGO involvement. Consequently, for the Dutch government, these mechanisms would mean a diversion of power to other societal actors, to move away from strict top-down governance approaches, incorporate bottom-up initiatives and to reconsider its own internal power structures in terms of ministerial power, financial power, and decision-making power. The Dutch government should guide a transition towards a more inclusive business structure possibly through interventions.

The Netherlands are situated within a larger system of agreements and institutions and only has so much room to maneuver. This means that designing a comprehensive degrowth pathway for the global meat industry, e.g.: revisioning the CAP as well as renegotiating the trade agreements and intellectual property rights (TRIPS) within the WTO arena are essential (Fitzpatrick et al., 2022; Chiengkul, 2018). We have noticed that within literature on degrowth and trade, we were able to digest in our available timeframe, there is a definite call for the revision of global trade institutions. However, we have not been able to find examples or revision proposals of this called-for change, nor were we able to find valid information on the analysis of leverage by the Netherlands to push for change within the supranational (EU) and global level (WTO). This possibly alludes to a knowledge gap that could be addressed in further research.

2. Supranational level: Netherlands

System lock-ins:

On the Supranational level, we have noticed that EU policies regarding agriculture (CAP) and trade are predominantly focused on promoting food exports, hence facilitating livestock surpluses in domestic production. This regulatory framework has become very engrained into the EU agricultural practices and, according to Kornher & Von Braun (2020), is quite arduous to make subject to systematic change due to its "long standing favorable framework conditions and long-term investments in R&D". The CAP is primarily domestically focused but has huge external effects on the Ghanaian livestock production. Not accounting for the external effects of the functioning of the CAP to agricultural impact on Ghana remains a problem. As with many other countries, also Ghana's food system has become very reliant on exported agriculture, even though they are not necessarily benefiting from this export-oriented nature of the EU themselves (IPES-Food, 2016)

Mechanism:

Formation and revision of the CAP

Trade under the concept of degrowth could still foster global peace and equal agricultural distribution to suffice in food sufficiency. This is where we see a potential role for the Netherlands and the EU (Reichel, 2017). When looking into possible entry point for the Dutch government to introduce the principles of degrowth into the EU, we have been able to find to some leverages. However, these are examples are exhaustive and further research into Dutch agency over the EU would be needed in order to secure more, and possibly more robust leverage points.

Pertaining to meat production, one mechanism for the Dutch government could lay in the formation and revision of the CAP. The European commission has introduced the idea of including "structured dialogue" with member states to assist, design and set out specific CAP plans. In this dialogue environment, the Netherlands could have agency in introducing degrowth principles relating the agricultural goals. Steering CAP policy goals towards less products or less financial support for the Dutch livestock industry. Together with the Dutch commissioner involvement, the Dutch government could exert agency of its interest on the EU agenda for possibly lowering agricultural surpluses. The Dutch government could become a frontrunner in the implementation of degrowth principles and can serve as an example for other EU member states and guide them to follow suit.

Inclusion of civil society committees' involvement in free trade agreements

Furthermore, the European commission has been known for utilizing civil society dialogue groups to shape laws and policies regarding agriculture. If the Dutch government can guide such groups to be properly established, this would allow for the involvement of bottom-up degrowth advocates (European Commission, n.d c).

When it comes to trade mechanisms under degrowth, we would argue for the inclusion of civil society committees' involvement in free trade agreements (FTA) between the EU and SSA countries. There have already been instances of these involvements, namely in Animal Welfare trade, moreover the Sustainability impacts assessments which also includes civil society participation on environmental matters (Molitorisová & Burke, 2022).These CSOs should be involved at multiple stages, including the negotiating, implementing and enforcement phases. However, these organizations would require financial aid to fully participate in FTAs. That is where the role of the Dutch government could lay. As with the European Commission involvement of CSOs, this involvement could help assist states to facilitate and organize just and appropriate trade mechanisms in order to comply with degrowth principles, and to prevent domestic market distortions which can become quite prevalent under the scope of food security.

8. Discussion

8.1 Implications of Dutch Change on the Ghanaian Poultry System

The emergence of aforementioned leverage points and mechanisms in the Netherlands suggests evidence of initiatives toward degrowth in a high-income country. In addition, African scholars have expressed disappointment of the decisions to allow poultry imports into the country (Kusi et al., 2015). Considering the trends in the Netherlands, a decrease in imported poultry products to Ghana is a valid prospect. Therefore, from a Ghanaian perspective, building resiliency in the food system from within is very important. Important to note is that the Netherlands can react in two ways: with consideration toward Ghana in their poultry export strategies or without. Moreover, some of the mechanisms of change in the Netherlands could be applicable to support the Ghanaian context. This displays a possible opportunity for the Netherlands to support Ghana during their transition toward degrowth. This section will discuss two questions:

a. What could be the result of less trade volumes of poultry from the Netherlands to Ghana?
b. How does stimulating a degrowth pathway in the Netherlands transform the knowledge shared with Ghana?

What could be the result of less trade volumes of poultry from the Netherlands to Ghana?

Implication 1: Impacts on food security (related to consumption imports)

This reduction of exports could at first create some concern regarding food security in Ghana. This inevitably poses a risk that other countries could step in and supply the poultry required to feed the Ghanaian population. Moreover, we could consider that the reduced poultry imports from the Netherlands could cause a spike in illegal trade with neighbouring countries, provided Ghana maintains an aversion to EU-related imports (Kwaw, et al., 2017). The consumption side of the chain would not be the only one affected. This shift in imports/local production could have an impact on consumers as well. In section 5.3 we have highlighted how some factors influence the preference for imported poultry, while others influence the preference for local produced poultry.

Implication 2: Impacts on production-related import dependency

As we have established (Chapter 6.3), the Netherlands is also responsible for the import of supplies for the production in Ghana, for example day-old chicks and some feed supplies. Stopping these imports would also put pressure on the Ghanaian poultry supply chain, causing a reduction of local production. Decreasing the imports could help in reducing the import of poultry diseases from the Netherlands, but at the same time, the Netherlands currently sponsors biosecurity measures, like vaccinations. It is also important to note is that the Netherlands also supports the hatchery sector with live animals. With that in mind, degrowth could render foreign market expansion as no longer be relevant for Dutch companies and exits to the global market setting may occur. This could mean that Ghana could have an investment gap because the Netherlands halts investments from the private sector. In addition, it could leave space for other countries to fill the market, and therefore perpetuate current international dependencies.

How does stimulating a degrowth pathway in the Netherlands transform the knowledge shared with Ghana?

As the previous argument includes an emphasis on knowledge, we can discuss the implications of knowledge transfer in a Dutch degrowth paradigm. Recall, it is not only exports of poultry, feed, and technology that flow from the Netherlands to Ghana but also knowledge and technology. The Africa Strategy, Dutch Africa Poultry Platform (DAPP), and other public-private relations between the Netherlands and Ghana are ongoing platforms for knowledge transfer between the two countries.

First, Dutch feed companies, academic institutions, have significant production-related knowledge, resources, and networks. As previously mentioned, changing the goal of companies could transform the type of knowledge procured to Ghana. By maintaining awareness of the goal of the Dutch feed companies, they could help Ghana produce and diversify their poultry system according to post-growth principles. Here, we could see that epistemic injustices are addressed with the possibility to include different worldviews, for example taking the African/Ghanaian outlook on poultry production, indigenous knowledge, and consideration of land use into account. There is also the possibility that the knowledge generated in a degrowth-oriented society lacks applicability to Ghanaian contexts. In this sense, a growth-oriented knowledge vacuum could be created, and the environmental concerns associated with growth paradigms could perpetuate.

Based on these implications, we argue that the Netherlands should strive to balance their influence on the Ghanaian poultry sector by reducing consumption-related imports and increasing production-related inputs with consideration to the local knowledge and utilizing specific, targeted goals that fall in line with post-growth principles stated by McGreevy et al. (2022). This means that in the short term, the Netherlands would increase the production imports that foster local productivity, like grandparent and parent chicks that will be further used to produce chicks for meat production. This is an item that is already being imported, but of which the volumes are insufficient. However, based on African scholars' dissatisfaction with the allowance of imports from Ghanaian authorities, there are presumably Ghanaian initiatives that could aid in the response to implications on food security and production resource dependency.

8.2 Limitations

The main factor that contributes to limitations within this report pertains to the fixed timing of the ACT project with four part-time weeks (mostly for developing a proposal) and four full-time weeks for research and report development. To address this constraint, we scoped down from researching the position and the impact of HICs with regards to exports of meat products to SSA to focus on the Netherlands as a HIC, the poultry sector within the global meat industry, and Ghana within SSA. This scope enabled us to provide more depth regarding the poultry sectors within these two countries and the export landscape between them. Additionally, there were two main assumptions we had originally sought out to address; however, we were unable to gauge the assumption whether economies of HICs appropriate resources from LMICs within the time provided. It should also be noted that this case study, and the degrowth pathway identified, should not be directly applied to understanding the position and impact of other HICs, or even the Netherlands, with regards to exports of meat products to SSA.

The lack of data availability in several areas made it challenging to draw conclusions from or to deepen our understanding of the case. For example, there was a lack of data coming from the SSA and/or Ghanaian perspective. Most of the reports that were publicly available come from the Western perspective (i.e. USDA, Dutch Government, World Bank, and the EU). Additionally, there was some inconsistency in the time periods of when data was collected, mostly ranging from 2014 – 2022.

Regarding the construction of a degrowth mechanism, the power structures that determine the functioning of the European Union, the Dutch government and Western governance at large, are inevitably rooted in growth mentality and metabolism. Inducing the Netherlands on a degrowth pathway requires a foundational and structural change reverberating throughout the whole Western system. However, this is not something we have been able to address, nor could we full encompass the power of the Netherlands in such an effort.

Lastly, it is important to note that our findings are influenced by the backgrounds of our team and the inadequate perspectives and knowledge we possess related to stakeholders' experiences in SSA and Ghana. Without a fair representation of these perspectives within this project, epistemic injustice can take place. Epistemic injustice occurs when certain knowledge is ignored or excluded, in favour of another (Boogard, 2021). This can lead to the structural suppression of ways of knowing and of certain groups. For future research, we recommend conducting interviews with relevant stakeholders in Ghana and fostering representative multistakeholder dialogues. This could support the applicability of the leverage points within the degrowth pathway.

9. Conclusions

In the beginning of the report, we denoted the assumption "HICs supply local markets in LMICs with cheap food products, rendering local production uncompetitive". We tried to test this assumption through the research question: ***What is the position and the impact of the Netherlands (NL) with regards to exports of meat products to Sub-Saharan Africa (SSA)?*** In the following section, we will discuss our main conclusions on our sub-question leading up to the conclusion to our main research question.

1. **According to market values/size/volumes, what is the most relevant export destination for meat products in SSA from the NL?**

Concluding on our findings for our first sub-question, we have determined that Ghana, located in the West-African region within SSA, is the most relevant export destination for poultry meat. For the sake of feasibility, we decided to scope down the meat sector to poultry. This because the current market share of global poultry exports going into West-Africa is 71,7% in 2017 for the EU, making it the leading supplier of poultry meat going into this region. Within this scope of West-Africa, we discovered that Ghana is the clear top destination of EU poultry meat exports, with the Netherlands having the biggest share (43.3%) in EU poultry exports going into Ghana. This is where our scope boiled down to Ghana with significant relevance to the Netherlands. Furthermore, the existing historical and current ties to Ghana further solidifies the relevance for scoping towards the chosen case study.

2. **What are the export-related dynamics of poultry products between the NL and Ghana?**

Concluding on the export dynamics of poultry products from the Netherlands, we firstly delved into the Dutch side of the poultry industry. The Netherlands has a vast, efficient and intensive livestock production generating more poultry products than what is domestically demanded, creating a production-surplus leading to low prices of exported poultry products. On a supranational scale (EU) we noticed that the CAP, responsible for agricultural subsidies, contributes to the livestock production surpluses further enabling the Netherlands export cheap poultry products across the globe.

On the Ghanaian side of the poultry industry, we noticed that since liberalization of the Ghanaian poultry trade in the 2000s, the number of imported poultry products massively increased. Ghanaian domestic poultry production has relatively high costs compared to the imported poultry products and has had challenges to keep up in terms of prices with the imported poultry products.

With the population and demand for poultry products rising in Ghana, the country has become dependent on poultry imports to suffice in its aims for food security. This has been recognized as a problem by the Ghanaian government, who has been trying to protect and boost its own domestic poultry market and production through various policies and trade regulations over the years. However, with little effect.

The Ghanaian production consists mostly of non-commercial farming practices, complemented by a small share of industrialized farming. The main challenges for the domestic production to take off and become competitive are related to high feed costs, insufficient regulation in the hatchery sector, poor biosecurity, lack of infrastructure and the high price of broiler production over layer production.

3. **What are the power dynamics in the poultry export landscape from the NL to Ghana?**

In order to conclude on the power dynamics in the poultry export landscape, we investigated the relevant stakeholders present on both the Dutch and Ghanaian side of the poultry sector and assigned them certain positions in terms of interest and power.

In our analysis of the stakeholder, we came across the increasing collaboration between the Dutch government, the Dutch private sector, and the Ghanaian embassy encouraging private sector involvement throughout the supply chain. We visualised these relations and processes in the value network map and the causal loop diagram, followed by a stakeholder power overview of how these relations are contributing to the current power dynamics. Our power dynamic analysis concludes that we could see a significant power positions of Dutch stakeholders, with varying levels of interest for a degrowth pathway, and that Ghanaian stakeholders generally have lower positions of power, however with more interest in a degrowth pathway.

4. **What leverage points for a degrowth pathway can be identified within the export landscape with the case study country?**

Using the rich picture we concluded on system lock-ins and subsequently, leverage points and related mechanisms for change. Based on our areas of expertise on the subject matter, and on our perception of influence on driving degrowth in the poultry sector in the Netherlands, we came to the following leverage points:

1. <u>Knowledge transfer:</u> With this leverage point, we want to address the dominant concentration of knowledge related to the growth-metabolism with mechanisms to mainly shift the goals of businesses and academic/research institutions in the poultry sector in the NL away from the growth-metabolism – impacts the growth-oriented knowledge transfer from NL to Ghana. Furthermore, to change decision-making processes of academic institutions.

2. <u>Consumer behaviour:</u> With this leverage point we want to address the high meat consumption and growth mindset within the Dutch society through mechanism that tend to alter consumer behaviour patterns by influencing the culture around food by means of educational programs and the stimulation of community farms.

3. <u>Trade and regulation:</u> On a national scale, this leverage point tries to address the current governance tendency to strive for maintaining the institutional status quo, leaving little space for change. Our proposed mechanism revolves around the creation of new food policies, through food system dialogues creating a more degrowth oriented foundation for the Dutch livestock industry, together with the diversification of agri-business board constellations in order to ensure more bottom-up involvement. On a supranational scale, this leverage point wants to address the export-oriented nature of supranational policies contributing to production surpluses. Moving towards the inclusion of degrowth principles could be achieved through mechanisms focusing on the formation and revision of the CAP and the inclusion of civil society committees' involvement in free trade agreements.

On top of these leverage points, we have also identified possible implications of these leverage points for the Netherlands and Ghana.

Concluding remarks:

We conclude that due to Ghana's reliance on imports and the relative positions of power of stakeholders within the poultry sector in the Netherlands, we find some evidence that the Netherlands is in a position of power in the poultry export relationship with Ghana. Influenced by the Netherlands' position of power, we see some evidence that the Netherlands (HIC) contributes to supplying local markets in Ghana (LMIC) with cheap poultry products, rending local production uncompetitive. We recommend that the Netherlands considers four leverage points (knowledge transfer, consumer behaviour, and trade and regulation – at the national and supranational level) and implements the related mechanisms within a degrowth pathway for the Dutch poultry sector. Throughout this transition, it is essential that the implications of these mechanisms are considered, not only regarding the Netherlands, but especially Ghana

10. Recommendations for future research

- Research into what type of knowledge transferred from the Netherlands to Ghana.

- Research into the practical application of knowledge of “western” origin in Sub-Saharan contexts by Ghanaian farmers, or how HIC knowledge is used.
- Research into the efficacy of import tariffs on livestock production in Sub-Saharan (Ghanaian) contexts.
- Research into the preservation of traditional foods and taste preferences that are coupled with locally produced chicken. Specifically with the inclusion of Ghanaian backyard farmers.
- Research into origin of feed ingredients in feedstuffs supplied by feed companies of Dutch origin in Ghana.
- Further literature review on the utilization of poultry as a development tool (Thieme & Pilling, 2008)

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Appendices

Appendix A: Poultry Production - From Egg to Plate

Generally, production systems can be categorized as intensive and extensive, and within different countries there are a variety of farming systems and practices used. To start, intensive systems are generally designed so that their total environment is provided to maximize the profit of their rearing (Mpofu, 2020). This can be confined to small areas and create stress for the animal and the environment. It sometimes comes with concerns regarding food safety, animal welfare and environmental impacts (Mpofu, 2020). In contrast, within extensive farming systems, animals live in larger areas and the stocking density (the number of animals on a specific land area) is lower (Mpofu, 2020).

Industrialized farming systems are some of the most documented systems and have historically been considered in development programs of low and middle income countries (Binswanger-Mkhize & Savastano, 2017). Therefore, this chapter aims to provide an overview of the general **industrialized** chicken production process from "egg to plate". Chickens that are produced for meat are known as broilers, while chickens for egg and chick production are called layers. The most common broiler breed in the Netherlands, for example, is the Ross and Cobb (Fokkerij, 2024).

In an industrialized system, broiler production starts with the input of day-old chicks from a specialized hatchery. These chicks are transferred from the hatchery farm to the broiler farm. Hatchery farms are specialized in the incubation of fertilized eggs. Another important input is feed, which is often highly relevant for any livestock production system (den Hartog & Sijtsma, 2013). Feed is considered a key input because the composition and intake of feed can influence the quality and quantity of the final animal-based product (Choi et al., 2023; den Hartog & Sijtsma, 2013). Next, starting at one day old, the chicks are reared until they are mature for approximately 6-7 weeks (Maurer, 2003). To rear these broiler chickens, there are several different commercial housing systems that arise: battery housing, open housing, and free-range housing. Important to note is that each of these systems have different implications for the cost of production for the animals, required housing equipment, and animal welfare of the animals (Nesheim, 2015). Once animals are reared to their maturing age, the animals are generally transported from the farm to the slaughterhouse. Through an industrialized processing line, the animals are culled, and meat is harvested, packaged, and prepared for retailers. Within this step, the meat is often monitored according to rules and regulations by veterinarians and/or an Animal Welfare Officer (European Commission, n.d d). From the meat processor, the products are transferred to the retailer. As animal welfare has garnered increased societal concern over the years, some NGO's and retail labels have emerged. These labels and NGO's can have an influence on specific parts of the production process by changing different aspects of quality assurance schemes in food production (Wood, 1998).

Within industrialized broiler production, there are several important nuances. First, is the fact that once egg layer hens reach the end of their life (after 3-4 years) they join the final steps of the broiler production process, and become a meat product for human consumption or are even considered as a by-product of production in Western societies (Fan & Wu, 2022). Next, is the concept that broiler chickens are generally female birds, as female birds tend to have a genetic predisposition to produce more meat per carcass. For hatchery farms, this is a significant issue because male chicks are considered low-value. Therefore, male chicks tend to be culled early, and also service other sectors like processed chicken products, and carnivorous animal feed (Reithmayer et al., 2020). For the purpose of this report, as the focus is on meat, this will not detail egg production and consumption.

Appendix B: Stakeholder Longlist

Table 43 Stakeholder power-interest description.

Actor	Score (i = interest, p = power)	Quadrant	Justification
Ghanaian Government	(8I,10P)	High power/high interest	The Ghanaian government has high power in influencing the import of poultry products into Ghana and promoting post-growth agendas in Ghanaian communities. They have high interest in the trade relationship and potential of degrowth in the Netherlands because communities rely on imports of poultry products for food security (See Chapter 6).
Dutch Government	(7I,10P)	High power/high interest	The Dutch government has high power in promoting degrowth agendas in the Netherlands. It has high interest in degrowth, as it is an optional pathway to counter the environmental issues associated with food production.
WTO	(5I, 10P)	High power/high interest	The WTO has high power because it has the ability to influence trade worldwide, and therefore a high power in influencing the import of poultry products. They have a moderate interest as they advocate for trade through a lens of neoliberal values, which is not focused on degrowth/post-growth, however they are involved in the development of the Global South.
European Union	(3I, 10P)	High power/high interest	The European Union has high power regarding import and export of products. They have high interest in post-growth or degrowth in the Netherlands. With regard to their position globally, as Dutch agriculture (situated in the EU), this can have implications related to the position of the EU in global trade.
ECOWAS	(6I, 5P)	High power/high interest	ECOWAS has some power to influence the transition toward post-growth economies. Because West African countries would like to be self-sufficient for their own populations, they have a high interest on the status of Dutch poultry export, and the implications of a reduction in the Netherlands on their own country.
Dutch training institutions	(5I, 4P)	High power/high interest	Dutch training institutions have high power, as they provide significant amounts of knowledge to other countries/peoples. Because of the anticipated implications of degrowth in the Netherlands, they have significant interest in the change in norms regarding knowledge transfer for post-growth and degrowth principles.
Dutch academic institutions	(7I, 4P)	High power/high interest	Dutch academic institutions have some power as they have a significant global reputation regarding knowledge, and influence based on their collaborations. Dutch institutions have a high interest due to the change in knowledge transfer within degrowth and post-growth principles.
Dutch feed companies	(-6I, 8P)	High power/low interest	Dutch feed companies have quite a high power as they have feed mills in Africa and these countries are dependent on the feed mix the Dutch provides. We anticipate that they do not have high interest in changing towards a post-growth mentality because then they lose power enabled by the dominant economic paradigm.
Dutch retail companies	(-8I, 5P)	High power/low interest	Dutch retailers have high power in the Netherlands due to their position in supplying food to the population. They have low interest in the degrowth in the Netherlands, as the competitive advantage that enables power within the current economic paradigm will reduce.

Dutch meat processors	(-2I,2P)	High power/low interest	Dutch meat processors have high power regarding export destinations of their products. They have low interest in changing towards a post-growth pathway because export volumes and competitive advantage that enables power within the current economic paradigm will reduce.
Dutch hatchery firms	(-5I, 4P)	High power/low interest	Dutch hatchery firms have significant power in the Dutch poultry supply chain due to their role as a supplier of the most important input for the farming practice. They have little interest in degrowth in the Netherlands, as they benefit from intensive production practices. They have more interest than slaughterhouses and retailers, as there are still opportunities for them to support developing poultry meat sectors outside the Netherlands.
Dutch poultry breeding companies	(-3I, 3P)	High power/low interest	Dutch poultry breeding companies have little power and interest. However, their role in the export of live day-old chicks as well as other production inputs creates interest for them as a stakeholder.
Dutch poultry farmers	(-8I, -8P)	Low power/low interest	Dutch poultry farmers have very little interest into changing into a degrowth mentality as they focus on being profitable through intensive, efficiency-oriented farming practices. They have little power as they cannot intervene in the process due to, for example, regulations.
Large commercial farmers (Ghana)	(8I, -2P)	Low power/high interest	Large commercial farmers in Ghana have high interest, as they will experience pressure related to the increased demand in poultry production. However, they have little power in the decision process over degrowth pathways in the Netherlands.
Local merchants (Ghana)	(6I, -4P)	Low power/high interest	Local merchants in Ghana have relatively low power in the wider system surrounding poultry production and the decision process over degrowth in the Netherlands. However, they are characterized with higher interest, because with less imports of poultry there will be more pressure to sell and trade local chickens.
Small+medium commercial farmers (Ghana)	(5I, -7P)	Low power/high interest	Small and medium commercial farmers in Ghana have even less power to change the initiative towards a self-sufficient post-growth situation compared to large commercial farmers. We anticipate high interest because in the case of a degrowth pathway in the Netherlands, small and medium farmers will be affected by changes in their relationships with local large commercial farms with feed mills.
Backyard farmers (Ghana)	(8I, -8P)	Low power/high interest	Backyard farmers have even less power compared to small and medium commercial farmers. We anticipate high interest in a degrowth pathway in the Netherlands, as there will be more demand for local poultry in Ghana.