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From Livestock to Legumes

Economic Drivers and Barriers in Norway's Agricultural Policy Landscape

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Abstract

Agricultural subsidies and taxation policies in Norway remain heavily skewed toward livestock, reinforcing structural barriers that hinder the transition toward sustainable and plant-based food systems. This study examines how policy drivers and barriers sustain Norway's meat-dominated agricultural model and limit the development of plant-based production. To address this aim, the thesis investigates how subsidies and taxation policies shape opportunities and constraints for plant-based production (RQ1), explores which types of transitions key actors consider most beneficial (RQ2), and examines the barriers and politically feasible policy measures identified by stakeholders (RQ3). To answer these questions, a qualitative analysis of 16 semi-structured interviews was conducted. The results show that subsidies overwhelmingly support livestock, while horticulture remains underfunded and dependent on market income. Interviewees envision incremental subsidy reallocation, stronger public procurement, and VAT reductions on fruit and vegetables as promising entry points. Barriers include closed negotiations, retail concentration, and entrenched cultural narratives. The study concludes that structural reform faces strong path dependencies, but incremental measures can serve as stepping stones. It highlights opportunities for policymakers, farmers, retailers, and NGOs, and suggests that broader alliances around health, preparedness, and food security may enhance political feasibility. Globally, these findings illustrate how entrenched agricultural policy frameworks can be reoriented toward sustainability by addressing not only economic incentives but also institutional and cultural lock-ins.

Keywords: plant-based agriculture, animal agriculture, agricultural policy, economic instruments, drivers, barriers.

Executive Summary

This thesis examines how Norwegian agricultural policy, particularly subsidies and taxation, reinforces livestock production and constrains the transition to more sustainable and plant-based food systems. These economic levers create structural barriers that misalign policy objectives with climate targets, self-sufficiency goals, and the diversification of farming practices. Addressing these dynamics requires an understanding of the economic, institutional, and cultural drivers that sustain the current model, as well as the barriers and opportunities for reform.

Aim and Research Questions

The study aims to investigate how agricultural policy in Norway, particularly subsidies and taxes, affects the balance between animal agriculture and plant-based food production. It further seeks to identify the political and economic barriers to reform, the current state of the sector, and to explore which policy measures could most effectively support a more sustainable and plant-based food system. By focusing on the roles of subsidies and taxes, the study seeks to contribute actionable insights that can help address the environmental challenges associated with current dietary patterns, ultimately informing policy decisions to improve the affordability, accessibility, and sustainability of Norwegian diets through adoption of more plant-based food.

RQ1: How do current agricultural subsidies and taxation policies in Norway support or hinder the development of plant-based food production?

RQ2: What types of transitions do key actors envision as most beneficial for advancing plant-based food production in Norway?

RQ3: What barriers to policy reform do key stakeholders identify, and which policy changes are considered most promising and politically feasible?

Research Design and Methods

The study employs a qualitative design, based on 16 semi-structured interviews with stakeholders engaged in shaping or responding to Norwegian agricultural policy. Participants included politicians, public administrators, NGOs, farmers, farmers' organisations, retailers, and a political scientist. Interviews were conducted online or in person, recorded, and analysed using inductive qualitative content analysis in NVivo. This design enabled the study to capture diverse perspectives and identify the institutional, economic, and cultural factors shaping the feasibility of a plant-based transition.

Main Findings

- Economic levers: Subsidies are overwhelmingly skewed toward livestock (approx. 97%), with plant-based producers receiving marginal support. Retail pricing and campaigns make meat artificially cheap, while VAT reductions or tax shifts in favour of fruits and vegetables were considered promising by many stakeholders.
- Institutional structures: The Agricultural Agreement with its closed negotiations between the state and farmers' unions limit reform. Market access for horticulture producers is constrained by two dominant wholesalers and three major retail chains, limiting the market share particularly for newcomers and small-scale farmers.

- Transition visions: Stakeholders emphasise incremental subsidy reallocation, stronger public procurement, and diversified small-scale production (e.g., market gardens and plant breeding). Alliances between health, environment, and preparedness actors are seen as potentially powerful.
- Barriers: Heavy investments and debt in livestock, retail concentration, cultural narratives ("Norway is a grass country"), and political caution impede reform.
- Feasibility: Major structural change is seen as unlikely without crises creating windows-of-opportunities, but incremental reforms (VAT cuts, procurement, storage investment, tariff protection) are considered politically realistic.

Conclusions and Recommendations

In response to **RQ1**, subsidies and taxation policies strongly reinforce livestock production, while plant-based producers remain disadvantaged by design. Promising economic levers include VAT reductions on fruits and vegetables and incremental subsidy reallocation.

Regarding **RQ2**, key actors envision a transition built on rebalancing subsidies, strengthening public procurement, and stimulating demand through price incentives. Small-scale diversification, plant breeding, and decentralised logistics are highlighted as entry points.

Concerning **RQ3**, barriers include path dependencies from sunk investments, closed negotiations, concentrated retail structures, and entrenched myths. Politically feasible measures include VAT shifts, procurement policies, seasonal tariff protection, and incremental subsidy reforms. Broader coalitions across health, environment, and preparedness could strengthen legitimacy.

Policymakers are recommended to focus on incremental measures such as VAT reductions and procurement reform, while planning longer-term subsidy reallocation.

Farmers are recommended to explore diversification through market gardens and new crop varieties and strengthen resilience via storage and risk management.

Retailers are recommended to rebalance campaigns toward fruits and vegetables and support seasonal Norwegian produce.

NGOs are recommended to frame advocacy around health and preparedness to broaden support and reduce polarisation.

Future research should investigate the distributional impacts of subsidy/tax reforms on farmers, draw comparative lessons from international best practices, such as Denmark's plant plan, explore consumer acceptability of structural reforms, study alternative distribution models beyond dominant wholesalers, and examine how cultural myths can be dismantled. Identifying coalitions capable of driving reform should be a key priority, increasing the feasibility and likelihood of transitions.

The findings of this study show that Norway's barriers are less about biophysical limits than institutional inertia and cultural narratives. Similar tensions exist globally, where livestock-heavy subsidy regimes clash with climate and health goals. Understanding how to break these lock-ins, while building political coalitions for reform, is essential for aligning food systems worldwide with sustainability objectives.

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Abbreviations

CAQDAS: Computer-Assisted Qualitative Data Analysis Software

CO_2e: CO_2 equivalents

EU: European Union

EU ETS: EU Emissions Trading System

FAO: Food and Agriculture Organization of the United Nations

GHG: Greenhouse Gas

IPCC: Intergovernmental Panel on Climate Change

NGO: Non-Governmental Organisation

OECD: The Organisation for Economic Co-operation and Development

PEA: Political Economy Analysis

SDG: Sustainable Development Goal

UN: United Nations

UNDP: United Nations Development Programme

UNEP: United Nations Environment Programme

VAT: Value Added Tax

WTO: World Trade Organization

WTP: Willingness to Pay

1 Introduction

Food systems are at the core of human societies, shaping diets, land use, resource management, and interactions with the natural environment (FAO, UNDP & UNEP, 2021). They provide livelihoods for millions of people worldwide, sustain cultural traditions, and contribute to economic development and public health. However, in addition to these fundamental functions, food systems are also recognised as one of the most significant drivers of environmental change, with major implications for climate, biodiversity, human health, and animal welfare (FAO, UNDP & UNEP, 2021).

Globally, the agricultural sector accounts for approximately 30 percent of greenhouse gas (GHG) emissions, with livestock representing the largest share (Tubiello et al., 2021; Xu et al., 2021). Animal agriculture contributes disproportionally to methane, nitrous oxide, and carbon dioxide emissions, in addition to extensive water use, soil degradation, and habitat destruction that drives deforestation and biodiversity loss (FAO, UNDP & UNEP, 2021; Wood et al., 2019). Recent projections suggest that global temperatures could rise by nearly 1 °C due to food production alone (Ivanovich et al., 2023). Moreover, the sector demonstrates an inefficient use of scarce resources, with animal products and feed crops occupying 83 percent of global agricultural land and contributing to roughly two-thirds of deforestation (Funke et al., 2022). Animal agriculture carries substantial negative externalities, with its environmental and health costs largely unaccounted for in market prices. As a result, livestock production remains disproportionally supported despite its high emissions and resource use, while plant-based agriculture continues to play only a marginal role and receive limited policy attention (Funke et al., 2022).

From a food security perspective, livestock production is also inefficient. Producing one kg of beef requires about 25 kg of feed (Ritchie et al., 2023), and when cereals are given to animals instead of people, the nutritional losses are considerable: for every 100 grams of protein in cereals fed to livestock, only ten grams are left in beef, 15 in pork, and 34 in chicken (Cassidy et al., 2013). It is estimated that by redirecting cereals currently used as animal feed to human consumption, one could in principle feed an additional four billion people (Cassidy et al., 2013). Likewise, a global shift to plant-based diets could reduce agricultural land use from four to one billion hectares (Ritchie, 2021). According to the Food and Agriculture Organization (FAO et al., 2020), more than 820 million people experience food insecurity. These findings underscore the potential for food system changes to address significant sustainability and humanitarian challenges.

Despite widespread recognition of these issues by researchers, politicians and international organisations, global progress in transforming food systems remains limited. This situation is mirrored in national contexts such as Norway, where livestock production dominates agricultural policy and practice. None of the Nordic countries, including Norway, are on track to meet the 2030 UN climate and biodiversity goals (Meltzer et al., 2024). In addition to being livestock-oriented, Norway's food production is also heavily reliant on imported feed and characterised by relatively low consumption of fruits and vegetables (Meltzer et al., 2024). This dependence on imports creates significant land-use and water pressures abroad while domestic resources are not used in an optimal manner. Norwegian policy has historically prioritised meat, dairy, and egg production (Milford & Muiruri, 2024), with subsidies overwhelmingly directed towards livestock, and in 2023, 97 percent of support over the Agricultural Agreement went to animal-based production including animal feed (Mittenzwei, 2025). The political system is mainly directed towards animal agriculture, with plant-based production remaining underdeveloped and receiving comparatively little policy support.

The climate implications of this production structure are clear. Analyses by the Norwegian Environment Agency estimate that reducing red meat production by 33 percent could cut national emissions by 1.1 million tonnes of CO_2e annually, equivalent to a quarter of agricultural emissions and about two percent of total national emissions (Miljødirektoratet et al., 2020). Such findings underscore the need for policy reform that aligns agricultural subsidies with climate goals. In fact, the Norwegian Environment Agency highlights that following national dietary guidelines, by reducing red meat consumption and increasing intake of fruit, vegetables, and grains, represents the single most effective climate measure in the non-ETS (Emissions Trading System) sector (Miljødirektoratet et al., 2020). Such dietary shifts would also relieve pressure on land and natural resources.

Policy assessments further emphasise the urgency of reform. Only around eight percent of global agricultural policies are considered wholly environmentally beneficial (FAO, UNDP & UNEP, 2021), while more than 86 percent of public finance for agriculture supports activities that harm climate, biodiversity, and health (Global Alliance for the Future of Food, 2022). Norwegian reports, including Klimakur 2030 and the 2050 Climate Change Committee, conclude that dietary change is unavoidable if national targets are to be met (Møller & Beddari, 2024). Norway has committed to reducing emissions by 50-55 percent by 2030 and being a low-emission society by 2050 (Norwegian Ministry of Climate and Environment, 2021), but these goals will thus remain out of reach without a substantial reorientation of agricultural and food policy.

Shifting towards a more plant-based food system offers a clear sustainability potential. Plant-based protein sources such as peas, lentils, and tofu emit 0.2-3 kg CO_2e per kg of product, compared with 21-30 kg for beef (Nortura, 2023; Potter et al., 2020). Studies suggest that increased consumption of plant-based foods could reduce per capita food-related emissions by 22-40 percent (Berners-Lee et al., 2012; Scarborough et al., 2014). Beyond climate benefits, expanding domestic production of fruits, vegetables, and legumes could strengthen Norwegian food security and self-sufficiency (Bakken & Mittenzwei, 2023). As Springmann et al. (2025) underline, "without dedicated shifts towards healthier and more plant-based diets, there is little chance of staying below a global warming of 2 °C".

1.1 Problem Definition

Subsidies and taxation policies continue to reinforce the dominance of livestock production, creating structural barriers that hinder a transition to more sustainable food systems (Loeng & Korsnes, 2023). This misalignment between policy instruments and sustainability objectives impedes the transition to more climate-resilient food systems. Adjusting economic policy schemes to favour horticulture production (production of fruits, vegetables, etc.) could incentivise farmers to diversify and invest in sustainable crops and align Norwegian agriculture more closely with climate goals.

Consequently, the situation in which livestock production is heavily supported by national policies illustrates the pressing need to rethink food production patterns. For Norway, this means addressing both the environmental impacts of livestock production and the structural barriers preventing the development of more sustainable and plant-based agriculture, which includes transforming economic incentives, such as support for plant-based food production.

The research problem addressed in this thesis is therefore how policy drivers and barriers sustain Norway's meat-dominated food system and limit the transition to more sustainable, plant-based diets. Understanding these dynamics is crucial for identifying pathways to align Norwegian food policy with national climate targets and international sustainability commitments.

1.2 The Research Gap

Existing studies on sustainable and plant-based food systems have tended to examine consumer behaviour or policy measures in isolation, often focusing either on individual dietary choices or on quantitative analysis of policy instruments, such as meat taxes (Milford & Muiruri, 2024; Springmann et al., 2017; Jansson & Säll, 2018). In the Norwegian context, most of the agricultural policy research has been dominated by quantitative analyses, particularly of price effects on fruits and vegetables (Tangen et al., 2025), while there is a lack of research on how subsidies and taxation schemes shape structural incentives for different types of agricultural production (Ghorban Nejad et al., 2024). As food systems are shaped by complex intersections of environment, health, culture, and economics, an interdisciplinary and qualitative analysis is needed to capture how policies, market structures, and stakeholder perspectives together sustain Norway's meat-dominated food system and marginalise fruit and vegetable production. However, studies addressing this issue are few, with the majority failing to acknowledge how structural power relations serve to reinforce the dominance of meat and dairy production (Sievert et al., 2021). By combining policy analysis with stakeholder perspectives, this study contributes a nuanced understanding of how institutional and economic structures sustain Norway's meat-dominated food system, and how they might be reoriented towards sustainability.

Aside from a recent report by Mittenzwei (2025), few studies have addressed how agricultural support mechanisms influence the balance between livestock and plant-based production, leaving a critical gap in understanding how economic policies lock in existing production systems and affect diets. This research examines both meat-based and plant-based systems, with the objective of providing actionable insights for decision-makers. The development of policies that support a more plant-based and environmentally conscious food system in Norway is the ultimate aim. While the need for economic instruments to reduce emissions from agriculture is well established internationally (IPCC, 2018; Cederberg et al., 2013; Säll & Gren, 2015), there is limited research exploring the Norwegian policy landscape in this regard, and even less attention to the perspectives of stakeholders beyond consumers.

1.3 Aim and Research Questions

The study aims to investigate how agricultural policy in Norway, particularly subsidies and taxes, affects the balance between animal agriculture and plant-based food production. It further seeks to identify the political and economic barriers to reform, the current state of the sector, and to explore which policy measures could most effectively support a more sustainable and plant-based food system. By focusing on the roles of subsidies and taxes, the study seeks to contribute actionable insights that can help address the environmental challenges associated with current dietary patterns, ultimately informing policy decisions to improve the affordability, accessibility, and sustainability of Norwegian diets through adoption of more plant-based food.

To address these aims, the research questions are as follows:

RQ1: How do current agricultural subsidies and taxation policies in Norway support or hinder the development of plant-based food production?

RQ2: What types of transitions do key actors envision as most beneficial for advancing plant-based food production in Norway?

RQ3: What barriers to policy reform do key stakeholders identify, and which policy changes are considered most promising and politically feasible?

The food system is closely connected to climate policy, public health, economics, and cultural norms, making an interdisciplinary perspective essential. This study contributes to the literature by focusing specifically on Norway's agricultural policies through the lens of subsidies and taxes, an area where research has largely examined consumer behaviour rather than structural policy barriers. By examining how these instruments shape both meat and plant-based production, and by integrating stakeholder perspectives and policy analysis, the study explores what kinds of policy reforms might be both effective and politically feasible. As FAO, UNDP & UNEP (2021) emphasise, understanding the national impacts of agricultural support is key to phasing out the most distorting and damaging policies. In line with this, the study aims to provide practical recommendations that can help policymakers and advocacy groups improve the sustainability of Norwegian food systems.

1.4 Scope and Delimitations

This thesis examines the role of economic policy instruments in Norwegian agriculture, with a focus on how subsidies and taxes influence the balance between plant-based and animal agriculture. While the topic is closely connected to both animal welfare and public health debates, these dimensions fall outside of the scope of this study. The emphasis is rather placed on the environmental implications of agricultural policy. Importantly, the study does not attempt to quantify or model all environmental impacts of different production systems but rather seeks to explore how the structures of economic policies shape opportunities and barriers for producers and to some extent also consumers.

Geographically, the analysis is restricted to Norway to allow for a detailed exploration of the institutional context and national-level policies. At the same time, policy developments in other countries offer useful comparisons and are sometimes included as examples. Norway is an interesting case, as its agricultural sector is the most subsidy-driven in the world and primarily dominated by livestock production (FAO, UNDP & UNEP, 2021).

The study focuses on economic policy instruments, as these are structural mechanisms with direct influence over production incentives and consumer prices. Research indicates that awareness-raising alone has limited impact on consumption and production patterns unless they are supported by economic incentives (Ejelöv et al., 2025). Price is a major determinant of consumer food choices, and altering relative prices through fiscal tools is therefore a promising strategy for enabling dietary shifts at scale (Agora Agriculture & IDDRI, 2025). Economic policies can directly remove structural barriers, rather than relying on individual willingness to change. Thus, by focusing on supply rather than demand, the research highlights how policy frameworks influence what is produced and made available to consumers, thereby shaping dietary patterns more indirectly but structurally.

In terms of stakeholders, the study adopts a broad input but narrow output approach. While the primary audience is policymakers, a wide range of actors are interviewed, including non-governmental organisations (NGOs), politicians, public administration representatives, retailers, farmers' associations, fruit and vegetable farmers, livestock farmers and an author and political scientist. By contrast, consumers are excluded from the scope, as the study prioritises structural policy levers rather than individual motivations, which have already been widely studied (Austgulen et al., 2018; Nejad et al., 2024).

Finally, the study is time bound. The data was collected via interviews conducted between 21st May and 6th August 2025. Literature published after 6th August 2025 falls outside the scope of the project, and the thesis is therefore limited in several terms, including timewise.

1.5 Ethical Considerations

The research design has been reviewed against the criteria for research requiring an ethics board review at Lund University and has been found to not require a statement from the ethics committee.

1.5.1 Research Honesty and Personal Integrity

The research was not funded nor supported by an external organisation, ensuring full independence and integrity of the researcher. Given that the degree programme is entitled *Environmental Management and Policy*, some stakeholders and potential interviewees may have perceived the study as adopting a predetermined environmental perspective. This could potentially have influenced the willingness to participate, particularly among farmers who view agriculture as biological processes who should not be subject to environmental policy intervention. To mitigate this, the researcher sought to engage openly with all perspectives, transparently outlining the scope and objectives of the research, and including a diversity of literature sources to ensure a balanced approach. When analysing the data, accurate citation of sources was ensured to transparently present the findings.

1.5.2 Ethical Responsibilities to the Subjects of Research

Participation in the study was entirely voluntary, with participants free to withdraw at any time. A consent form was sent to the interviewees to inform about the objectives of the research, privacy and confidentiality, secure data storage and the voluntary nature of participation (see *Appendix 1*). It was signed by 14 out of 16 participants, with the last two giving only verbal consent during the interview, as they did not answer enquiries via email after the interviews. All participants were treated equally, regardless of their profession or beliefs, and the researcher did not impose personal views on the respondents. Care was taken to frame questions neutrally and respectfully, particularly when discussing sensitive topics such as subsidies and taxation that may affect participants' livelihoods.

1.5.3 Handling, Storage and Availability of Data

All data collected has been anonymised to protect participant identities. Transcripts were securely stored in a cloud service and an external hard drive. Access to the data was restricted to the researcher alone. These measures ensure academic integrity and compliance with ethical research standards, securing confidentiality and a transparent process (Creswell & Creswell, 2018).

1.6 Audience

1.6.1 Primary Audience: Policymakers

The main target audience of this thesis is Norwegian policymakers, as they hold the authority to shape and reform agricultural and food policies. The study aims to provide them with evidence-based insights into how current economic support structures affect the production, affordability, and accessibility of plant-based food compared to meat. By understanding these dynamics, policymakers can make informed decisions that better align with national goals for sustainability, climate mitigation, and public health.

1.6.2 Secondary Audience: Farmers, Retailers and NGOs

While policymakers are the primary audience, addressing the research questions requires perspectives from a broader group of stakeholders, including:

i. **Farmers and farmers' organisations**, who can provide first-hand experiences of the economic and practical challenges of shifting towards more plant-based production systems.
ii. **Retailers**, who understand supply chains, market dynamics, and the feasibility of scaling plant-based products.
iii. **Environmental and animal rights organisations**, who highlight the societal and ecological impacts of meat-heavy food systems and advocate for alternatives and seek evidence to support plant-forward policy reforms.

By incorporating diverse perspectives, the study ensures that its conclusions are grounded in real-world challenges and opportunities. Nevertheless, the recommendations are specifically tailored to policymakers, providing them with actionable strategies and interventions to enable a transition towards a more sustainable and plant-forward agricultural landscape in Norway.

1.7 Disposition

Chapter 1 (Introduction) introduces the research topic, outlines the nature of the problem addressed, and presents the research aim and questions. It further discusses research limitations, defines the intended audience, and provides an overview of the thesis structure.

Chapter 2 (Background) provides an overview of the Norwegian agricultural sector, and introduces key concepts such as subsidies and taxes, and gives an overview of financial support to the agricultural sector.

Chapter 3 (Literature Review) examines the existing research on the topic, identifies key empirical contributions and provides a relevant theoretical framework.

Chapter 4 (Research Design, Materials and Methods) outlines the research design, data collection, and analytical methods employed in the study.

Chapter 4 (Results and Analysis) presents and analyses the empirical findings of the research.

Chapter 6 (Discussion) discusses the results in relation to the broader literature, policy implications, and the theoretical framework.

Chapter 7 (Conclusion) summarises the main conclusions of the study, provides recommendations directed at the primary audience, and suggests areas for future research.

2 Background

This section provides key background information about the interpretation of subsidies and taxes applied in this thesis. It then focuses specifically on the Norwegian context targeted in this study, specifically the Agricultural Agreement. This is the result of annual negotiations between leading stakeholders in the sector, and it determines most of the economic support to producers. It is therefore crucial to this project. The chapter provides a comprehensive overview of economic support in Norwegian agriculture by also including economic instruments outside of the Agricultural Agreement.

2.1 Subsidy

A subsidy can broadly be defined as financial or other forms of support provided to reduce production costs or consumer prices. According to the Oxford Learner's Dictionary (n.d.), it is "money that is paid by a government or an organisation to reduce the costs of services or of producing goods so that their prices can be kept low". The World Trade Organization (WTO, 2006) extends this definition to include not only direct payments, but also measures such as tax concessions or import restrictions, such as tariffs, that protect domestic production from foreign competition. For the purposes of this thesis, therefore, subsidies will be considered to include not only government payments but also reduced or no taxes and import protection.

In Norwegian agriculture, subsidies are an essential policy tool used to support farmers and maintain agricultural production across the country. They can take the form of direct payments per unit produced (e.g., per litre of milk) or per input factor (e.g., livestock, land, electricity, diesel) and may also include indirect support such as reduced value added tax (VAT) on food or import protection for certain products (Mittenzwei, 2025).

2.2 Tax

According to Cambridge University Press & Assessment (2025), a tax is "money paid to the government that is based on your income or the cost of goods or services you have bought". Taxes are the primary source of public revenue and also the mechanism through which subsidies are funded, meaning that financial support for specific sectors must first be collected from taxpayers before it can be redistributed (Mittenzwei, 2025). To date, no country has implemented a tax on food products for environmental reasons (Leite Pinto, 2021). However, in Norwegian agriculture, tax policy itself functions as a form of subsidy or support through measures such as reduced VAT on food and tax-free diesel, alongside direct subsidies and import protection.

2.3 The Norwegian Agricultural Agreement

The Agricultural Agreement is the result of annual negotiations between the Norwegian government and the agricultural sector. The sector is represented collectively by two organisations: the Norwegian Farmers' Union and the Norwegian Farmers and Smallholders Union (Landbruksdirektoratet, 2025). The negotiations cover price provisions and target prices, the level and distribution of budgetary support across different schemes, and market arrangements and market regulation measures. Although the negotiations do not address indirect subsidies, such as taxes, or import protection regulations, the outcome of the negotiations establishes the foundation for the majority of direct subsidies in the agricultural sector. In the context of economic support for Norwegian agriculture, the Agricultural Agreement plays a fundamental role and should be incorporated into an analysis.

2.4 Overview of Support to the Food and Agriculture Sector in Norway

Table 2-1 illustrates the economic support to the food and agriculture sector in Norway, which can be divided into four main categories; Direct subsidies under the Agricultural Agreement, Direct subsidies outside the Agricultural Agreement, Indirect subsidies, and Import protection.

Table 2-1. Overview of support to the Norwegian agricultural sector (based on Mittenzwei, 2025).

Level	Category	Description/Example
Direct subsidies under the Agricultural Agreement	**Production subsidies**	*- Operational subsidies for milk and beef cattle* *- Livestock (+ extra for organic)* *- Outfield grazing* *- Grazing* *- Cultural landscape* *- Area (+ extra for organic)*
	Price subsidies	*- Basic subsidy (goat's milk, sheep / lamb)* *- Quality subsidy (cattle, lamb)* *- District subsidy (milk, meat, eggs, fruit & berries, potatoes and vegetables – only in northern Norway)* *- Norwegian wool* *- Joint facilities for fruit*
	Farm relief worker subsidies	*In case of illness or holiday*
	Price reduction schemes	*Raw materials, grains, potato starch / -spirits*
	Other	*- Regional environmental programme* *- Subsidy for food grains* *- Agricultural Development Fund* *- Transport (of meat, eggs, and animal feed)* *- Crop failure compensation* *- Animal breeding* *- Veterinary travel* *- Advisory services* *- Etc.*
Direct subsidies outside the Agricultural Agreement		*- Agricultural tax deduction* *- Electricity subsidy* *- Tax-free diesel*
Indirect subsidies		*- Reduced food VAT* *- Exemption from climate tax (agriculture is not covered by the EU ETS)*
Import protection		*Tariffs and trade barriers to protect domestic production*

2.4.1 Direct Subsidies under the Agricultural Agreement

Direct subsidies under the Agricultural Agreement are negotiated and set by the Agreement and thus decided by the government in collaboration with the two main farmers' unions in Norway. Production subsidies, amounting to NOK 13.4 billion, are annual payments made directly to

farmers upon application, on the condition that they are engaged in active farming and meet a minimum turnover in agricultural goods (Mittenzwei, 2025). These subsidies are granted for the use of production factors such as land and livestock, with the rates varying by region to compensate for natural disadvantages. The rates are generally higher in the north and west than in more productive areas such as Eastern Norway and Jæren, where agricultural production is less challenging. Additional support exists for organic agriculture and practices such as grazing or outfield grazing. Upper payment limits and a basic deduction apply per farm (Mittenzwei, 2025).

Price subsidies (NOK 2.9 billion) are paid to farmers based on the quantities of grain, fruit and berries, milk, meat, and eggs they deliver (Mittenzwei, 2025). Price subsidies for potatoes and vegetables apply exclusively to Northern Norway. Payments are administered by designated receiving facilities on behalf of the state and may be uniform on a national basis (for example, a basic subsidy for goat's milk and wool) or geographically differentiated, with higher rates in regions facing natural disadvantages (for example, regional subsidies for milk and meat).

An annual payment of NOK 1.5 billion in total is allocated to farmers who meet the same activity and turnover requirements as for production subsidies. This payment is referred to as farm relief worker subsidies and is used to cover the costs of hiring replacement personnel, for example during illness or holidays (Mittenzwei, 2025).

Price reduction schemes lower the market price of certain agricultural products while maintaining higher producer prices. A general reduction in the prices of raw materials, including milk, eggs, potatoes, meat, and food grain, amounts to NOK 225 million and is applied as a flat rate per litre or kg delivered. The reduction in the price of grain (NOK 2 billion) has a positive effect on grain farmers, by increasing their revenues, and on livestock farmers, by reducing their feed costs. A separate scheme for food grain (NOK 30 million) reduces the price of grain used for human consumption.

Other subsidies under the Agricultural Agreement include a wide range of measures, amounting to a sum of NOK 1.4 billion. These include the Agricultural Development Fund, transport costs for the livestock industry, and compensation for crop failure. The Regional Environmental Programme (NOK 786 million) funds measures aimed at the conservation of cultural landscapes, biodiversity, soil health, and water and air quality. Transport subsidies (NOK 447 million) reduce costs of moving feed, eggs, meat, and grain between farms and receiving facilities.

2.4.2 Direct Subsidies Outside the Agricultural Agreement

Direct subsidies outside the Agricultural Agreement include the agricultural tax deduction, tax-free diesel, and electricity subsidies (Mittenzwei, 2025). The agricultural tax deduction (NOK 1 billion) is calculated based on the farm business income and serves to reduce farmers' overall tax burden. Tax-free diesel (NOK 431 million) exempts the agricultural sector from the road usage tax, a measure that acknowledges that most diesel use in farming occurs off-road. Electricity subsidies (NOK 454 million) have been implemented after increasing energy costs, to reduce energy costs for farms, with targeted support for both greenhouse and other agricultural production.

2.4.3 Indirect Subsidies

Indirect subsidies to Norwegian agriculture include reduced food VAT and exemption from climate tax, together amounting to around NOK 8 billion (Mittenzwei, 2025). The reduction in VAT on food (NOK 900 million) can be considered an indirect subsidy, as the state foregoes tax revenues through the implementation of this policy. The standard VAT rate is 25%, whereas

the rate applicable to food products is 15%. The estimated value of lost VAT revenue has been calculated to be 10% of the market value of these products. The climate tax exemption (NOK 7 billion) applies to emissions from the agricultural sector, which is not covered by the EU ETS. By exempting the agricultural sector from climate taxation, the state indirectly provides subsidies for food production.

2.4.4 Import Protection

Import protection (NOK 4.6 billion) represents a fundamental component of Norwegian agricultural policy, whereby tariffs are imposed on imported feed and food, thus increasing domestic prices. In distinction to both direct and indirect subsidies financed by taxpayers, import protection is effectively paid by consumers. The value of this measure is calculated by multiplying domestic production volumes by the price difference between Norwegian and import prices, in accordance with OECD methodology. However, the majority of plant-based products, such as fruits, berries, and vegetables, are excluded from this calculation, although protection is likely positive for domestic producers in seasons when their products are available.

2.5 Distribution of Support

In 2023, the total value of direct and indirect subsidies in Norway, including import protection measures, amounted to approximately NOK 37 billion (Mittenzwei, 2025). Of the financial support allocated under the Agricultural Agreement, a significant proportion, amounting to 97 percent, was allocated to the animal agricultural sector. In contrast, a mere three percent was allocated to plant-based agriculture. In this calculation, subsidies for grains used in animal feed are also included under animal agriculture. However, upon incorporating all subsidies into the analysis, not only those under the Agricultural Agreement, it becomes evident that 83 percent of subsidies are allocated to the animal agricultural sector, while the remaining 17 percent are directed towards plant-based products. In this calculation, grains used as feed for livestock are included under plant-based production. The distribution is illustrated in *Figure 2-1*, in which plant-based products are marked in green and animal products in pink. As demonstrated by Mittenzwei (2025), the products which receive the largest share of subsidies are cattle, cow milk, and sheep/lamb meat, which collectively account for 70 percent of the total. This finding indicates that other subsidies than those distributed under the Agricultural Agreement are providing a comparatively higher level of support for plant-based food products, although the economic landscape in Norway remains overwhelmingly dominated by animal agriculture.

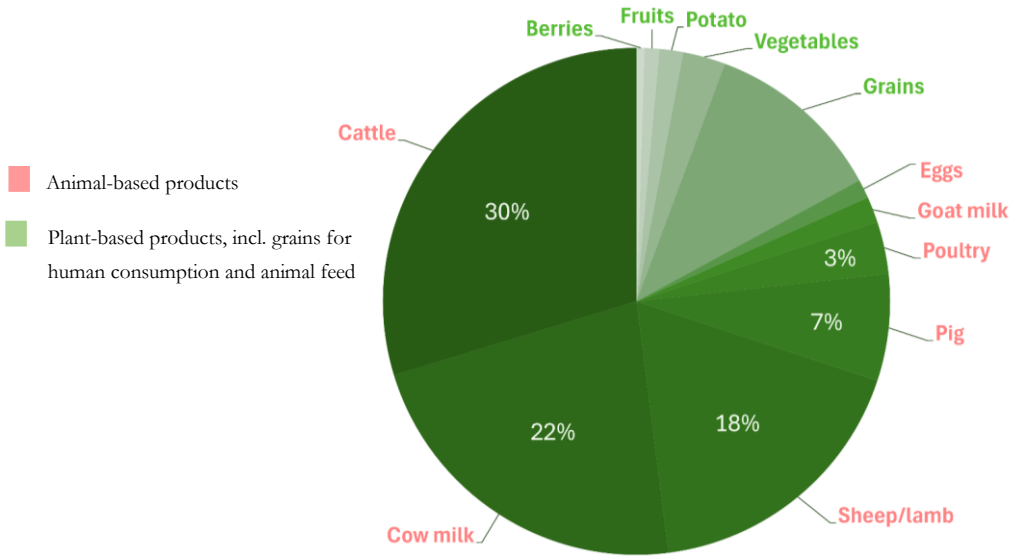

Figure 2-1. Distribution of agricultural subsidies per product in 2023 (based on Mittenzwei, 2025). The figure shows the share of total subsidies under the Agricultural Agreement and other support schemes allocated to plant- and animal-based production.

3 Literature Review

Research on agricultural policy related to sustainability in Norway and other countries, spans fields like economics, agricultural science, nutritional science, environmental science and political science. For this thesis, 46 academic papers and reports were identified to include in the literature review. Of these, more than half were published after 2021, and as many as seven were published in the first half of this year. This witnesses how rapidly this field is evolving, and that it is currently of high relevance.

In line with the focus of this thesis, the emphasis in this literature review is placed on four key themes: fiscal policy levers affecting prices, willingness to pay (WTP), demand – how consumers think and act, and other policy instruments. A review of these themes is followed by a synthesis of converging or diverging findings and addressing unanswered questions that this study approaches. For consistency and comparativeness, all monetary values are converted to NOK.

3.1 Fiscal Policy Levers Affecting Prices

Fiscal policies shape the agricultural system in Norway and influence both the income of farmers and the final price of food products to consumers. However, they materialise in diverse forms, including taxation and subsidies, as elaborated in Chapter 2 (Background). Fiscal policies are applied under the economic premise that people to a certain extent buy more when the price is reduced, while they buy less if the price is increased (Larsson et al., 2025b).

3.1.1 Taxes as Instruments of Agricultural Policy

An environmental tax on food products is essentially the action of internalising the environmental externalities caused by carbon emissions and other environmental damage. Taxation is considered by many researchers an effective way to reduce these negative externalities, with the potential of simultaneously improving diet quality and reducing mortality and healthcare burdens. This link is drawn since food with a high environmental footprint, such as red meat, often correlates with being unhealthy, while food with a low environmental footprint, such as most fruits and vegetables, are healthier (Leite Pinto, 2021).

Value added tax (VAT) is one type of tax that is added directly to the price, and consumers thus pay the tax when buying most goods and services, including meat, fruits and vegetables. Today, the income of this tax goes to the state, but it could potentially be used as a tax shift, which entails adjusting taxes for example to promote sustainability through reducing the VAT on healthy and sustainable food, while increasing the VAT on unhealthy and unsustainable food (Larsson et al., 2025b). Through a tax shift, the income of a GHG tax on meat could be earmarked and used for reducing the VAT on fruits and vegetables, so that meat would essentially "subsidise" a price reduction on fruits and vegetables. This way, the state could implement a policy aligned with sustainability and health goals, without losing revenue (Tangen et al., 2025). Recent research has shown that setting VAT rates based on health and environmental considerations "can improve diets and result in health, environmental and economic benefits in most European countries" (Springmann et al., 2025). The major environmental improvements were found to primarily be driven by increased VAT rates on meat and dairy products.

In the existing literature, one of the most discussed measures to reduce the environmental footprint of the agricultural sector is the introduction of a **carbon tax on meat** (Ejelöv et al., 2025; Grimsrud et al., 2020; Leite Pinto, 2021). However, as Leite Pinto (2021) note, no country has yet applied a tax on food products for environmental reasons. In consideration of issues related to food security, the global agricultural sector is to a significant extent not subject to restrictions imposed by economic policy (Markensten et al., 2018; Willett et al., 2019). For

instance, as stated by Säll et al. (2020), the sector is not included in the EU ETS and, in some countries (e.g., Sweden and Norway), the sector pays reduced rates, or receives refunds. on fuel for machinery and energy used in production.

It is evident that Norway does not currently have any environmentally motivated tax on products from animal agriculture, but in 2015, the Green Tax Commission, a Norwegian expert committee on green taxation appointed by the government, recommended a climate tax on red meat (Mittenzwei, 2015). This recommendation sparked the debate on environmental taxation in Norwegian agriculture, which had previously been neglected, and two political parties (the Green and the Liberal Party) have proposed to increase the VAT on meat (Tangen et al., 2025). Similarly, in Denmark a "meat tax" was proposed to Parliament by a Danish opposition party (The Alternative), following a Danish Council of Ethics publication. Although it did not become law, it highlights civil society's norm-promoting role (Sievert et al., 2021). The Green Tax Commission justified its Norwegian recommendation by estimating that a tax equivalent to NOK 400-800 per ton CO_2e, could cut national emissions by 5-7 percent (Mittenzwei, 2015)[1]. Thus, the implementation of a tax shift could enhance the competitiveness of plant-based food products, thereby potentially leading to an increase in production and consumption of plant-based products, including fruits, vegetables, berries, potatoes and grains.

As animal agriculture is associated with considerable negative externalities, including GHG emissions, nutrient pollution, high water consumption, biodiversity loss, animal welfare and human health concerns, the implementation of an "optimal" tax level could be a viable solution (Funke et al., 2022). Such a tax would serve to internalise these negative externalities and address the market failure scenario, wherein the price of animal-based products does not adequately reflect the associated negative externalities. This results in consumption levels that exceed those observed in a Pigouvian scenario, where the polluter-pays-principle is applied and all externalities are internalised in the market price (Funke et al., 2022).

An important discussion concerns **whether a tax should target supply or demand**. To achieve the most economically efficient outcome possible, and to reduce the environmental footprint of food production most efficiently, taxes should be targeted to every product type and farm specifically according to its environmental footprint. While this is not feasible to measure and implement across the entire agricultural sector, "meat taxes provide an attractive second-best alternative because they can help to achieve multiple policy objectives aimed at livestock farming and meat consumption" (Funke et al., 2022). The implementation of a tax could be conducted in two distinct ways, either at the source, such as a supply-side tax at the farm level, or as a consumption tax, such as a VAT applied to the purchase of the products. Ejelöv et al. (2025) asserts that "[C]consumption taxes on emission-intensive foods, like red and processed meat, can be cost-efficient measures to both reduce GHG emissions and alleviate public health concerns through price-driven behavioural changes". According to Funke et al. (2022), consumption taxes are also easier to implement, as they come with lower monitoring costs than implementing taxes at the source.

In the context of a national policy aimed at reducing emissions from food, for example in Norway, one concern is to ensure that domestic producers are not placed at a disadvantage, thereby prompting an increase in import rates and subsequent emissions leakages. According to several studies, consumption taxes emerge as the most viable instrument to achieve this (Jansson

[1] These numbers should be treated with caution, as the model is a simplification of a complex reality, and for instance the consequences of a tax on import and carbon leakage was not included in the assessment (Mittenzwei et al., 2015).

& Säll, 2018; Wirsenius et al., 2011; Ricci et al., 2024). The rationale behind this is that the imposition of a supply-side tax would be exclusive to domestic producers, thereby increasing the final price of Norwegian products and consequently reducing the relative price of imported products. A recent study (Ricci et al., 2024) indicates that the implementation of a supply-side tax in the EU would result in a competitive disadvantage for EU farmers, leading to over 40 percent carbon leakage as non-EU producers would replace European ones. In contrast, the introduction of a consumption tax, applied uniformly to both domestic and imported products, has the potential to mitigate the challenges posed by domestic production and to "reduce the risk of emission leakage by increased import levels" (Jansson & Säll, 2018). However, the disadvantages of a consumption tax include the fact that it is disconnected from the source of the emissions and that consumer preferences determine the mitigation potential; whether consumers decide to change their behaviour following the increased tax or not (Jansson & Säll, 2018).

Price elasticity

The implementation of a tax entails a financial burden, which is likely to be borne by the consumer. The extent to which a tax, and the subsequent price change it generates, results in altered consumer behaviour, depends on the consumers themselves, as well as the price elasticity of the goods in question, meaning the extent to which price changes influence demand or supply change (Tangen et al., 2025). A few studies, including one that utilised Norwegian data, have concluded that the price elasticity for meat is moderate. This suggests that the implementation of a meat tax may result in only moderate effects on demand (Gustavsen & Rickertsen, 2018). In contrast, a more recent study, based on data from countries outside of the EU, including Norway, has found that consumers exhibit price sensitivity when it comes to meat (Bouyssou et al., 2024). In this scenario, the implementation of a meat tax could serve as an effective policy measure to reduce consumption. However, as this study is not only based on Norwegian data, it is not fully comparable with the Norwegian studies, but it is still included as there are few studies on price elasticity for food in Norway.

As stated by Samfunnsøkonomisk Analyse (2019), different kinds of meat are found to be complementary goods. This means that a decrease in one type of meat, such as beef, also causes a reduction in demand for other meat, including pork, chicken and lamb. This meta-study also concludes that an increase in the price of meat has little effect on the demand for vegetables, which suggests that there is no clear link between a meat tax and increased consumption of vegetables. This finding suggests the potential necessity for a complementary VAT reduction on vegetables to enhance their consumption. Despite the limited extent of research on the price elasticity of Norwegians' consumption of fruits and vegetables, a notable increase in consumption was observed following a price reduction initiative by the grocery store chain Extra (Coop Norge, 2024; Tangen et al., 2025). Moreover, research suggests that the elasticity of demand tends to be stronger over the long term than in the short term, given that changing behaviour and learning to use alternative products requires time (NOU 2019: 8). This phenomenon aligns with the observed minor decline in Norwegian meat consumption, following a prolonged period of increasing consumption and subsequent price increases over an extended period (Tangen et al., 2025). This may suggest that a tax shift could be a viable strategy, even if its full effect is not immediately observable. However, the limited existing research on price elasticities for meat and plant-based products in Norway hinders the ability to offer a clear conclusion, and further research in this area is necessary to provide more precise insights.

"Optimal" Tax Rates

Although the numbers are uncertain, due to methodological challenges of quantifying all relevant sustainability aspects in pricing, including climate, health aspects, biodiversity, antibiotic usage and social and economic aspects (Röös et al., 2021), several studies have attempted to quantify the optimal size of an environmental tax on meat. A Norwegian study from 2020, finds that a "tax in line with the general tax level for GHG emissions in Norway (in 2015) would imply a GHG tax on red meat of NOK 12 per kg." (Grimsrud et al., 2020). Moreover, outcomes are sensitive to the assumed level of the carbon price studies using prices above NOK 1050 per tCO_2e report substantially larger reduction in meat consumption and emissions, while lower prices yield smaller, but still significant, effects (Leite Pinto, 2021). Funke et al. (2022) uses data from countries all over the world to estimate that "an environmental tax on meat in high-income countries would increase its current retail price by roughly 20-60 percent, depending on meat type", which corresponds to a tax of NOK 58-92 per kg for beef, NOK 20 per kg for pork, and NOK 15 per kg for poultry.

Expected Environmental Impacts

There are several studies when it comes to measuring the environmental impact of a tax on meat or animal products, but as they all use different data and are based on different contexts, they also come to slightly different results.

Leite Pinto (2021), concludes that if a tax on animal products would be implemented in the EU, "it would be the most effective action ever adopted to reduce the impacts of meat consumption up to 18% and total emissions by at least 3%, in a short period of time". On the other hand, Jansson & Säll (2018) estimate that an EU-wide consumption tax on animal products of €290/tCO_2e (equivalent to ca. NOK 3400) would deliver only modest mitigation, about a 5% cut in EU agricultural emissions and a reduction of 0.75% globally, driven mainly by beef. They attribute the limited impact to inelastic demand, implying much larger price rises would be needed to shift diets, thus at high abatement cost per tonne. Ricci et al. (2024), concludes that setting a consumption-based GHG tax at €100/tCO_2e (equivalent to ca. NOK 1200) yields only modest cuts (about 2-3%) because producers can redirect sales to imports, thus, larger reductions would require much higher rates. Springmann et al. (2025), concludes that a tax shift, by "increasing VAT rates on meat and dairy, and reducing VAT rates on fruits and vegetables can improve diets and result in health, environmental and economic benefits in most European countries", with the environmental benefits primarily driven by increased rates on animal products. In quantified terms, this paper estimates the effect of increased VAT on animal products in 28 countries, with simulated reduction of emissions by six percent. Springmann et al. (2017), estimates that a global carbon tax on food, based on environmental impacts and not only targeting animal products, could reduce agricultural emissions by almost ten percent.

A Swedish simulation study indicates that applying a GHG tax on all foods, using the price of NOK 1.2 per kg CO_2e, could cut emissions by up to 200kg CO_2 per person per year, which is equivalent to approximately ten percent of food emissions and two percent of total emissions per person (Säll et al., 2020). They state that the decrease was "mainly a result of reduced consumption of beef and other animal-derived products".

No studies were found using Norwegian data to measure environmental impacts of a tax shift in the agricultural sector, however, according to the report from the Green Tax Commission, a tax on red meat of NOK 400-800 per tonne CO_2e, would lead to emissions reductions of 5-7 percent (Mittenzwei, 2015). However, this number might be slightly lower in the case that a reduced consumption of red meat would lead to an increased consumption of other types of meat, as they have higher emissions factors than plant-based products (Miljødirektoratet, et al.,

2020). Gustavsen & Rickertsen (2013) concludes that reducing the VAT on fruits and vegetables increases the consumption to some extent, but that the effect is most substantial among consumers who already buy a lot of it, and that this indicates that increasing the VAT on animal products is more impactful.

Another interesting finding is that a tax shift could affect the food and hospitality industry to "reduce taxed foods while using more subsidised ingredients in composite foods (like decreasing the amount of beef while using more legumes in sausages)", potentially creating a spiralling effect where the food industry impacts consumers through a behavioural shift and norm changes (Larsson et al., 2025a).

Potential Negative Effects

Whereas tax reform is supported as a viable solution to reduce emissions and other environmental externalities of food production, tax reform might also have some adverse trade-offs. One example is the importance of cows, sheep and goats to secure biodiversity through semi-natural pasture in Norway and Sweden (Eriksson, 2021). These landscapes are important for conserving local biodiversity and may be threatened by a tax leading to changed consumption patterns and eventually a lower number of grazing animals (Eriksson, 2021; Moberg et al., 2021). To limit this risk and make sure the pastures are kept, one tool could be to offer direct payments to farmers for keeping some grazing animals on the pastures, to support the ecosystem services the animals contribute to (Gren et al., 2021).

In addition, a GHG tax that would only be implemented on beef or red meat, could cause a substitution effect, shifting consumption from red meat to other types of meat, diluting the climate gains of the tax shift and potentially leading to an increase in overall consumption of animal products (Leite Pinto, 2021). Thus, the results would be "the most significant when the tax is applied on all animal products, including dairy, cheese and eggs" (Leite Pinto, 2021).

3.1.2 Subsidies

Next to taxes, subsidies represent another established fiscal policy measure that is widely implemented, also in food policy. This section presents research on subsidies and how they affect agricultural production and consumption.

Purpose and Scale

According to Sievert et al. (2021), subsidies in agriculture have historically been used to boost agricultural productivity, a strategy that has contributed to a steep increase in production volume but has promoted environmental and public health harm. According to the Food and Land Use Coalition, subsidy programs worldwide distribute more than NOK seven trillion annually, of which roughly NOK five trillion goes directly to agricultural producers. And in most countries the majority goes to meat and dairy farmers, who account for the largest carbon footprint (Sievert et al., 2021; FAO, UNDP & UNEP, 2021).

Correspondingly, FAO, UNDP & UNEP (2021) has established that "agricultural support is not providing desirable results for sustainability and human health but repurposing it can be a game changer". This report notes that shifting subsidies is a unique opportunity to transform food systems to become more efficient and supportive of the sustainable development goals (SDGs).

Norway's Subsidy Architecture and Allocation

As found in FAO's report, Norway is the country in the world which supports its agricultural sector the most (FAO, UNDP & UNEP, 2021). According to Møller & Beddari (2024), approximately 90 percent of farmland in Norway is allocated to animal agriculture, and 97 percent of the subsidies over the Agricultural Agreement are also allocated to animal agriculture. Therefore, there seems to be a strong correlation between where the government money goes and what is produced. The paper states that only six percent of the agricultural subsidies in Norway go to plant-based production, which should be increased to achieve the government's claimed ambitions to increase plant-based production (Møller & Beddari, 2024).

Samfunnsøkonomisk Analyse (2019) also finds that reducing subsidies to animal agriculture, and particularly beef, in Norway promotes welfare with reduced negative externalities, concerning both environmental impacts and human health. Mittenzwei (2015) concludes that reduced subsidies of a size of NOK 400-800 per tonne CO_2e to animal agriculture is equally effective as a tax on the products and would lead to emissions reductions of five to seven percent.

Policy Options and Impacts

The literature unanimously shows that increasing support to horticulture producers increases their production and has positive health and environmental effects. Springmann & Freund (2022) consider various scenarios, including removing all agricultural subsidies, partially removing them and repurpose subsidies from animal agriculture to plant-based production. They found that repurposing could increase plant-based production in OECD countries by up to 19 percent, and that recycling revenue, in this case increasing the VAT on animal products and reducing the VAT rate on fruits and vegetables, would be progressive (Springmann & Freund, 2022). Similarly, Larsson et al. (2025a) conclude that such a tax shift, by combining a meat tax with a fruit and vegetables subsidy, increases consumption of fruit and vegetables by approximately 7.6 percent and has positive co-benefits for low-income households rather than negative, by reducing monthly food costs by NOK 30 on average.

Contrastingly, Gustavsen & Rickertsen (2013) indicate that subsidies do increase purchases of fruits and vegetables to some extent, but that they benefit households that already consume large quantities of healthy foods the most, while those who consume the least fruits and vegetables already are targeted less. Moreover Röös et al. (2021) note that "Legumes are sustainable and protein-rich substitutes for animal products, but the price levels of legumes are already low in relation to meat and demand would probably not be significantly affected by price reductions". They also find that subsidies come with a high cost for the state, and thus high costs per reduced tonne of GHGs, and that subsidies could entail a risk of increasing levels of food waste, if the consumption does not follow the increase in production following the subsidies (Röös et al., 2021). It should also be noted that changes in agricultural support as a national policy, only affect domestic production (Mittenzwei, 2015). This poses a risk for an increase in imports of meat if subsidies to Norwegian farmers are imposed and put them at a competitive disadvantage compared to farmers in other markets. Thus, Norwegian producers cannot increase the prices of their products if they are subject to less governmental support, without this increasing the likelihood of increased imports (Mittenzwei, 2015).

3.2 Willingness to Pay

3.2.1 Price and Affordability

In Norway, the price of meat has increased substantially less (three percent) than for other food and beverage products (29 percent) in 12 years (Asheim et al., 2020). This shows that meat over time has become comparatively cheaper compared to plant-based and other foods. This trend is due to new technologies, gains from economies of scale, and increased access to cheap inputs (Mittenzwei et al., 2017). This has contributed to the fact that in 1959, the share of the salary an average Norwegian spent on food was 45 percent, while this number was eleven percent in 2020 (Ueland et al., 2022). Meat has therefore shifted from being a scarce, high-cost product to a relatively low-priced commodity, making it a convenient choice for even budget-constrained households (Ueland et al., 2022).

3.2.2 How Prices Shape Purchasing

Across countries, prices are a notable driver of food choices. In a Canadian survey, almost two out of five respondents reported reducing or removing meat from their diet because it had become more expensive, with sustainability, food safety, and health also cited as secondary reasons (Charlebois et al., 2016). Modelling studies point in the same direction, but with some nuances. A French study modelled that a tax shift, taxing high-impact foods while subsidising low-emission foods, resulted in a cheaper average diet and up to ten percent emissions cuts, although the results are likely to vary based on income and preferences (Abadie et al., 2016). However, a study using EU data finds that even large price changes often translate into only modest demand shifts (Jansson & Säll, 2018). A Swedish-based study shows similar results and concluded that a tax of approximately NOK 210 per kg of beef might be necessary to achieve significant consumption reductions, "which is probably too high to be politically viable" (Röös et al., 2021). Other global studies show further that price effects vary a lot from commodity to commodity, and that the biggest price and consumption changes occur for beef and lamb, while many plant foods see small changes. Nevertheless, overall diets can remain similarly affordable as consumers shift from more expensive animal products (with higher pricing due to a GHG tax) to lower-priced plant options (with a substantially lower GHG tax due to a smaller environmental footprint) (Springmann et al., 2017; Springmann et al., 2025). Finally, price instruments on their own may not spur transformational shifts, but they can carry symbolic or normative weight, as the state signals, through the taxes and/or subsidies, that externalities matter (Röös et al., 2021). In addition, combining taxes and subsidies "could be an important cog in transitioning the food system as a whole" (Röös et al., 2021).

Evidence suggests that reorienting public support from animal agriculture to plant-based production can lower the cost of sustainable, nutritious foods and nudge consumption towards healthier, lower-impact diets (FAO, UNDP & UNEP, 2021). A broad policy review finds that consumers widely perceive price as a barrier to sustainable diets, and that calibrated price signals, through mechanisms (e.g., differentiated VAT levels or regulating promotion policies for grocery stores) can steer choices towards more sustainable food (Agora Agriculture & IDDRI, 2025). From a Norwegian perspective, aligning prices with the true costs of production, including externalities, is presented as a dual objective, ensuring fair farm incomes while enabling plant-based products to compete on price (Møller & Beddari, 2024).

3.3 Demand: How Consumers Think and Act

3.3.1 Core Drivers and Barriers

Norwegian studies consistently point to taste, product variety, and price as the primary reasons meat remains a convenient choice, while environmental motives are comparatively weak (Ueland et al., 2022). Many consumers still lack clear knowledge about the climate and health impacts of meat and other animal products, reflecting limited and contested public messaging over time in the media, who have focused more on the environmental impacts of e.g., transportation and housing (Austgulen, 2014; Mittenzwei et al., 2017). On the supply and retail side, producers report that access to delivery agreements is the main constraint, with retailers' import decisions and non-binding intentions creating uncertainty and potential waste (Møller & Beddari, 2024; Mittenzwei et al., 2017). Møller & Beddari (2024) report that the amount of products that the retailers choose to import is unknown to the actors in the Norwegian agricultural sector, which makes it hard to fit the production of Norwegian products to the actual demand. With non-commitment as part of the intentional deals between farmers and retailers, the retailers can prioritise a cheap batch of imported goods. These factors in turn affect what consumers see and at what price (Møller & Beddari, 2024). International reviews echo these patterns, highlighting the fact that consumers widely see price as a barrier to sustainable diets, and pricing levers (e.g., differentiated VAT, promotion rules) are viewed as practical ways to steer choices (Agora Agriculture & IDDRI, 2025). Habits and culinary norms reinforce meat demand; habit formation is a documented driver (Funke et al., 2022). Moreover, research highlights the power of vested interests and stakeholders, such as livestock farmers, to resist change, and that "institutional barriers and bureaucracy (…) represent a significant challenge to domestic support reform" (FAO, UNDP & UNEP, 2021; Funke et al., 2022; Sievert et al., 2021).

3.3.2 Acceptance

A Norwegian survey suggests that the acceptance of price increases on red meat is relatively low in the population, with 60 percent opposing such a tax (Grimsrud et al., 2020; Bruvoll & Lindhjem, 2021). However, a broad range of studies find that earmarking tax revenues to reduce the price of fruit and vegetables increases support (Grimsrud et al., 2020; Röös et al., 2021; Ejelöv et al., 2025). Comparative syntheses find that acceptance improves when policies are cost-neutral for consumers (e.g., tax-and-subsidy packages that keep grocery bills stable) and when communication is transparent about goals and revenue use, so that consumers are aware of the benefits of the tax revenue (Larsson et al., 2025a; Röös et al., 2021). Broader policy guidance reinforces these points, stating that reforms are received better "when pre-announced, implemented gradually and accompanied by public awareness campaigns", with attention to vulnerable groups and, stakeholder buy-in, to reduce opposition from key stakeholders like farmers and low-income groups (FAO, UNDP & UNEP, 2021). In summary, demand is shaped by familiar motives, such as taste, convenience, price, habits, and norms, while acceptance depends on fairness, clarity, and perceived benefits. This provides practical design cues for any shift toward more plant-based consumption.

3.4 Other Policy Instruments

The rationale behind including other policies in this literature review is that other instruments have been referenced and discussed in the literature about economic policy instruments, particularly in terms of comparisons and contrasts with economic instruments. It has also been incorporated into the interview questions in this thesis, to a certain extent, with the objective of obtaining a more realistic and holistic perspective on potential policies. Many researchers cite economic policy instruments as a primary focus; however, it is necessary to consider a broader

range of measures, as price incentives are more efficient in combination with other instruments (Agora Agriculture & IDDRI, 2025).

Beyond taxes and subsidies, the literature highlights a broad toolkit to shift the food landscape. This includes direct regulations (e.g., "meat-free days" in public institutions) and behavioural instruments such as nudges and vegetarian defaults (Funke et al., 2022). Norwegian analyses typically group instruments into (i) economic measures, (ii) direct regulations, and (iii) information/communication (Samfunnsøkonomisk Analyse, 2019). A "ladder" of interventions runs from information, via enabling healthier choices (greater plant-based availability), to nudging and labelling, then price changes, and restricting or removing animal-product options in specific settings (Mittenzwei et al., 2017). Retailers also matter, and if they choose to, grocery chains can influence demand through assortment, shelf placement and other behavioural design alongside pricing (Møller & Beddari, 2024).

A broad range of studies recommend bundling instruments. Information and changing the social norm around food choices to legitimise eating plant-based food can strengthen the effect of price-based tools, for example by pairing GHG-weighted economic food policies with communication and visibility for plant-based options (Van Oort et al., 2021). For commodities where the price responsiveness is low, as it often is for relatively climate-friendly items, analysts advise complementing price policies with alternative instruments such as information and campaigns (Samfunnsøkonomisk Analyse, 2019). A Norwegian synthesis also argues that a mix of price and information or marketing measures can be successful to change consumption over the longer term (Tangen et al., 2025). Two Swedish studies echo this, by stating that a tax shift should be accompanied by other instruments; pure information instruments such as nutritional advice have limited effects on their own but may be needed together with "stronger" measures like fiscal policy for larger shifts (Ejelöv et al., 2025; Larsson et al., 2025b).

3.4.1 Information

Lack of sufficient information among consumers about sustainable and healthy diets is a recurrent barrier mentioned in the literature. Consumers cite lack of knowledge or competence as a primary reason why they do not switch to healthier diets (Agora Agriculture & IDDRI, 2025). Findings from a Swedish study indicate that "Sweden has experienced a reduction in meat consumption which has taken place without any economic policies", and that information and increasing awareness of environmental issues related to food production combined with a broader range of vegetarian food options has likely shifted diets; nonetheless, analysts caution that prices remain influential and additional measures would support the shift (Säll et al., 2020). A Norwegian study also recommends the pairing of information with other tools, such as practical education, including teaching plant-based cooking, increasing the availability of plant-based options in canteens, and ensuring the accessibility of plant-based substitute products. This approach is based on the premise that combinations of measures tend to demonstrate better outcomes compared to individual interventions (Mittenzwei et al., 2017).

3.4.2 Marketing

Marketing strategies have the capacity to either counteract or reinforce dietary goals. A Norwegian study by Supphellen (2020) found that generic marketing of meat, partly supported by government funding, has likely contributed to maintaining stable meat sales, even during periods of negative media coverage of the meat industry. Consequently, it can be argued that competing interests among state actors are in play, with some promoting dietary guidelines advocating for reduced meat consumption and increased consumption of alternative foods, while others provide support to the meat marketing industry. The policy implication is to align publicly supported marketing with public-health and sustainability objectives (Supphellen,

2020). More broadly, the rules of retail-level marketing (i.e. the promotion of products, the frequency with which this occurs, and the placement of products) function as policy levers in their own right. These rules are highlighted in the Nordic literature as potential complements to information and fiscal tools (Larsson et al., 2025a; Møller & Beddari, 2024).

3.5 Synthesis

Literature identifies fiscal policy as the most effective tool for shifting diets and reducing emissions. Consumption-side taxes on high-emission meats are typically more feasible than production-side measures, as they are applied equally to domestic and imported products and limit leakage concerns. Political and public acceptance increases when revenues are recycled to lower fruit and vegetable prices, ensuring cost-neutral outcomes and protecting low-income groups. Current subsidies demonstrate a clear bias towards livestock, thereby locking in emission-heavy production. A reallocation of support toward plant-based foods combined with targeted consumer price relief is viewed as more effective than consumer subsidies alone and has the potential to increase supply of plant-based foods. Acceptance of meat taxes is initially low but rises when reforms are gradual, transparent, and framed as fair. Beyond price, demand is also shaped by taste, convenience, and social norms, meaning price signals work best when healthier options become visibly cheaper and more accessible. Overall, the literature stresses that a combination of policy instruments, such as pricing, enhanced availability, information, defaults, and marketing rules, is more effective than any individual instrument. Norwegian-specific gaps remain around elasticities, equity impacts, and interactions with retail and imports.

3.6 Theoretical Framework of the Study

The thesis is based primarily on the theory of path dependency, supported by selected aspects of institutional theory, as these together offer a comprehensive lens through which to understand the historical entrenchment and the ongoing reinforcement of livestock-dependent agricultural systems in Norway.

Path dependency theory provides insights into how past decisions and institutional arrangements constrain present and future options. Influential contributions by David (1985) and Arthur (1989) establish how self-reinforcing processes, such as investments, create "lock-ins" that make deviation from the established path costly and/or unattractive. In a political science perspective, Pierson (2000) emphasises that once a country or region embarks on a particular pathway, it becomes increasingly challenging to alter this course due to the systems, institutions and investments that have been established around the initial choice. While adjustments are possible, the original decision exerts a significant and enduring influence on future developments (Pierson, 2000).

In agriculture, this framework has been used to explain the persistence of production systems despite environmental, economic or social pressures. Sutherland et al. (2012) expand the path dependency theory by demonstrating that major changes in farm-level practices usually occur only in response to trigger events, such as crises, policy shifts, or market shocks. Such a trigger represents a window-of-opportunity, as farmers enter a period of instability, options might be reconsidered, and new practices can become established. That way, a new path dependency can materialise. For policy design, this suggests that recognising and leveraging trigger events can be critical in fostering transitions.

Since its origins in the field of technology (Sarkis et al., 2011), path dependency theory has therefore evolved into a framework for understanding a range of social issues, including agricultural sustainability transitions (Archer et al., 2008). It shows how past investments in

livestock infrastructure, skills, and policy frameworks can reinforce continuity, while also clarifying the conditions under which transitions may occur.

Previous research on path dependencies in Norwegian agriculture shows that its current state is significantly shaped by historical factors, such as previous technology investments, cultural norms, feeding strategies, and policy decisions (Rønningen et al., 2021). These "lock-ins" have contributed to a strong reliance on livestock production, making transitions towards more plant-based production systems particularly challenging. This context illustrates the relevance of path dependency theory to the present study, which investigates the structural drivers and barriers to dietary transition within Norway's agricultural policy landscape.

While path dependency explains the historical roots of the livestock-based system, institutional theory helps illuminate how current formal and informal structures sustain this trajectory. In particular, Scott's (2014) three-pillar framework is relevant:

- Regulative pillar: subsidies skew toward livestock, tariff design, and enforcement mechanisms that favour livestock production (Mittenzwei et al., 2017; Møller & Beddari, 2024).
- Normative pillar: meat as a convenient and default food choice, and the cultural importance of livestock to rural communities and national food identity (Asheim et al., 2020; Ueland et al., 2022).
- Cultural-cognitive pillar: taken-for-granted assumptions, such as the notion that Norwegian agriculture is inherently livestock-oriented (Meltzer et al., 2024; Mittenzwei et al., 2017).

By integrating these pillars into the analysis, the thesis will not only trace the historical lock-ins identified by path dependency theory but also examine how present-day institutional arrangements, in policy, governance structures, and cultural discourse, continue to reinforce or challenge this path. Combining these theories into a framework, enables a more nuanced understanding of the interplay between historical trajectories and current policy dynamics in shaping the feasibility of dietary transition in Norway.

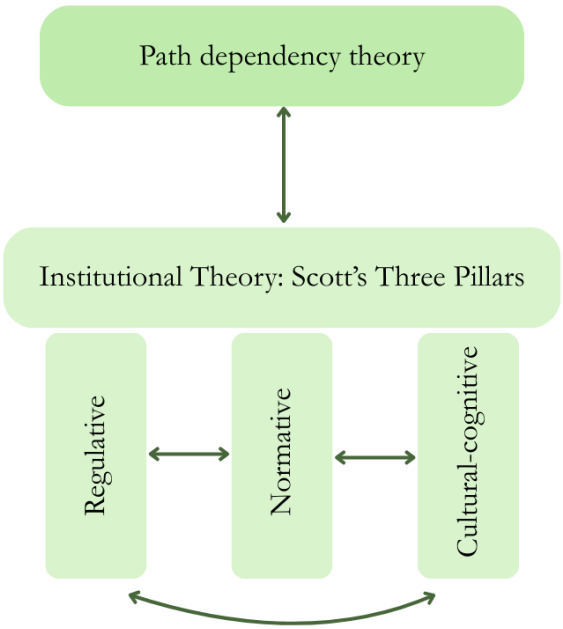

Figure 3-1. Theoretical framework.

4 Research Design, Materials and Methods

This chapter elaborates on the research design, materials and methods applied to answer the research questions. It begins by presenting the qualitative design and the constructivist worldview guiding the study, before explaining the data collection process through semi-structured interviews, including reflections on the sampling of stakeholders. Then, the chapter describes how the interview material was coded and analysed using qualitative content analysis in NVivo. Finally, it discusses the strategies applied to ensure validity and reliability.

4.1 Research Design

The research design for the thesis project is qualitative, relying on semi-structured interviews with open-ended questions (Creswell & Creswell, 2018, p. 41). The data consists of stakeholders' perspectives and opinions, resulting in open-ended qualitative data (Creswell & Creswell, 2018, p.55). This design is relevant, as the participants work with agricultural policy directly or indirectly. Capturing their diverse viewpoints offers a broad overview of the Norwegian policy landscape and sheds light on potential drivers and barriers to change towards a more plant-based food system. Such insights are necessary to address the research questions.

A qualitative approach has several advantages that fit the aims of this project. It is flexible, iterative and evolving, allowing the researcher to adapt the questions based on the interviewees' expertise. This flexibility is particularly valuable when interviewing a wide range of actors, as it enables the participants to guide the findings and highlight issues that might otherwise be overlooked.

4.1.1 Worldview

Research is inevitably guided by a worldview, which is defined as "a basic set of beliefs that guide action" (Guba, 1990, p. 17). To ensure transparency, it is important to acknowledge the worldview that the research is based upon. This thesis is guided by the constructivist worldview, which aligns well with a qualitative approach. Constructivism assumes that individuals develop subjective and varied meanings of their experiences (Creswell & Creswell, 2018, p. 46). Accordingly, this worldview allows the researcher to discover a multitude of views and catch complexity by asking open-ended questions where the interviewee is free to express their own interpretation of the answer.

This worldview fits the project's aim to uncover how agricultural subsidies and taxation policies are perceived by policymakers, NGOs and farmers, among others. Asking open-ended questions allows participants to interpret issues in their own terms, capturing the complexity of how food systems are shaped. One potential limitation of this worldview is the reliance on subjective accounts, which make the results context specific. However, by interviewing a diverse group of stakeholders and capturing a wide range of perspectives, the study aims to counterbalance this limitation.

4.2 Methods for Data Collection

4.2.1 Semi-Structured Interviews

The method for data collection is semi-structured interviews. This format allows for comparability between interviews, while also securing flexibility to explore themes that come up in conversation. Separate interview guides were prepared for the different stakeholder groups to ensure relevance and comparability of the results (see example in *Appendix 2*). On average, the interviews lasted 50 minutes.

16 interviews were conducted, continuing until a certain degree of data saturation was reached, meaning that recurring themes and perspectives emerged across interviews, and no substantially new insights appeared. The process also concluded when no more actors answered that they were able to participate. In total, 37 actors were contacted, of which 16 agreed to participate: environmental NGOs (2 of 4), animal welfare NGOs (1 of 3), politicians (4 of 10), public administration (2 of 3), retailers (1 of 6), farmer associations for fruit and vegetables (3 of 3) and livestock (1 of 2), fruit and vegetable farmers (1 of 2), and other relevant stakeholders (1 of 4). One interview was conducted in person due to the participant's availability, while the other 15 were conducted online – three via Teams and 12 via Zoom, depending on the preferences of the interviewees. All interviews were recorded.

Semi-structured interviews as a method offer several advantages to this project. They are particularly useful for gaining access to participants' own stories, understandings and reasoning, as well as for capturing historical and contextual information that may not be available through other sources. Semi-structured interviews also provide the researcher with control over the questions and their order. This balance between structure and openness makes it possible to capture both the breadth of viewpoints across stakeholder groups and the depth of each participant's reflections (Alvehus, 2025, p. 75-76).

At the same time, interviews also carry certain limitations. One challenge is that the information gathered is indirect and filtered through the views of the interviewee, rather than directly observed behaviour. The responses may also be influenced by social desirability bias, where participants provide answers that present themselves or their organisations in a more favourable light. Furthermore, not all participants are equally articulate or reflective, which can affect the richness of detail of the data collected (Alvehus, 2025, p. 75-76). To mitigate these limitations, the researcher sought to maintain an open and non-judgemental tone throughout the interviews, encouraging participants to speak freely and share their honest perspectives. The questions were also adapted during the interviews, to ensure that the discussions remained relevant while allowing participants to highlight issues that they considered most important.

4.2.2 Participants

The interview participants included representatives of environmental and animal welfare organisations, politicians, public administration employees, a grocery retail employee, an author and political scientist, fruit and vegetable farmers, small-scale livestock farmers and lastly, representatives of farmer associations (both for plant-based and animal agriculture), see *Table 4-1*. Although their approaches vary significantly, these groups were chosen because they were all engaged, directly or indirectly, in shaping or responding to agricultural policy in Norway. Politicians were particularly relevant as they had the power to influence subsidies, taxes, and regulatory frameworks, and could clarify both the political feasibility of reforms and potential resistance to change. Politicians from all parties represented in the Norwegian Parliament were contacted, but only representatives from the centre and left side of the political spectrum accepted the interview request. This potentially introduced a bias towards perceiving plant-

based policy reforms as more politically feasible than they might be across the right side of the political spectrum. Employees of environmental and animal welfare organisations contributed perspectives from their policy expertise, advocacy strategies, and experiences with lobbying, offering valuable insights into the topic and which economic instruments had traction nationally and internationally.

Farmers were also central to the study. Fruit and vegetable farmers were included because they were strongly affected by the current agricultural policy landscape while representing a key part of the solution to move beyond mainly livestock-based production systems. Small-scale livestock farmers provided perspectives on transition challenges and potential barriers to policy change, while also highlighting practices such as grazing that may deliver environmental benefits. Including this group helped ensure that the analysis considered not only plant-based production but also the perspectives of those potentially negatively affected by reforms.

Table 4-1. List of interview participants, grouped according to stakeholder group.

Code	Date of interview	Organisation type and classification
EN1	21.05.2025	Environmental NGO
EN2	22.05.2025	Environmental NGO
AN1	23.05.2025	Animal welfare NGO
PL1	03.06.2025	Politician
PL2	13.06.2025	Politician (also fruit/vegetable farmer)
PL3	24.06.2025	Politician
PL4	27.06.2025	Politician
PA1	06.06.2025	Public administration representative
PA2	04.07.2025	Public administration representative
GR1	06.08.2025	Grocery retail
PS1	24.06.2025	Author/political scientist (also livestock farmer)
FV1	13.06.2025	Fruit/vegetable farmer
FA1	17.06.2025	Farmer association (fruit/vegetables) (also fruit/vegetable and livestock farmer)
FA2	18.06.2025	Farmer association (fruit/vegetables)
FA3	25.06.2025	Farmer association (fruit/vegetables)
FA4	13.06.2025	Farmer association (livestock) (also livestock and fruit/vegetable farmer)

4.2.3 Sampling

The sampling strategy was primarily purposeful sampling, supplemented by some snowballing (Creswell & Creswell, 2018, p. 262). Purposeful sampling was chosen to ensure representation of the different stakeholder groups defined as relevant for the study, while snowballing was used when participants suggested additional relevant actors. In total, 43 individuals were contacted, of whom 16 agreed to participate. An effort was made to contact 3-4 people within each stakeholder group to achieve an even distribution, except for politicians. For politicians, one or two representatives from each of the ten political parties in the Norwegian Parliament were contacted, in order to capture the breadth of political perspectives.

Contact with potential participants was established mainly via email, with a few approached via LinkedIn. The agricultural sector in Norway is relatively small, particularly when considering actors engaged in discussions about economic instruments and the future direction of the sector. Nine interviewees were identified by contacting organisations directly and asking for the most relevant individual to interview. This included politicians, who were identified based on their responsibility for or previous experience with agricultural politics. Three interviewees were identified through online searches of organisations or individuals who had recently appeared in the media on topics related to the study. The final four were identified through snowball sampling, based on recommendations from other participants.

4.2.4 Translation

All interviews were conducted in Norwegian, as this was the mother tongue of all participants and the researcher. The transcripts were coded in the original language to preserve nuance, but English codes were used for analysis and reporting. Translations were carried out using Google Translate, ChatGPT or DeepL, with additional verification by searching for the translated terms online to ensure accuracy. This approach was chosen to minimise potential bias and to ensure that the terminology reflected commonly used expressions in English-language research.

4.3 Method for Data Analysis

The data was analysed using qualitative content analysis, supported by NVivo, a Computer-Assisted Qualitative Data Analysis Software (CAQDAS). This enabled systematic and flexible handling of the interview transcripts, by helping to organise and analyse the material in one place, strengthening the validity and rigour of the analysis, and facilitating a more structure and efficient writing of the results.

The analysis process followed Creswell & Creswell's (2018, pp. 269-270) five steps for qualitative data analysis. First, the transcripts were organised and prepared for coding. Second, the data was carefully read to gain an overall understanding. Third, the transcripts were coded manually in NVivo. Fourth, descriptions and themes were generated by grouping codes into broader categories, with particular attention to those that recurred across multiple interviews. Finally, the results were narrated and contextualised to relate the findings to the research questions and the wider literature.

The coding process was inductive in nature, as the categories were derived directly from the interview material rather than being pre-defined (Creswell & Creswell, 2018, pp. 257-258). Initially, a wide range of codes was created to capture diverse aspects of the stakeholders' perspectives. These codes were then iteratively grouped into eight parent codes, such as policy instruments, trade, markets and demand, and risk and resilience. This approach provided insights into how the current agricultural policy landscape shapes production systems in Norway, going beyond what could be obtained through a literature review.

4.4 Validity and Reliability

Validity in qualitative research concerns whether the findings are accurate and credible from the perspective of the researcher, the participants, or the readers (Creswell & Miller, 2000). To enhance validity, this study incorporated several strategies. First, carefully prepared interview guides with neutral, open-ended questions were used to avoid leading participants in any direction. Second, responder bias was mitigated by assuring participants, both in the consent form and at the beginning of the interviews, that they had the right to refrain from participation or omit answers to any questions (Creswell & Creswell, 2018, p. 275). Third, peer debriefing with both the supervisor and peers provided further opportunities to critically review interpretations and strengthen credibility. In addition, negative or discrepant information is presented and discussed, ensuring that findings were not overly simplified or one-sided (Creswell & Creswell, 2018, p. 275). Lastly, another potential challenge was social desirability bias. Because the project was introduced as part of the Environmental Management and Policy programme, some participants, such as farmers, may have been more cautious in their responses due to perceived political or environmental associations of the researcher. To mitigate this, only limited information about the researcher was presented, and terminology familiar to the agricultural sector, such as "fruits, berries, vegetables, grains, and potatoes", were used rather than "plant-based", as this could be perceived as normative or politicised.

Reliability relates to the consistency of the research approach across researchers and contexts (Gibbs, 2007). To strengthen reliability, all interview transcripts were checked repeatedly to avoid mistakes, and coding was conducted with great care, continuously comparing the data with existing codes and defining these clearly (Creswell & Creswell, 2018, p. 275).

5 Results and Analysis

This chapter organises the interview material into themes that repeatedly surfaced across stakeholders (NGOs, politicians, public administration, grocery retail, political scientist, fruit and vegetable farmer, farmers' organisations). For each theme, the descriptive findings are presented with short, illustrative quotes. Where helpful, compact figures and tables are added for clarity. Together, these sections map the economic, institutional and cultural forces shaping plant-based production and identify practical entry points, and obstacles, for transition, based on the answers from the interviewees.

5.1 Organisation and Market Access

5.1.1 Organisation of the Agricultural Sector and the Agricultural Agreement

The governance chain described by public administrators runs from farmers' unions (whose members are mainly meat and dairy farmers) up via the Norwegian Agriculture Agency to the Ministry of Agriculture and Food, with the Ministry of Climate and Environment and the Ministry of Finance involved on cross-cutting goals (see *Figure 5-1*) (PA1, PA2). In addition, producer organisations, consumers, NGOs, municipalities, research, Innovasjon Norge and retailers influence policy development respectively (FA2). Across interviews, many portray governance of the agricultural sector as closed and inaccessible. Environmental NGOs stress that decisions sit inside negotiations between the state and the farmer unions; "It is a problem that agricultural policy becomes a somewhat closed negotiation, and that one cannot talk more openly about how the measures affect our food system and our local communities" (EN1). One political scientist adds that they create "an insanely detailed set of regulations and subsidies that are almost impossible to understand" (PS1).

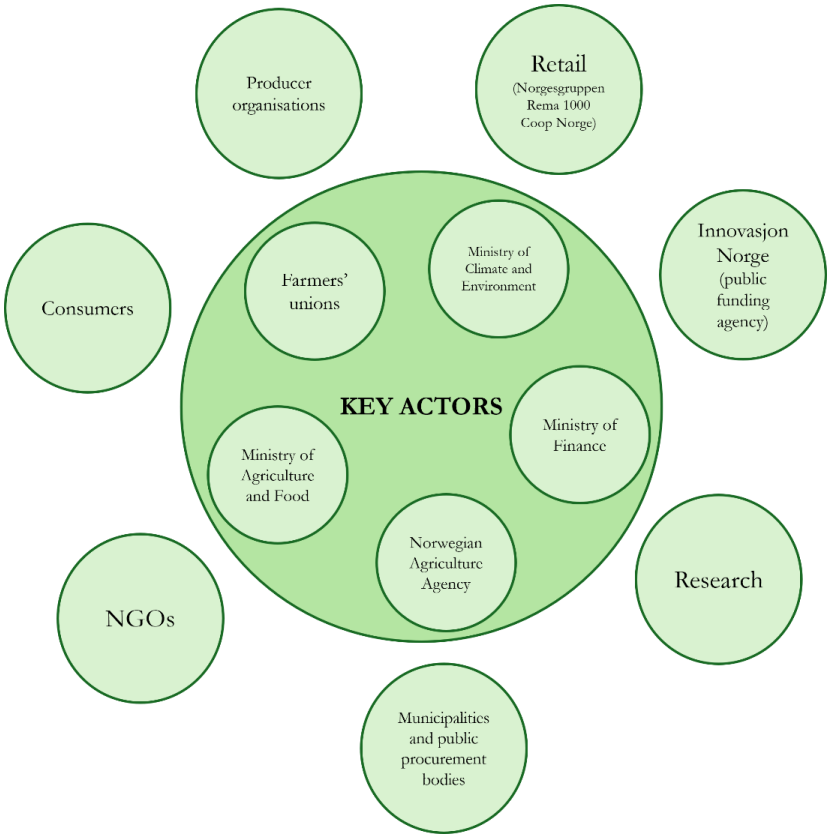

Figure 5-1. Overview of key actors in the Norwegian agricultural sector.

When it comes to the Agricultural Agreement, views diverge. Several interviewees (e.g., PL2, FA1) defend the model and highlight the benefit of farmers' unions negotiating directly with the state, explaining that "The big advantage in Norway is that we have an Agricultural Agreement Institute where the organisations negotiate with the state" (PL2). Contrastingly, environmental and producers call the institution outdated and poorly suited to today's climate-, health- and diet-related tasks (FA3). NGOs also underline how complex and hard to navigate the system is, as it is exclusive to the actors involved in the negotiations, with complex regulations that are hard to grasp for someone outside of the negotiations (EN1).

5.1.2 Market Regulation and Access

Seven of the interviewees note that meat and dairy producers enjoy **intake obligation schemes**, while fruit and vegetables do not, meaning that plant producers must secure a buyer in advance of producing, to ensure that they can sell their products. A politician underlines the vulnerability of this, asserting that "there is no intake obligation for fruits and vegetables. And if there is surplus [in the market already], you can suddenly be told that you won't be allowed to deliver after all" (PL2). However, only one interviewee was positive about the implementation of intake obligation for horticulture products, while four interviewees actively argued against it, stating that it would lead to overproduction and waste unless demand starkly increases, as fresh produce cannot be stored like milk or meat. Instead, they call for stronger contracts and better coordination between producers and retailers to secure a balance between supply and demand. A producer representative is blunt, arguing that "Intake obligation will not solve anything (…) we end up with overproduction" (FA2).

Most interviewees mention **market access** as a challenge for plant-based producers. They describe a bottlenecked system where two wholesalers (Bama and Coop) dominate store access for fruits, vegetables and berries, favouring large incumbents and making entry hard for smaller growers (FA3). One representative from a farmers' organisation quantifies it, stating that "Bama, controls 65% [of the market] (…) Coop 30 or 35%. To enter those value chains is very difficult for newcomers" (FA3). Politicians and NGOs repeatedly call for new mid-sized distribution solutions between farm-gate niches and the dominant duopoly; as one politician puts it, we need "support for establishing new distribution systems" (PL1). While several highlight rejected deliveries and unsold Norwegian produce as symptoms of a skewed system (AN1, PA1), one vegetable producer stresses that demand in their experience is strong, and that scaling profitably is the hurdle: "The market has not been an issue (…) [we experience] much more demand than what we are able to produce" (FV1). Overall, the majority emphasise that without better access to the market, expanding Norwegian plant-based production will remain difficult.

5.2 Economic Levers Shaping Plant-Based Production

Economic policy was consistently described by most interviewees as the decisive factor shaping both production choices and consumer diets (PA2). Several highlighted that farmers are under economic pressure (EN1) and respond above all to profitability, not campaigns or morals, stating that "it is the relationship between production costs and production income that determines which choices you make [as a farmer]" (PS1). An NGO representative also noted that if producing fruits, vegetables and berries was made more profitable, more farmers might choose to do so (AN1). A public administrator emphasised that political ambition is needed to strengthen plant-based production, but that concrete economic support measures are currently lacking (PA1), and a farmer organisation emphasised that "in the big picture, the entire agricultural sector and budget funds must be turned over to green production" (FA3). Interviewees stressed that price is central also for consumers, especially under current economic pressures; "whenever the price increases, sales decrease" (GR1), and that today it is cheaper to eat meat than plant-based food (AN1). For this reason, many argued that the future of

sustainable food systems depends on creating stronger economic incentives that make plant-based production profitable and healthy foods affordable (AN1, PL3, PA2, PS1, FA3, FA4). The representative from the livestock farmer's organisation noted that "the most important thing we can do for the future is to make it cheaper to eat healthy food" (FA4).

5.2.1 Subsidies and Volume Incentives

Across the sample, ten of 16 interviewees, including NGOs, politicians, public administration representatives, farmers and farmers' organisations, state that Norwegian agricultural subsidies are heavily skewed toward livestock, while plant-based receives a marginal share. Several stress the stark imbalance, whereby horticulture delivers substantial value yet get little support. As one farmer organisation puts it, "Fruit and vegetables farmers account for twenty percent of value creation in the primary sector but receives only three percent of the subsidies via the Agricultural Agreement" (FA3). Public administration confirms the pattern, expressing that "The largest share of the subsidies are allocated to livestock production" (PA2). An NGO underscores scope and direction, "over NOK 30 billion … was allocated to cattle, sheep and milk" (AN1). A small-scale producer of plant-based products highlighted that "the biggest challenges [for their business] are the agricultural policy and subsidy schemes" (FV1). Environmental NGOs add that design features disadvantage small and mixed growers, as per-acre schemes miss diversified plots, where different vegetables are grown, and reward large scale (EN1). They further note, "if you have some carrots, some turnip and a lot of other things, then it is difficult to get much subsidies". Politicians suggest slightly different approaches as remedies: one wants to increase the overall pot of subsides across all farmers, with earmarked plant-based funds, noting that there are currently "too few incentives to settle for plant-based production" (PL3). On the other hand, another favours a base subsidy for small-scale producers and less allocated to intensive livestock producers, suggesting that "if you want to go big, you should get your income through the market" (PL2). A third argues for rebalancing away from concentrate-fed meat: "remove the subsidy from those who currently receive high amounts of subsidies to produce meat on the bases of concentrate", which is imported feed, often from Brazil (PL1). A farmer's association representative adds a different lens, calling support to farmers an indirect subsidy to consumers, arguing that "if the farmer did not receive any support, the price would have to be even higher" (FA2).

A clear majority of the interviewees (seven of 16) explicitly argue the architecture rewards output and scale, especially in livestock. A political scientist identifies the subsidy reducing the price of concentrate feed as "the absolute most important subsidy we have in Norwegian agriculture today", yielding a system where large volumes win (PS1). A politician points to per-kilo logic in meat, with farmers receiving higher prices and more subsidies if they produce more meat in kg (PL1). An animal welfare NGO echoes this and urges a pivot "away from focusing on volume (…) and rather focus on quality" (AN1). Overall, interviewees see these mechanisms as locking in high-volume, concentrate-dependent food production.

On the plant-based side, respondents highlight threshold effects and value-chain concentration that disadvantage smaller actors. An environmental NGO criticises the model where a few very large suppliers serve a handful of wholesalers, highlighting the example of cauliflower production in Norway, stating that there are only three domestic producers covering the market (EN2). A plant-based producer emphasised that "(…) if you have five to six dairy cows you get around NOK 368 000 a year, while we get about 3 500 per acre for organic vegetables, but nothing until we pass a minimum size threshold" (FV1). Several interviewees propose counterweights that privilege smaller units to diversify supply (EN1, EN2). Yet, views diverge on the balance between small and large producers. One politician argues that "it is small-scale that should receive support" (PL3), whereas a farmer's organisation warns that there is a need for large-volume production to meet demand (FA2). Another farmers' organisation threads the

needle, stating that the current system is structured for large producers to grow, but "even small-scale productions have to be economically viable in the long run" (FA3).

In sum, most interviewees depict a subsidy map dominated by livestock (EN2, AN1, PL1, PL4, PA2, FV1, FA1, FA3), with incentives supporting high-volume production (EN1, EN2, AN1, PL1, PS1) that disadvantage both small-scale livestock and plant-based producers. Environmental NGOs and many politicians called for a redirection of subsidies toward fruit, vegetables, and legumes, while farmer associations and public administration actors differed more in emphasis, as some favoured incremental adjustments, while others more radical restructuring. Yet, across the spectrum, interviewees pointed to the imbalance between subsidies for livestock and plant-based production as a central economic lever shaping the food system.

5.2.2 Farmers Incomes

There is expressed agreement among nine of the interviewees (NGOs, politicians, farmers and farmer associations), that the income models in the Norwegian agricultural sector vary between segments, and livestock is consistently described as subsidy-dependent, while the incomes of horticulture producers are largely market-driven. On the plant-based side, a farmer's association and multiple others stress that prices in the market determine revenue, stating that "More than 90% of the income of a vegetable farmer comes from the market" (FA1). However, this is by many portrayed as something positive; "as a farmer and vegetable producer, I am happy that we take out as much as we do through the market (…) that we don't have to receive so much in subsidies" (FA1). According to a small-scale vegetable farmer and a politician, this works well for large producers, as they are often quite profitable (PL1, FV1), but the risk lies with small-scale vegetable producers, who often struggle to sustain themselves solely on the income from their plant production (FV1).

By contrast, several interviewees underline the fact that livestock producers rely heavily on subsidies, and that for example "the income of a farmer who has sheep is largely based on subsidies, and they take out little in the market" (FA1). A plant-based farmer puts the fragility of fruit and vegetable farmers bluntly, expressing that "What we sustain ourselves through is actually not vegetable production, because there is little profitability in that. So, what we actually sell, is more events and rentals" (FV1). They argue this reliance on tourism and experiences is a symptom of inadequate profitability and adds that without viable farm returns among horticulture farmers, young entrants will hesitate to enter this job market, and existing producers might burn out.

Overall, the majority view is that livestock incomes depend largely on transfers, while plant-based incomes depend on market access and price, with environmental NGOs and farmers adding that diversified smallholders often struggle to qualify for substantial support, leaving them especially exposed to market swings (EN1, EN2, FV1, FA1).

5.2.3 Taxes

Although several of the interviewees oppose a tax on red meat, eight of them favour using some kind of tax lever to shift diets, with most in favour of cutting VAT on fruits and vegetables and raising charges on less healthy and/or high-emission items. Support comes mainly from NGOs, public administration, retail and two of the four politicians. An environmental NGO representative backs a tax shift, stating that "We have considered a healthy tax reform; to increase the price (…) for example via VAT, on things we don't want too much of and reduce the price on products we want more of" (EN2). An animal-welfare NGO makes the consumer signal explicit, asserting that "If you reduced the VAT on fruits and vegetables and increased it on meat, it would have a price-adjusting effect" (AN1). A public administration's representative,

points to prior expert advice from the Green Tax Commission: "(…) they point at a tax being the most effective measure [to reduce emissions in the agricultural sector]" (PA2). Retail experience aligns, and reporting that VAT-linked price cuts increase demand, presenting that "(…) Kiwi's [a grocery chain] price campaign on fruits and vegetables [reducing the prices to simulate a VAT reduction] gave an enormous increase in sales numbers" (GR1), while two politicians argue for consumer-side VAT cuts on fruits, vegetables and plant proteins as a clear way to lower shelf prices, articulating that "I would definitely reduce the VAT on fruits and vegetables and plant-based proteins" (PL1, PL3). Public administration emphasises that a consumer tax on red meat resulting in higher prices and where the increased income goes to the producer is particularly positive and "a win-win situation, where the farmer earns more while prices increase and the consumption [of red meat] perhaps decreases slightly" (PA2).

By contrast, three interviewees are sceptical or opposed to taxation, and the opposition is concentrated among farmer organisations and one politician. The politician argues that taxing biological production, as agriculture is an example of, is a mistake, expressing that "I believe that taxes on biological production are completely wrong" (PL2). A farmers' association representative warns that producer-side levies won't change in-store prices but only affect farmers negatively. They claim that "What happens with a climate tax, is that the farmer must pay for the tax. It does not get more expensive for the consumer", as they argue that the retailers will impose the tax on farmers and keep the in-store price the same as before (FA1). Another farmer's association is broadly wary: "In principle, I am against too many taxes. (…) We are not there yet [to implement a tax on meat]. We have not discussed it neither" but acknowledges that narrowly targeted taxes do have a purpose, as long as a balance with consumer freedom is kept (FA3). A third farmer's association adds that, while "price matters (…), there are many other ways to reduce emissions than putting the burden on food production" (FA2).

In sum, the majority view is that well-designed taxes (especially VAT cuts on fruit and vegetables, paired with selective levies such as on red meat) can shift consumption via prices, but caution against burdening food producers. Design and actual changes to the in-store price, and not just the farmers' income, emerge as the shared precondition for effectiveness.

5.2.4 Tariffs and Import

A broad majority (nine of 16) argue that strong tariff protection is essential for Norwegian production, especially for fruit and vegetables. Politicians and NGOs state that tariffs stabilise prices and sales windows for domestic growers (EN2, PA2, PL2, PL3, PL4, FA1, FA4). An NGO representative asserts that "The lack of customs protection, and that we are not better at protecting Norwegian agricultural protection is a barrier, particularly for fruits and vegetables (…) when we increased the tariff rate on potatoes, the self-sufficiency rate increased" (EN2). A politician underlines product-specific protection applied when specific domestic products are in season, stressing that "one of the most effective measures we have is our customs protection to ensure that we have quite a high tariff rate on the goods we can produce in Norway" (PL4). At the same time, an animal-welfare NGO notes the effects of the current use of import protection, and that it "makes it much more profitable to raise pigs and poultry", meaning that it currently favours intensive systems, with low prices on imported concentrated feed (AN1).

An even larger group (12 of 16) highlights import pressure as a primary market shaper. The dominant view is that low-priced import goods regularly undercut Norwegian produce and reduce the reference price in Norwegian retail (EN2, PL1, PL2, PL3, PA1, PA2, GR1, PS1, FA1, FA2, FA3, FA4). One politician is clear, expressing that "I think import is what has been the biggest threat to domestic production in Norway" (PL3). A farmer's association offers a concrete scenario: "If a cheap pallet of tomatoes from the Netherlands is what should set the price in the Norwegian market, we are quite 'lost'" (FA1). Several stress that roughly half of

vegetables consumed are imported (FA4), and that retailers often prefer imports (PL1). Retail acknowledges the impact of import, and Respondent GR1 reports an aim to raise the Norwegian share and a preference for "cleaner and closer" inputs. In sum, most interviewees see robust, well-calibrated tariffs as a key support mechanism for domestic farmers, while pervasive import competition remains a central barrier for plant-based production.

5.2.5 Pricing

In-store pricing set by retailers is a topic where most of the interviewees agree. Across the sample, a large majority (12 of 16) say retail pricing practices are a decisive lever shaping what Norwegians buy, and by extension, what gets produced. Environmental NGOs repeatedly point to artificially low prices on meat and cross-subsidisation in stores, stating that many retail chains "sell meat at a loss", and questioning whether that should be okay (EN2), while an animal welfare NGO adds, "the grocery stores sell meat at a loss (…) and then they gain the income on other things, and I imagine fruits and vegetables are probably among them" (AN1). Several farmer association voices echo this, and one argues that "fruits and vegetables contribute to subsidising other product groups (…) so the price on fruits and vegetables is too high" (FA3), and another illustrates high retail mark-ups explaining that "If I get NOK 20 for an item, it costs NOK 40 in the store", which leaves producers squeezed even when shelf prices are high (FA1).

The retail representative acknowledges how price-sensitive demand is, reporting that Kiwi's fruit and vegetable campaigns drove "huge increases in sales" and that "every time the price goes up, sales go down" (GR1). Public administration perspectives align, by stating that consumers are highly price-driven (PA1), and with three retail chains controlling most of the market, pricing power sits with the retailers. At the same time, a farmer's association cautions that the retail chains draw a picture to consumers of fruits and vegetables being cheap, via constant promotions ("buy 3, pay for 2 etc.") even as overall prices have increased (FA2). Where politicians differ is in their proposed solutions to these pricing issues. One advocates more local and direct consumption channels to reduce margins and leave more of the income to the producer (PL1), while another argues retail chains should take more of the pricing risk rather than pushing prices down, so farmers are "protected from going into the red" (PL2). A representative of a livestock farmer's association even contends that higher shelf prices on cheap meat, could benefit the farmer (FA4), while others prioritise rebalancing promotions toward fruit and vegetables (PL3, FA1, FA2, FA3). In sum, the majority view is that price signals in the stores, such as selling meat at a loss and offer campaigns on fruits and vegetables, are central to dietary shifts; but there are different suggestions as to *how* to rebalance those signals and *who* in the value chain should absorb the change.

Table 5-1. Summary of drivers and barriers for economic instruments.

Theme	Drivers	Barriers
Economic instruments	Rebalancing subsidies toward plant-based and small/mixed systems	Livestock-skewed subsidies
	Earmarked or base subsidies for small-scale producers	Volume-based subsidy logic rewarding scale
	VAT/tax shifts making fruit and vegetables cheaper	Opposition to taxes from politicians and farmer organisations
	Tariffs protecting local produce in season	Import competition undercutting local produce
	Targeted consumer price campaigns	Retail pricing power (e.g., price campaigns on meat)

5.3 Production Potential and Transition Pathways

5.3.1 Production Potential of Plant-Based Products in Norway

Across the sample, a clear majority (11 of 16) judge that Norway can produce significantly more plant-based foods, from staples like potatoes and roots to a wider range of vegetables and some fruits (EN1, EN2, AN1, PL1, PL2, PA2, FV1, FA1, FA2, FA3, FA4). Contrastingly, three interviewees repeat the narrative that "Norway is mainly a grass country" (PA1), referring to biophysical limits of domestic plant-based production (PL4, PS1, FA1). Others challenge that story with concrete cases and missed potential, explaining that "(…) in Finnmark [the northernmost region in Norway] they manage to produce carrots" (PL1), and from a vegetable producer in Northern Norway, "(…) it is simply a myth that one cannot grow vegetables in Northern Norway. It is just not set up for it [lacking infrastructure and economic support]" (FV1). A politician also notes that historically, domestic production of vegetables was higher in Norway (PL2).

Regarding demand, some insist that the demand for fruits and vegetables must increase if producers are to grow more (FA1), while others counter that demand exists but is currently covered by imported products, not Norwegian produce "[Norwegian farmers] can produce more, but do not get market access because the stores take in imported goods" (PL1).

Among the **opportunities**, market gardens are small, diverse vegetable plots, where the produce is sold mainly via direct channels to consumers and restaurants. By five interviewees, these were considered a promising way to increase the number of producers and variety of plant-based products in Norway, while countering the trend of ever-larger farming units (PL2). An environmental NGO underscores the need for more small-scale farmers, and asserts that even though they are currently few, "they can have quite a lot of [positive] influence in the direct contact they have with people" (EN2). A farmer's association is more sceptical and cautions that market gardens "won't save the volume production", meaning that large-scale producers are needed to deliver the quantities the market demands (FA2).

Six interviewees acknowledge plant breeding as a practical enabler of plant-based production (PL2, PL4, GR1, FA1, FA2, FA3). This entails developing new or altered breeds of fruits, vegetables, berries, potatoes and grains who are better adapted to the local environment and can increase production yields. Concrete gains are already visible, as "We can now eat Norwegian apples all year round. That is partly due to plant breeding" and growing apples who can be harvested later and stored longer (FA3). Several interviewees add that new or hardier varieties could shift crops from imports to domestic production (PL2, GR1).

Eight of the interviewees mention weather conditions as a primary **constraint** for horticulture (EN2, PL1, PL2, PL4, PA1, GR1, FA1, FA2). The vulnerability of field vegetables is repeatedly emphasised, illustrated by the following quote: "The weather is a risk to all agriculture, especially what takes place outside – with vegetables, fruits and berries" (PA1). However, one farmers' association acknowledges that while climate change has brought many additional challenges to horticulture, it has also created opportunities in Norway, like longer growing seasons and the potential to grow new crops such as grapes and peaches (FA2).

Seven interviewees point to storage as a bottleneck and/or opportunity (EN1, PL1, PL2, PS1, FA1, FA2, FA3), highlighting that storage capacity is essential to support production (PL1). For horticulture, investing in better cooling facilities could extend the Norwegian season, but this is currently a financial challenge for producers with an unstable economic situation (FA1). An environmental NGO highlights that Norway "can be self-sufficient in Norwegian potatoes if we only store them properly" (EN1). On the other hand, regarding meat, the political scientist mentions that "we have plenty of meat in warehouses, we have too much" and that "the market is full" (PS1).

Interviewees agree that the risk is structurally high in Norwegian horticulture, and it is important to engage in **risk management**. Respondent EN2 flags that the market relies on a few big producers; for example, with only three cauliflower producers. Thus, if one quits due to low profitability, supply stability on a national basis is threatened. On a similar note, a politician links risk to specialisation; where farms once spread risk across several productions, many now depend on a single crop (PL2). Thus, support should encourage variation over monocultures. A politician adds that vegetable growers lack good safety nets, and that current crop-failure aid does not cover losses when only some crops, and not all of the farmers' products, fail (PL1). They support grants for new entrants, small-plot support, and better storage facilities to increase self-sufficiency.

In conclusion, interviewees see potential for increased plant-based output if (i) small-scale/market-garden channels help add producers and diversity of products, and (ii) plant breeding extends what, where, and how long farmers can grow. Weather and storage are among the core physical constraints, but appropriate risk management strategies are widely viewed as the bridge that can lower those barriers. A few interviewees also note that a changing climate may expand viable crop options over time, even as it generally increases risk.

5.3.2 Centralisation and Structural Shifts

Across interviewees there is broad agreement that transition in the agricultural sector is necessary. Two environmental NGOs argue it must be planned over the long term and tailored to location. However, employment of farmers is considered of high importance, and an environmental NGO calls for a national, staged shift in which the result is "half the cattle [rather than] half the farmers" (EN2). The most cited barriers to transition from livestock to more plant-based production systems are lock-in from buildings and debt (EN1, EN2, AN1) and the skills/tools gap when moving from livestock to horticulture (EN1, EN2). As an NGO representative puts it, once a farmer has invested in a specialised barn, switching courses is

structurally hard. They emphasise that "If you build a barn today (…) you expect to produce that number of pigs every year for 25 years (…) So then you are in a way a bit locked-in" (AN1). One environmental NGO is clearly stating that "I think the debt ratio makes it hard for people to readjust" (EN1). Another further emphasises that livestock farmers cannot simply switch to vegetables overnight because it is "a completely different production, completely different knowledge, completely different machines" (EN2). In short, the majority see transition as costly and slow, but eventually necessary, although the costs must be covered by someone.

Politicians and farmer representatives differ in the role of centralisation. One politician argues that current patterns place livestock (which can in most cases be produced anywhere) in prime areas for crops that depend on those conditions, and criticises centralising "parts of the milk- and meat production to areas that could well have been used for grain production" (PL2). A political scientist argues that today's large-scale and concentrated model, with horticulture production in only a few regions, is outdated and that smaller and more distributed units would be preferable. Logistics reinforce the critique, as centralised warehouses lengthen routes and undermine freshness; "If the transportation routes are too long and centralised (…) then it counteracts that we want as fresh products as possible" (FA3). Overall, several interviewees advocate locating livestock where it does not crowd out plant-based options and dispersing production and infrastructure to better match land qualities and shorten supply lines.

5.3.3 Information Instruments and Marketing

Interviewees are divided on the power of information tools to change public opinion and educate on plant-based food. Around half (EN1, EN2, AN1, PL4, PA1, GR1, FA2) argue they are essential to promote more plant-based and sustainable diets, with for example dietary guidelines and awareness campaigns as important tools to signal that people should eat less meat and more vegetables (EN2). Others emphasise weak or non-measurable effects; a public administrator notes that "we have not seen enough research to be able to quantify the effect of softer instruments [like information]" (PA2), while a farmer's association sums up the consensus among sceptics, arguing that "Public awareness campaigns are (…) the spice on top; they're not what turns the ship around" (FA3). A political scientist adds that consumer attitudes are not the crucial constraint, but that it is rather poor farm economics (PS1). Still, several point out that the new Norwegian dietary guidelines from 2024 have lifted the topic on the agenda, and that information-based tools are important in combination with other measures like economic policy (FA3).

Many interviewees mention that public marketing is unbalanced, and that Matprat (the partially state-funded information office for the meat- and egg industry in Norway) dominates visibility while the (also state-funded) information office for the fruit and vegetable sector is comparatively weaker (EN1). Several argue that this has boosted meat consumption beyond what the demand would otherwise be (PL3). Moreover, a political scientist argues that the marketing of Norwegian meat, egg and dairy romanticises livestock production, giving the "impression that Norwegian cattle is outside on the pasture all the time. Which they are not" (PS1). A plant-based farmer questions the scale of dairy promotion; "if milk is absolutely essential (…) why do you have to spend NOK 350 million on marketing?" (FV1). A farmer's association echoes this by pointing out that heavy ad spend exists precisely because marketing changes behaviour (FA2), and retailers report that price campaigns have huge effects: "Kiwi's price campaign on fruits and vegetables led to enormous increased in sales", indicating that these products are in fact price sensitive (GR1). Overall, while some call for stronger, sustained pro-veg communication, a sizeable group cautions that information alone rarely shifts consumption at scale unless it is clear, long-term and combined with other instruments.

5.3.4 Public Procurement

With broad support among interviewees, public procurement emerges as one of the clearest demand levers for shifting diets and production. Ten interviewees, from NGOs, farmer organisations, retail and public administration, frame it as a high-impact tool if state and municipal institutions prioritise attractive plant-based meals and Norwegian produce (EN1, EN2, AN1, PL4, PA1, FV1, FA1, FA2). One environmental NGO emphasise that menus matter as much as messaging, and that institutions should serve tasty plant-based dishes, sometimes without the "vegetarian" label to avoid stigma (EN1). Another NGO states clearly that "all public kitchens should follow the national nutritional guidelines and care about local food production, but they don't" (EN2).

Several cite concrete entry points, such as the fact that Oslo municipality has experimented with meat-free canteens. Farmer representatives argue that requirements in public kitchens, hospitals, nursing homes and the armed forces could expand demand rapidly: "It would not be any problem to increase production quite substantially, quite quickly – by setting requirements in public procurement" (FA2).

A recurrent barrier is that current tender practices prioritise lowest price, subsequently often favouring imports and weakening alignment with stated aims to increase Norwegian fruit and vegetable production (PA1, FA2). Interviewees call for procurement criteria that weight environmental and quality dimensions more strongly than price alone (PA1). A farmer representative also criticises authorities for not practicing what they preach, since authorities urge more Norwegian produce while their own canteens serve imports (FA1). Overall, the majority view procurement as an actionable, near-term driver of transition, provided menus, criteria and purchasing routines are redesigned to pull through more plant-based and local options.

5.3.5 Technological Innovations

Six interviewees emphasise that targeted investment support, e.g., for new technology, is decisive for scaling Norwegian horticulture production (PL2, PA1, FV1, FA1, FA2, FA3). The most common need is basic infrastructure, such as storage rooms, cooling and heating systems, irrigation and drying, which in most cases are crucial elements for farmers to establish and expand their production (PL2, PA1, FV1, FA1, FA2, FA3). Several argue that today's support is uneven; there is no dedicated support to building greenhouses, while small dairy units receive beginners' support of about NOK 368 000 annually and large one-off grants for building barns (FV1, FA1). As one farmers' organisation puts it, "It is costly to establish yourself within the vegetable sector" (FA3). Another one underlines both the need and the bottleneck: "We need investment support, to invest in good storage units", but the pot from Innovation Norway [an institution offering innovation funds to Norwegian companies] is quickly exhausted by needs in the livestock sector (FA2).

Seven interviewees discuss technology as a potential accelerator of plant-based production, with a small majority highlighting the potential of new technology, while three interviewees also emphasise the risks. The benefits mentioned include reducing manual labour-intensity and increasing sustainability in the sector, noting that precision farming and intelligent spraying can cut inputs and improve environmental outcomes (PL2), while robotic weeding tested in Norway has shown pesticide reductions of "over 90%" (FA2). Another interviewee adds that new storage methods can extend shelf life and urges closer partnerships with industry to scale such solutions (FA3). A farmer sees the benefits of "techno-ethical" innovations like precision fermentation, while warning that heavier automation and lower labour-intensiveness can make farmers more isolated (FV1). In addition, a politician notes adoption takes time because new

equipment, such as electric tractors, remains expensive and out of reach for most (PL4). A politician and a political scientist critique "technology optimism", warning that "It is a very misguided modernism (…) a kind of technology optimism that bigger investments and bigger barns will solve all problems" (PL1, PS1). Overall, most interviewees view innovation as necessary, but they diverge on whether it meaningfully transforms production structures or risks entrenching them.

5.4 Power and Feasibility of Reform

5.4.1 Power Structures

Power of Politicians

Across the interviews, at least ten respondents argue that Norwegian agriculture is ultimately steered by signals from the Parliament and the government; yet most say those signals translate into minor adjustments rather than real shifts, and the system is rigid and resistant to change (EN1, EN2, AN1, PL1, PA1, PA2, GR1, FA1, FA2, FA3). Environmental NGOs stress that policy promises across health, climate and agriculture are incoherent and lacking real action (EN1, EN2). Politicians disagree on how far to push; one welcomes politicians setting the framework but insists that concrete initiatives should arise from the farmers' organisations themselves (PL2), while others call for bold political steering, even if it might be unpopular in the short term (PL3). A plant-based farmer says the obstacles they meets are "fully political" (FV1), while a farmer's organisation points to an example from the UK, where authorities forced retailers to promote fruit and vegetable, leading to sales rising sharply (FA1).

Power of Farmers

A broad majority describe an agricultural sector with considerable influence, concentrated in large unions and cooperatives. A politician emphasises the benefit of this, as that bottom-up farmer initiatives are desirable and more effective than top-down directives (PL2). A political scientist criticises this by stating that "Norwegian agricultural policy has become by and for Norwegian farmers" (PS1). Moreover, interviewees repeatedly say that this power is organised around milk and meat, with horticulture having a very little to no influence (EN1, EN2, PL1, FV1, FA3, FA4). Several characterise the unions as conservative, arguing that major changes will likely need to come from outside the farm sector (AN1, PS1). Environmental NGOs underline that green producers have been sidelined; and thus, a farmers' association suggests moving plant-based subsidy decisions outside the traditional negotiations in the Agricultural Agreement (FA3).

Power of Retailers

Most interviewees (NGOs, politicians, administration, researchers, and a retailer) notes that the three national chains (Norgesgruppen, Rema 1000 and Coop Norge) have a substantial market power, shaping who gets contracts, what reaches the shelves, and consequently what is consumed (EN1, EN2, AN1, PL1, PL2, PL4, PA1, GR1, PS1). NGOs point out that retailers often prefer established suppliers, creating a high entry barrier for new green producers (EN1), and add that in-store campaigns and pricing strategies strongly steer demand (AN1).

Power of Consumers

Many interviewees contend that also consumers hold substantial power, that consumption patterns drive the market (EN2) and, over time, can push producers to adapt (AN1). Politicians note that consumer influence is most effective when collective and large-scale (PL3). One emphasises that "If it becomes a movement, if a number of people get engaged in this, then it can have a real chance for change", but that this is currently lacking. Moreover, a politician also

cautions that power is constrained by what retailers offer, and that people can only choose among what's on the shelf (PL1).

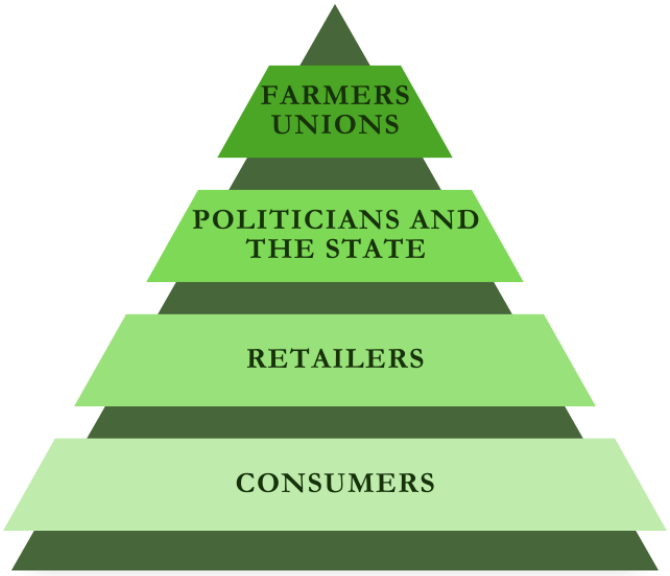

Figure 5-2. Hierarchy of power - influence over Norwegian agricultural policy, based on interviews.

5.4.2 Political Feasibility

Most interviewees (nine of 16) see narrow but potential openings for gradual change if politics actively creates consumer demand and legitimises a shift towards more plant-based production. A politician illustrates two potential pathways of change; either momentum builds up from the grassroot or political parties with boldness to make change get more power (PL1). Another potential is targeted public procurement possibly increasing volumes fast; "by setting requirements in public procurement, (…) we could have had a significant increase in Norwegian production" (FA2). Several "in-between" voices add some enabling signals, highlighting rising cultural acceptance for plant-based food (EN1), and health-framed arguments that more vegetables is a public good (EN2). Elections are also flagged as a potential lever, since "A new composition of politicians can make it possible to raise new discussions, and things that were not feasible before can be implemented" (PA2).

A minority (five interviewees) are openly pessimistic about major shifts inside today's institutions. An NGO representative describes a conservative, slow-moving system; "It is an incredibly cumbersome system" (AN1). When asked how likely a restructuring towards more plant-based production is, a political scientist bluntly responds: "The way it is now, not at all" (PS1). A politician also doubts change will happen while farmers are under economic pressure and public awareness is low and argues that "powerful political measures" are needed, ideally backed by alliances between environmental, animal welfare and health groups (PL3).

Environmental NGOs point to windows where policy can quickly align narratives and markets (health framing, procurement, clearer goals) but warn of low political will behind positive rhetoric (EN2). The majority place today's negotiation architecture in the "stuck" category; a farmer's association calls it "an outdated construction" (FA3), with too little follow-through, a view echoed by an NGO representative (AN1). More optimistic interviewees (PL1, FA2) see timed windows, such as grassroots growth, agenda-setting political parties, and public-sector purchasing, that could tip the system. In contrast, dead ends include expecting incrementalism inside existing forums to deliver structural change, and betting on consumers acting individually

at scale without coordinated political moves. A farmer remains long-run optimistic about a plant-based turn but anticipates movement only when legitimacy and urgency peak (FV1).

Several interviewees are moderately positive. One environmental NGO acknowledges a growing cultural openness to plant-based food but doubts the existence of strong political will to meet targets (EN1). Another NGO mentions that fruit and vegetables are now being included in food security debates and government strategies, but that political action remains weak (EN2). One politician state that there has been growth in fruit production, and that politicians claim to support this, yet they still propose trade policies that undermine domestic production (PL2). A public administration representative emphasises that there has been some new support for climate measures in agriculture but sees little structural reorientation towards more plant-based food production (PA1). The representative for the retail sector notes that self-sufficiency and preparedness are important topics today and have led to goals for increasing domestic production. However, they are unsure whether a specific focus on fruit and vegetables is part of this (GR1). A plant-based farmer is optimistic in the long term due to the growing legitimacy of plant-based transitions. However, current farm organisations and a lack of political willpower are blocking progress, and the farmer is thus noting that we will probably have to reach a crisis point before change happens (FV1). A farmer's association is critical of the outdated negotiation system and the insufficient focus on climate policies. However, they note that there are some early signs of more political support for plant-based production (FA3). Another farmer's association believes that there is potential for change when goals are clearly set but warns that the current structures lack the economic capacity for change (FA4).

Table 5-2. Actor-barrier diagram, including political feasibility.

Actors	Barriers/Lock-ins	Political feasibility
Politicians →	Support for plant-based in rhetoric, but import policies undermine domestic production →	Limited, but potential reform possible through elections of bold parties
Public administration →	Rigid agricultural policy negotiation system (the Agricultural Agreement) locks in status quo →	Moderate scope to expand existing environmental programs in agriculture
Farmers & farmer organisations →	Debt and infrastructure lock-ins (barns, machinery) tie producers to livestock →	Transition only feasible in the long run, likely triggered by crisis or ambitious goals
Retailers →	Market concentration (3 chains dominate), causing high entry barriers for new producers →	Medium, depends on public procurement and potential tariff shifts, to prioritise local produce
NGOs →	Conservative and cumbersome system dominated by livestock-focused farmers' unions →	Opportunities for change via health and preparedness framing, alliances, cultural openness to plant-based food

5.5 Cultural and Policy Barriers

5.5.1 Myths & Cultural Traditions

Five interviewees flag pervasive myths that shape Norwegian debates. *Table 5-3* illustrates prevalent relevant myths mentioned by interviewees, about Norwegian agriculture, including the counterarguments from the respective interviewees.

NGOs and politicians emphasise that tradition reinforces livestock dominance and slows change (EN1, AN1, PL1, PL3, PA2). Consumers are also swayed by a national narrative that "As long as it is Norwegian, it is good", masking variation in standards (AN1). NGOs add that cooking skills and familiarity with fresh ingredients are weak among the public, representing a barrier for increasing the consumption of fruits and vegetables (EN2). PL2 & PS1 both stress that everyday meat is not a historical norm, stating that "there was not a single Norwegian 40 years ago who ate meat every day" (PL2) and that "Eating meat is not Norwegian culture, Norwegian culture is vegetables and a small piece of meat" (PS1). A politician adds that immigrants bring techniques, products and tastes that diversify vegetable use and can refresh norms. Environmental NGOs conclude that updating the cultural story on what counts as "Norwegian food", is as important as correcting the agronomic myths (PL1).

Table 5-3. Myths and counterarguments in Norwegian agriculture.

Myth	Counterargument	*Source*
"Norway consists mostly of grass"	Inaccurate: we can produce a lot more fruits and vegetables in Norway than we currently do.	*Respondents EN2 & PL1*
"Norwegian agriculture is small-scale and family-based"	Inaccurate: Norwegian agriculture is highly specialised and similar to industrial models abroad.	*Respondent AN1*
"Agricultural policies are district-friendly"	Inaccurate: Norwegian agricultural policies in fact support industrialised production dependent on imported feed.	*Respondent PS1*
"Fertile soil depends on grazing animals"	False: Soil was built by plants long before grazing animals evolved.	*Respondent FV1*
"Livestock production in Norway is idyllic"	False: this is a romanticised image portrayed e.g. in children's books, which does not fit reality.	*Respondent FV1*

5.5.2 Environmental Policy and Agriculture

Negative impacts of agriculture are emphasised by environmental NGOs, who stress that industrial, capital-intensive farming is not economically, resource-wise or socially sustainable (EN1). Several interviewees add that harms include biodiversity loss from monocultures and fossil-fuel dependence; and a political scientist specifically warns that plant-based agriculture is not a silver bullet when run as monoculture (PS1). A plant-based farmer emphasises the impact of animal agriculture, establishing that "Livestock farming is the most destructive force, in fact more destructive than industry and the transport sector" (FV1). Another argues industrialised methods "destroy the soil over time" (FA3).

Environmental goals vs. a livestock-oriented system are frequently raised across NGOs and some politicians, where the majority view is that current policy does not align with climate and nature goals but avoids reducing livestock production and shifting toward plant foods, leaning instead on technical fixes. As one politician states, "one has not taken seriously the need to reduce meat production and increase edible plants" (PL1). A public administrator notes farming is accountable for about ten percent of Norway's emissions and must reduce emissions to meet national targets (PA2). An environmental NGO frames the goal as consumption "in line with the planetary boundaries" (EN2). By contrast, one politician argues Norwegian farming is itself a climate measure, with lower per-unit emissions than most countries (PL2). However, this directly contradicts a farmer-representative's statement that "producing cauliflower in Norway has a bigger climate footprint than producing it in France" (FA1). Another communicates that "there are many other things one can do to reduce emissions than putting the burden on food production" (FA2).

Whether **climate policy** could drive reform is an open question for many of the interviewees. Environmental NGOs point out that clearer climate prioritisation could accelerate a plant-forward shift. Some public officials see room to scale existing environmental programs (PA1). Others doubt current climate labelling and add-ons matter, asserting that "It is simply symbolic" (PS1). A politician argues change will need understandable, credible measures rather than unpopular techno-fixes (PL3). Overall, politicians disagree on whether climate policy should primarily push for dietary and production change or validate Norwegian practices.

5.6 Policy Priorities and International Comparisons

5.6.1 Policy Priorities in Norway

Policy priorities provide important context for understanding the political space in which reforms toward more plant-based food production may or may not be pursued. They reflect the goals that politicians, public administrators, NGOs, farmers and farmers' organisations see as most pressing, and therefore help explain which arguments gain traction in public debate and policymaking. While not all of these priorities are directly framed in terms of plant-based production, they strongly shape the opportunities and constraints for transition by influencing how subsidies are justified, where investments are directed, and which policy instruments are seen as legitimate.

Across interviews there is broad agreement that increasing Norway's plant production is crucial for raising **self-sufficiency**. Several interviewees mention that today's self-sufficiency level is roughly 35%, among the lowest in Europe (PL3) and even globally (PS1), while the current political target is 50% (PL4). As a public administration officer puts it, "The most important measure to increase self-sufficiency, is to produce more high-energy plant crops, meaning grains, legumes, oil seeds, potatoes" (PA2). A politician confirms the direction, asserting that "We are quite self-sufficient of meat and milk (…), but not on fruits and vegetables" (PL4). An

environmental NGO calls it positive that these aims now appear in official strategies, but action remains lagging (EN2), and a farmer's organisation adds that while 50% is now a stated goal, there is no concrete plan to reach it (FA3). This priority links directly to the transition to plant-based food, since raising self-sufficiency depends less on already secure livestock sectors and more on expanding domestic fruit, vegetables, and legume production.

Preparedness has moved up the agenda, particularly after the war in Ukraine and the following increase in prices on flour and grains (PL3). NGOs emphasise that preparedness makes fruit and vegetable production more central (EN2). This is supported by historical experience, according to a farmer, who points to increased plant-based production both in the US and UK during previous wars and crisis situations (FV1). In an increasingly unstable world, this is an argument that can resonate with both politicians and the general population (PL3). Many interviewees add that true preparedness depends on decentralising production and logistics and spreading growers across the country (PL1, PL2, FA3). The framing of preparedness thus strengthens the case for diversifying away from livestock and scaling up plant-based production as part of food security.

Most interviewees describe declining **employment** in agriculture. A politician states that "Farms are being closed down at a rapid pace in Norway today, and few wish to establish new ones from scratch" (PL3). Particularly in horticulture production, work is heavy and inflexible, market access uncertain, and the cost-risk barrier high (AN1, FA2, FA3). A dietary shift toward less livestock will inevitably lead to job losses in some areas (AN1, PA2), though respondents note similar restructuring is happening in other sectors. In contrast, a politician notes one positive trend, pointing to Østfold where "Ten percent of the farmers (…) are now small-scale", often new entrants with other flexible jobs (PL1). A politician highlights new technology as a potential solution to lack of sufficient labour (PL2), while a farmer argues that organic and small-scale plant production can create meaningful jobs, especially for immigrants with agricultural skills, turning a perceived labour intensity into a social opportunity (FV1). A farmer's organisation promotes market gardens to lower entry risk and diversify products (FA4). The horticulture sector is dependent on seasonal labour, and labour shortages, such as during COVID-19, can leave crops unharvested (FA2). A farmer's organisation calls access to seasonal workers "one of the biggest challenges" and urges tailored labour rules and state-backed programmes to secure labour when needed (FA3). Employment concerns are therefore central to the plant-based transition; while livestock reductions may cut jobs, expanding fruit and vegetable production could create new opportunities if labour challenges are resolved.

Politicians agree that an important objective of agricultural policy is to secure **settlement across the country**, by spreading vegetable production geographically (PL1, PL2, PL4). A public administrator explains the logic, which is to keep livestock where conditions suit grass, and prioritise fruit and vegetables where climate allows, to avoid accelerating depopulation, affirming that "one of the targets is essentially to have agriculture in the entire country" (PA1). However, a farmer's organisation cautions that not every crop fits every region and that policy must balance regional needs so grazing-based systems persist where horticulture is difficult (FA1). An NGO criticises that agricultural subsidies are mainly designed to maintain settlement in rural districts rather than to maximise food production and argues that this should be more transparent (AN1). This settlement logic has implications for the plant-based transition, as expanding horticulture requires careful geographic planning to ensure that plant crops complement, rather than replace, viable regional grazing systems.

Politicians and administrators emphasise recognised **benefits of Norwegian agriculture**, including relatively low emissions per unit, strict animal-welfare rules, and low antibiotic and pesticide use, which sustain high consumer trust (PL2, PL4, PA1). A politician argues that

maintaining domestic production can be a climate measure, emphasising that "food production in Norway emits less per unit than most other countries in the world" (PL2). A public administrator notes that Norway lacks the extreme industrial concentration seen elsewhere and that oversight is strong (PA1). At the same time, an animal welfare NGO representative cautions against assuming "Norwegian = good" in every case (AN1), using the narrative to justify complacency rather than targeted improvement, as e.g., animal welfare tragedies also occur in Norway to some extent.

Overall, the interviews converge on three near-term priorities: raise plant production to lift self-sufficiency; support preparedness by decentralising production and logistics; and lower entry and labour barriers, especially for small-scale fruit and vegetable growers. In relation to plant-based transitions, these perceived strengths both bolster legitimacy for maintaining livestock-heavy systems and could also be reframed to highlight the advantages of scaling sustainable Norwegian plant production.

Figure 5-3. Policy priorities in the Norwegian agricultural sector, ranked based on interviews.

5.6.2 Examples from Other Countries

Several interviewees point to Denmark as the clearest reference case for support to plant-based production. Environmental NGOs describe a comprehensive, well-funded, and communicative push for plants that link goals across ministries. One representative is "very inspired by the Danish plant plan, as it is very comprehensive and includes many different measures into a coherent whole" (EN2). A farmer adds about the dedicated plant fund that "I think it is 100 million DKK annually, which is to be used to further develop plant-based food and plant-based production" (FV1).

Sweden and Finland are also cited as examples of earlier market development and product availability. A politician observes "there are a lot more available vegetarian products (…) both in Sweden and Denmark, and that they are more locally produced" (PL3), while a public administrator points to Swedish pulses and Finnish oats already on shelves (PA2).

Politicians acknowledge that Norway lags behind its neighbours. One concedes, "we probably have a lot to learn from Denmark" (PL1), and a public administrator concludes bluntly, "we are in a very bad position compared to our neighbours" (PA2).

Cooperation models abroad also resonate with the interviewees. A farmer's organisation representative argues that Norway should mirror Dutch-style public–private alliances: "To establish cooperation with the business sector on this, the way they have been good at in the Netherlands … that is also a way forward" (FA3).

5.7 Summary of Drivers and Barriers

Table 5-4. Summary of drivers and barriers.

Scott's Three Pillars	Drivers	Barriers
Regulative	Rebalancing subsidies toward plant-based and small or mixed systems	Livestock-skewed subsidies and volume incentives locking in animal agriculture
	VAT/tax shifts making fruits and vegetables cheaper	Retail pricing power (e.g., price campaigns on meat)
	Tariffs protecting local produce	Import undercuts prices lowers the market share of local produce
	Clear national targets signalling direction	No concrete plan or timeline to reach 50% self-sufficiency
	Investment support for storage, cooling, irrigation, greenhouses	Limited storage capacity
		High start-up costs for farmers
	Plant breeding extending seasons and regions	Debt burden of livestock farmers
	Public-private tech partnerships	High costs of technology
		Seasonal-labour dependence
	Precision tools / robots reducing input and labour	Two dominant wholesalers in fruit/veg and three retail chains reducing market access
	Stronger contracts and local/direct channels	Centralised warehouses and long transportation routes
	Decentralised storage and logistics to improve freshness	No intake obligation for fruit/veg -> high sales risk
	Political windows (elections)	Policy negotiations being closed
	Clearer climate and nature prioritisation	Symbolic techno-fixes with little structural effects (e.g., methane inhibitors in feed)

	Scale up existing environmental programmes	Conflicting political priorities (environment only one of many)
	Public procurement potential	Concentration of production and livestock in prime crop areas crowding out horticulture
Normative	Increased openness to plant-based food	Limited consumer demand for plant-based food
	National dietary guidelines and well-designed campaigns	Imbalanced marketing (the visibility of livestock vs. plant-based)
	Immigrant cuisines enriching Norwegian food culture and skills	Weak cooking skills and knowledge of food
	Spread production and storage across regions	Skills gap for transitioning to horticulture
	More small-scale and local producers	
Cultural-Cognitive	Market gardens as low-risk entry option and diversity booster	Established myths (e.g., "Norway is a grass country")
		Weather risks

6 Discussion

This chapter discusses the results of the study in relation to existing literature and theoretical frameworks. It begins by comparing the findings with what was already known about agricultural policy and transitions in Norway and similar contexts. It then reflects more explicitly on the theoretical and methodological choices made in the research. Finally, it addresses the contribution, legitimacy, and limitations of the study.

6.1 Discussing Results Against What Was Already Known

6.1.1 Economic Levers and Policy Lock-Ins

Literature established that Norwegian subsidies skew heavily toward animal agriculture (Mittenzwei et al., 2017), reinforcing an efficiency logic which benefits high production volumes per farmer (Sievert et al., 2021). This study confirms this imbalance between governmental support for animal agriculture and plant-based production, highlighting path dependency caused by specific disadvantages for horticulture compared to livestock, including the lack of intake obligation, thresholds for economic support, meaning that the production has to be of a certain size to gain any support at all, and a difficulty to gain market access, due to a wholesaler and retailer system dominated by two wholesalers for fruit and vegetables, and three grocery chains.

Re-visiting Scott's (2014) three pillars, this study brings fresh insights by showing how all pillars contribute to a lock-in situation:

i. Regulative: subsidies reward livestock production disproportionately.
ii. Normative: fairness claims, e.g., the emphasis on protecting rural jobs and settlement through the country.
iii. Cultural-cognitive: identifying and debunking myths that entrench a livestock-dominated agricultural sector in Norway.

Thus, this research empirically demonstrates how path dependency operates through both policies, such as subsidies, tariffs, investment funds, and retail concentration.

6.1.2 Transition Pathways

In the literature, transition pathways are mainly discussed in terms of subsidies, taxation, and price incentives (Charlebois et al., 2016; Röös et al., 2021). This study expands on this by also exploring how actors describe significant untapped potential for plant-based production in Norway, through e.g., vegetables in Northern Norway and market gardens, while also unveiling myths such as that Norway is a "grass country", finding that widespread narratives like this are internalised not only among farmers, but also policymakers. This illustrates how the cultural-cognitive of Scott's (2014) three pillars is a critical barrier to change, reinforcing path dependency.

The contribution of this research is thus to move beyond the debate on regulative and economic constraints towards recognising institutional-cultural barriers. An implication of this is that for a transition to succeed, policies alone are not enough, but narratives and myths among key stakeholders must also shift to acknowledge the benefits of plant-based food. This could be enhanced by the right policies, for example information-based instruments like awareness-raising campaigns.

6.1.3 Political Feasibility

Milford & Muiruri (2024) highlight path dependency and political inertia as a barrier to increasing plant-based production in Norway, and other studies suggest that meat taxes are very unpopular both among politicians and consumers, but that a tax shift increasing the price of meat while simultaneously decreasing the price on fruit and vegetables is more accepted (Grimsrud et al., 2020; Bruvoll & Lindhjem, 2021; Ejelöv et al., 2025).

This study shows that the majority of the interviewees agree that reform is "cumbersome" and blocked, and several interviewees stressed strong opposition to taxing meat or restructuring subsidies, saying that "we are not there yet" or that taxation of "biological production" is wrong. However, the interviewees also identify small opportunities, including a change in public procurement towards more plant-based and local food, and political elections as a window of opportunity for stronger political will, grassroots initiatives and alliances combining arguments around health, environment and preparedness which might increase acceptance. Thus, this research shows that the Norwegian agricultural system is not entirely closed off for change, but that reform depends on timing, i.e. window of opportunities like elections, and coalition-building, for example between NGOs, health, and climate actors. Consequently, the study adds nuance to literature by mapping actors' perceptions of feasibility and showing that optimism and pessimism vary systematically between NGOs, politicians, farmers and administration.

6.2 Reflecting on the Results of the Study

6.2.1 Theoretical Reflections

Path Dependency

Path dependency theory provides strong explanatory power for understanding the persistence of livestock dominance in Norway. Past investments in barns and machinery, the debt structures of farmers, and the institutionalised system of the Agricultural Agreement constrain present opportunities for change. This study confirms these well-known lock-in mechanisms and extends them by highlighting retail concentration as an additional, and previously underexplored, source of path dependency. Retailers' market power not only limits plant-based producers' access to the market but also reinforces the self-reinforcing cycle in which livestock production remains the most viable choice.

Scott's Three Pillars

The regulative pillar explains rational choices made under skewed subsidies and incentives. As long as state support and policy instruments favour livestock, farmers and other actors are likely to continue reproducing the system, even if alternatives exist.

The normative pillar shows that moral arguments, such as protecting farmers and rural jobs, often trump other considerations. These values sustain political legitimacy for existing arrangements and make reforms that might threaten employment less persuasive.

The cultural-cognitive pillar reveals taken-for-granted myths, such as the idea that "Norway is a grass country", as some of the deepest barriers to change. These assumptions naturalise livestock production as the only logical path, narrowing the scope for alternative visions.

Reflection

Using Scott's (2014) three pillars together with path dependency theory helped explain why Norwegian agricultural reforms are slow despite political ambitions. The framework makes visible how rules and incentives, social norms, and taken-for-granted beliefs reinforce each

other, producing a strong lock-in around livestock production and limiting the effectiveness of reform efforts.

At the same time, Political Economy Analysis (PEA) could also have been a relevant lens, as it highlights how power asymmetries, vested interests, and economic incentives shape policy (Gordon et al., 2025). Issues such as retail concentration, subsidy distribution, and import dependence are not only institutional lock-ins but also political economy dynamics where powerful actors benefit from maintaining the status quo. This lens would also situate Norway's agricultural system more firmly in global capitalism and trade structures, providing a critical angle.

While PEA would have offered a valuable critical perspective, the chosen framework, combining path dependency and institutional theory, proved well suited to this study. It captures the embeddedness of Norwegian agriculture well, and explains why reforms remain difficult to implement, making it an appropriate basis for this analysis.

6.2.2 Methodological Reflections

By using semi-structured interviews, the research captured a broad spectrum of actors and revealed perceptions and myths not visible in statistics. This was therefore a suitable method for capturing diverse stakeholder perceptions. A limitation of the method is the strong dependence on self-reported perspectives and the lack of quantitative modelling of e.g., production potential or subsidy effects.

The study could perhaps have combined interviews with discourse analysis analysing for instance speeches, white papers, and media to show how institutional myths are constructed and reproduced, however this would have said little about behind-the-scenes feasibility and negotiations and would also be difficult to accomplish within the scope of this study.

Another option could be to conduct the data collection through focus groups, to bring actors together to observe how they debate directly. This could more deeply uncover conflicts, alliances and shared myths. However, it would be difficult to get high-level policymakers or busy union representatives into the same room, and power dynamics may silence voices who disagree with the consensus of the group (Alvehus, 2025, p. 80).

A third option was to conduct anonymous surveys, to quantify perceptions across a wider pool of stakeholders, and ensure that actors can express their opinions more freely. Yet, this comes with the risk of superficial answers, and the researcher would not have the opportunity to ask follow-up questions or engage with the respondents (Creswell & Creswell, p. 50).

In conclusion, the author stands by the choice of semi-structured interviews as the method for data collection, as it helped uncover nuanced and subjective views and allowed respondents to expand on their experiences and add any relevant information that went beyond the specific questions asked (Alvehus, 2025, p. 76).

6.2.3 Legitimacy and Contribution

Regarding legitimacy, the project and its research questions appear to be well-founded and relevant, as interviewees confirmed that policy debates on meat reduction and plant-based transitions are currently contested issues in Norway, at least to some extent.

The research contributes to advancing the understanding of the topic by documenting how institutional lock-ins operate in Norway, through subsidies, norms, myths. As noted, it fills a research gap, as previous studies stress a livestock bias in Norwegian policies, but rarely show the cultural-cognitive dimension so clearly (Sievert et al., 2021).

The study also discovered two potential new research questions, namely

i. 'How to break cultural-cognitive myths?', and
ii. 'What coalitions of actors could credibly push reform?'

6.2.4 Limitations and Generalisability

While the sample of participants was small, the study covered representatives of several stakeholder groups to investigate the variety of opinions. The sample was limited to mostly national actors, with few local and no consumer voices, although this was a deliberate choice as the study focuses on structural policy rather than individual motivations, and consumer attitudes have been more widely researched than the attitudes of politicians, public administration officers, farmers and retailers (Austgulen et al., 2018; Nejad et al., 2024).

The results of this research are most relevant to small, high-income countries with strong agricultural corporatism, where farmers' unions and agricultural organisations play a powerful role in shaping policy. Norway shares these features with countries such as Finland and Switzerland, which are also marked by close ties between the state and agricultural interest groups (Pellervo, n.d.; Federal Office for Agriculture FOAG, n.d.). By contrast, the results are less transferable to large EU countries with more fragmented agricultural structures and weaker corporatist traditions.

The results of this study reflect a moment of political debate, with the interviews conducted one year after the release of the new Norwegian dietary guidelines, during the Ukraine war (with preparedness high on the agenda), and leading up to national elections in Norway. Policy windows may change quickly, and the results must therefore be viewed as situated in their context.

7 Conclusion

This thesis examined how Norwegian agricultural policy sustains a livestock-dominated food system and limits the transition towards more sustainable, plant-based production systems. By analysing economic and institutional dynamics, the research identified key policy drivers and barriers, including strong path dependencies and cultural framings. The findings highlight both the challenges and opportunities for reform, offering insights into feasible measures that could strengthen plant-based production. The answers to the research questions are outlined below, followed by practical implications and recommendations for future research.

7.1 Conclusions to the Research

RQ1: How do current agricultural subsidies and taxation policies in Norway support or hinder the development of plant-based food production?

Barriers

Subsidies are overwhelmingly skewed toward livestock, with 97 percent of subsidies allocated over the Agricultural Agreement distributed to animal agriculture (Mittenzwei, 2025). Horticulture producers receive marginal support and are expected to gain most of their income from the market, while this does not apply to livestock producers. Moreover, the subsidy system is also structured to reward scale and volume, as many support mechanisms are structured in a way that the more one produces, the more support one receives. Small and mixed fruit and vegetable farms are therefore disadvantaged by design, as they do not get any support unless they reach minimum thresholds for support. In addition, retail cross-subsidisation in stores makes meat artificially cheap, further reducing competitiveness of plant-based products.

Drivers

Although the economic support systems are mainly causing barriers to plant-based producers, some actors argue that it is positive that horticulture producers are more market-driven, and that such producers can be very profitable if they produce large volumes. VAT reductions or targeted tax reforms are not applied in practice, but considered promising tools to level prices, while meat taxes are unpopular among the interviewees and not considered politically viable.

RQ2: What types of transitions do key actors envision as most beneficial for advancing plant-based food production in Norway?

Due to a skewed subsidy system being a substantial barrier to scaling plant-based production in Norway, many interviewees envision redirecting subsidies from concentrate-fed livestock towards fruit, vegetables and legumes, which represent more sustainable farming methods. Secondly, the respondents emphasise public procurement and consumer price incentives as one of the quickest ways to scale plant-based production and demand, as increasing the public demand for local and plant-based products would give more farmers access to the market and the security of being able to deliver their products. Thirdly, political elections are mentioned as a window-of-opportunity for getting ambitious politicians in power who are willing to make more drastic changes to the agricultural policy than what has happened in the past. Fourthly, creating alliances between organisations and people who care about health, environment and preparedness, can potentially secure grassroots support as it is considered a stronger alliance than environment and animal welfare, which appeal to a rather limited audience. In the long term, establishing a strong alliance might spark a transition in the sector. Lastly, it is emphasised among the interviewees that transition should prioritise small-scale diversification, for instance

via market gardens, plant-breeding or securing more local supply chains, while ensuring economic viability for small-scale farmers.

RQ3: What barriers to policy reform do key stakeholders identify, and which policy changes are considered most promising and politically feasible?

Barriers

The barriers identified by the interviewees can be grouped into four main categories. Firstly, path dependency highlights how heavy investments in livestock infrastructure such as barns and robots, and debt as a result of this, makes it both difficult and economically risky for farmers to reduce their production and transition to plant-based production. Secondly, the negotiations around the Agricultural Agreement are dominated by representatives for livestock farmers, with plant-based producers having limited access to decision-making. Thus, it is difficult to change the system when dominant decision-making actors have interests in maintaining the status quo. Thirdly, market access is a major barrier to change as all fruits and vegetables sold in the major grocery stores in Norway go through two wholesalers, who are identified by the interviewees to often prioritise cheap imports and giving contracts to established farmers, and to a little extent to newcomers. Lastly, cultural narratives and myths remain influential, such as the widespread belief that "Norway is a grass country where plant-based production is difficult". The view persists even among farmer associations and policymakers, despite several small-scale farmers in Northern Norway demonstrating that vegetable production is entirely feasible. These narratives help reinforce the legitimacy of livestock production as the primary and most viable form of agriculture in Norway.

Politically Feasible Changes

Although substantial barriers exist, the respondents also identify several promising drivers for change. As the subsidy system is deeply entrenched in Norwegian agricultural policy, incremental rebalancing of subsidies, rather than drastic reform, is considered the most viable starting point. Secondly, despite the lack of support for a meat tax among the interviewees, a tax shift including VAT reductions on fruits, vegetables, and plant proteins is considered promising, as it is a positive policy tool incentivising change by making healthy and sustainable food cheaper. Thirdly, stronger tariff protection for domestic crops in season is mentioned as an important facilitator of increased fruits and vegetable production in Norway. Lastly, and as already mentioned, public procurement favouring Norwegian plant-based foods, e.g., in schools, hospitals and in the military, is considered to have substantial potential for change even in the short-term.

Whilst not directly relevant to the research questions, it is important to also acknowledge that several interviewees commented on the conditions necessary for structural change to occur. These interviewees argued that such change is unlikely without the occurrence of external shocks or crises, such as war or food security shocks. This can partly explain why preparedness has become an increasingly more important topic since the outbreak of the war in Ukraine and the subsequent lack of imported grain supply, resulting in higher ambitions for self-sufficiency in Norway.

7.2 Practical Implications and Recommendations for Key Stakeholders

The results of this study point to several practical implications for actors who shape the Norwegian food system. While structural reform faces strong institutional and political barriers, incremental measures are possible and could serve as stepping stones toward more permanent transitions. Below, tailored recommendations are provided for key stakeholders.

Policymakers

Policymakers should prioritise politically feasible, incremental measures such as reducing VAT on fruits, vegetables, and legumes, and using public procurement to increase demand. Implementing meat taxes was discouraged by most interviewees, but gradual VAT adjustments between plant-based and animal-based foods should be considered. A longer-term subsidy restructuring towards horticulture and strengthening import protection for seasonal Norwegian crops should be planned for.

Farmers and Farmers' Organisations

Farmers should focus on diversifying production by exploring market gardens and crop varieties adapted to Norwegian conditions. In addition, farmers organisations should support investments in storage infrastructure to reduce waste and extend marketability of fruit and vegetables. Such steps can increase resilience and open new income opportunities beyond livestock.

Retailers

Retailers should shift promotion strategies to favour fruits and vegetables in price campaigns, shelf placement, and marketing. Additionally, they should reduce the dependence on imports by supporting seasonal Norwegian produce. This strengthens domestic supply and aligns with national food security goals.

NGOs

NGOs should focus on framing advocacy around health, preparedness, and national food security rather than solely environmental aspects and animal welfare. This narrative builds broader public and political support, reduces polarisation, and could thus potentially make policy change more feasible.

In summary, the findings underscore that genuine reform requires addressing all three of Scott's (2014) pillars simultaneously. This involves reallocating subsidies (regulative), reframing norms around health, preparedness, and fairness (normative), and challenging cultural myths such as the idea that "Norway is a grass country" (cultural-cognitive). Only by working across these dimensions can incremental reforms lay the groundwork for a more fundamental shift in Norwegian agriculture.

7.3 Recommendations for Future Research

This thesis has demonstrated how economic instruments, institutional structures, and cultural narratives jointly shape the prospects for plant-based production in Norway. The analysis showed that barriers are not only rooted in subsidy regimes and market lock-ins but also in deeply internalised myths. This study has shown that Norway's prospects for a plant-based transition are less constrained by physical limits than by institutional inertia and cultural narratives. This underscores the importance of studying not only the regulative but also the normative and symbolic dimensions of agricultural governance.

Future research should build on these insights by addressing areas that remain underexplored. First, the distributional impacts of subsidy or tax reforms on farmers should be studied, particularly to assess equity and political acceptability. Second, comparative lessons from Denmark's plant plan and plant fund could provide valuable lessons for how to design supportive instruments that can accelerate change without provoking strong opposition. Third, research should explore how retail entry barriers can be overcome through alternative distribution models for small producers. Finally, a key task is to investigate how cultural-cognitive myths can be challenged, and which coalitions of actors may credibly push for reform.

Globally, these research directions resonate with the wider challenge of aligning food systems with climate, health, and equity goals. Many countries face similar tensions between livestock-heavy subsidy regimes, entrenched agricultural narratives, and the urgent need for more plant-based transitions. By unpacking how institutional path dependencies and cultural framings interact, this study contributes to understanding not only where transitions are blocked but also where political windows may open. Addressing these challenges at both national and global scales will be decisive for building food systems that are economically viable, socially just, and environmentally sustainable.

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Appendix

Appendix 1: Consent form

Master Thesis Project: Economic Drivers and Barriers in Norway's Agricultural Policy Landscape

CONSENT FORM

This form is to ensure that you have been given information about the thesis project and to give you an opportunity to confirm that you are willing to take part in this research. For all activities below, please indicate which applies to you (*checked box indicates consent*):

☐	I have been **familiarised** with the thesis project, I have had the possibility to ask questions and I have received satisfactory answers to my questions before being interviewed
☐	As a research participant, I am aware of my **right to withdraw participation** at any time
☐	I give my consent that the interview can be **recorded in writing**, translated and analysed
☐	I give my consent that the interview can be **audio- or video-**recorded, transcribed using a third-party speech-to-text transcription application, translated (if necessary) and analysed
☐	I understand that the results of the research will be presented so that **no information can be traced to me personally /** I have been informed that **pseudonymity of participants will be ensured**
☐	I give my consent that a record of my interview can be **safely stored** for future reference
☐	I have been informed how **data will be either destroyed or reused** at the end of the research

Note: Your participation is voluntary. As an interviewee, you do not have to answer all the questions that are asked; you reserve the right to refuse or cease participation in the interview process without stating your reason and may request to keep certain materials confidential. In addition, you have the right to ask to review any summary or synthesis of the interview at any time up until the data is actually published.

There will be no monetary payment for participating in the research, but you will have contributed to a research project that generally aims to investigate political and economic pathways to support plant-based food production in Norway.

Please, sign below to confirm your consent – digital signatures are possible:

	Participant(s)	**Researcher(s)**
Full name(s)		
Signature(s)		
Date(s)		

Appendix 2: Interview Guide Example (Questions to Policymakers)

1. How do current subsidies and taxes affect livestock versus plant-based food production in Norway?
    - Do you think these policies support long-term sustainability, or are they shaped more by tradition or short-term economics?
2. What are the main challenges in reforming agricultural subsidies or economic incentives to support more sustainable food production?
    - Would you say these challenges are mostly political, economic, legal, or cultural?
3. Do you think there is a need to change subsidies/taxes in order to support sustainable food production? If yes, how politically realistic do you think it is to shift subsidies from livestock to more sustainable food production?
    - What do you think would make these changes more acceptable by consumers and policymakers?
4. How does Norway's agricultural policy align with national and international climate, environmental and sustainability goals (e.g., biodiversity, emissions)?
    - Are there any tensions between these goals and current agricultural policies, and if so, how are they addressed?
5. What role do stakeholders such as farmers, industry, NGOs, and consumers play in shaping agricultural policy?
    - What opportunities or platforms do these stakeholders have to influence/shape agricultural policy?
    - Which actors currently have the most influence, and how do you view that balance?
6. Are there any ongoing political or governmental discussions about shifting subsidies or economic support to favour more sustainable or plant-based food production?
    - If yes, are they aimed more at producers, consumers, or both?
    - If not, what would it take to initiate them?
7. Do you believe Norway should introduce new economic incentives (such as increased subsidies for plant-based production or taxes on high-emission foods) to support a more sustainable food system? Why or why not?
    - Would your party/institution support a tax shift?
8. How do economic tools like subsidies, taxes, or procurement policies compare to public education and awareness campaigns in influencing sustainable food system change?
    - Can education alone shift behaviour, or do you see economic policies as necessary?
9. If you could introduce one new policy tomorrow to improve the sustainability of Norway's food system, what would it be?

Additional Questions (if time allows):

10. What arguments or concerns are most commonly raised when proposals to reform livestock subsidies or taxes are discussed?
    - Have these arguments evolved as climate and sustainability concerns gain more traction?

11. How do you see consumer preferences shaping agricultural policy?
    - How do you balance consumer freedom with policy interventions?

12. How does Norway compare to other Nordic countries when it comes to policy support for plant-based food and sustainable agriculture?
    - Is there already or will be any joint Nordic programme/action plan to make food systems more sustainable? Or any food system/consumption-focused multinational collaboration between Nordic countries?

13. What has been your experience of engaging with the agricultural sector around plant-based food policies?
    - What do you see as the general reaction to this topic? Where are the bottlenecks and where is it generally easier to find common ground?

14. How can Norway make sure that changing support away from livestock doesn't harm food security or farmers' incomes?
    - Would your party/institution support government programmes to help farmers adjust?

15. What lessons have been learned from earlier attempts to reform subsidies, either in Norway or other Nordic/EU countries?

Appendix 3: Coding structure

Parent code	**Sub-Code**	**Sub-Sub-Code**	**Sub-Sub-Sub-Code**
Policy instruments	Economic policy	Subsidies	Plot-based subsidies
		Taxes	
		Tariffs	
		Pricing (set by retailers)	
		Public procurement	
		Investment funds	
	Information instruments	Marketing	
		Shelf placement	
Governance, institutions and sector organisation	Organisation of the agricultural sector	The Agricultural Agreement	
		Structural measures and logistics	Volume and overproduction
			Centralisation
			Storage
	Market regulation	Market access	
		Intake obligation	
		Regional specialisation policy	
	Power structures	Consumer power	
		Power of retailers	
		Politicians' power	
		Power of farmers (plant-based vs. livestock)	

		Influencing the power	
	Political feasibility		
Trade, markets and demand	Import	Self-sufficiency	
		Preparedness (in terms of crises)	
	Consumer attitudes		
	Consumer freedom		
	Vegetarian products (meat replacements, etc.)		
	Sharing meals		
Production systems and capacity	Production potential of plant-based food in Norway		
	Plant breeding		
	Market gardens		
	New technology		
	Advisory services		
	Competence sharing		
Risk and resilience	Risk management	Weather impacts	
	Transformation in the agricultural sector		
Environment, health and ethics	Environmental policy and agriculture	Methane inhibitors	
		Pesticides	
		Food waste	
		Negative impacts of agriculture	
	Health and nutrition	Ultra-processed food	
		Organic food	

	Animal welfare		
	Human rights		
Socioeconomics and livelihoods	Farmers' incomes	Income from the market	
	Employment in the agricultural sector	Seasonal workers	
Knowledge, evidence and narratives	Research		
	Examples / best practices from other countries		
	Culture and tradition	Myths and misunderstandings	
	Benefits of Norwegian agriculture	Biological processes	
		Settlement across the country	