Retinking Agriculture: Transitioning Towards Agroecology in South Holland

EXAMINING BARRIERS AND ENABLER FROM THE AGROECOLOGICAL FARMERS' PERSPECTIVE

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Abstract

The agricultural sector in South Holland is highly productive and contributes greatly to the economy. However, current industrial agricultural practices generated several severe environmental and socio-economic challenges. Various renowned international institutions have emphasised the necessity for a radical, rather than an incremental, transformation in the agri-food system. There are growing calls to shift the paradigm from industrial agriculture to agroecology. Agroecology is a fundamental alternative vision of the agri-food system, bundling the power of sustainable farming practices that utilise ecological principles and re-establish the connection between farmers and consumers, and by extension nature. This study sets out to introduce the reader to agroecology and to discover strategies for how the province of South Holland can stimulate the transition to agroecology. To achieve this goal, the research methodology comprised a literature review and semi-structured interviews with agroecological farmers, an agroecology expert, and a provincial agricultural policymaker. The results uncovered that the underlying goal of the agri-food system should be transformed from profit and production maximisation of industrial agriculture to sustainability and social justice of agroecology. Achieving this goal shift requires fundamental changes and will be a tremendous challenge because of the complex and embedded nature of the agri-food system. Agroecology simultaneously tries to realise this transformation on three fronts: as a science, a set of agricultural practices, and a movement. Furthermore, the research identified key barriers and enablers in the transition to agroecology in South Holland from the agroecological farmers' perspective. The province of South Holland could stimulate the transition by providing long-term affordable land, revising regulations to support forward-thinking practices, adopting an integrated approach to agriculture, bridging the gap between civil servants, farmers, and consumers, restructuring subsidy allocation, and lobbying to simplify (organic) certification processes. The research verifies the results of previous studies on several barriers and enablers but distinguishes itself by focusing specifically on the farmers' perspective and the province of South Holland. Additional research is needed to broaden the scope beyond the viewpoint of agroecological farmers, and how to implement the policy recommendations effectively. Currently, the Dutch agri-food system is not yet ready for a paradigm shift from industrial agriculture to agroecology. However, the system is being pressured from various angles generating windows of opportunity. While being just one actor in the agri-food system, the province of South Holland could stimulate the development of agroecology by incorporating agroecology explicitly in policymaking.

Keywords

Agroecological transition; sustainable farming; agri-food sector, farmers' perspective; policy recommendations; South Holland

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Introduction

Societal Background

The agricultural sector in South Holland is highly productive and contributes greatly to the economy (Randstedelijke Rekenkamer, 2022). However, the contemporary Dutch agricultural sector faces several challenges. The agricultural sector is an important source of nitrogen emissions, contributing to environmental pollution and damaging nature reserves (RIVM, n.d.). Intensive agriculture pollutes the waterbodies through the use of pesticides and (artificial) fertilisers (van Gaalen et al., 2021). Furthermore, intensive agricultural cultivation methods degrade soil fertility, lowering long-term agricultural productivity (WUR, 2023). Moreover, the intensification of agriculture and the use of chemical inputs contribute significantly to biodiversity loss (Brouwer, 2022). Additionally, the agricultural sector is a large emitter of greenhouse gasses, contributing to climate change. Simultaneously, it is vulnerable to the effects of climate change such as extreme weather conditions (Klimaatakkoord, 2019). Besides, many farmers face economic pressures and uncertainty, while frequently struggling to find a successor (CBS, 2021). The modern diet is increasingly composed of processed foods rich in fat and sugar, which are significant factors in the rise of metabolic disorders and obesity (Gliessman et al., 2023).

The Dutch agricultural sector has seen tremendous changes since the Second World War. After the war, agriculture in the Netherlands was in poor conditions (Meerburg et al., 2009). The post-war Minister of Agriculture Mansholt advocated for rapid industrialisation of agriculture to avoid future famines (Riches & Polmowski, 2019). In the latter half of the 20th century, yields per hectare of staple crops like wheat rose significantly, food prices fell, the growth rate of food production generally outpaced population growth, and chronic hunger decreased (Gliessman et al., 2023). These successes were largely due to scientific advancements and technological innovations, including developing new plant varieties, using fertilisers and pesticides, and expanding extensive irrigation infrastructures (Gliessman et al., 2023). All these factors contributed to the emergence of what is now known as industrial agriculture, commonly referred to as conventional agriculture. In this form of agriculture, production elements are reduced to their most basic forms, processes mechanised, and input-output efficiency optimised. This approach makes agriculture strikingly resemble industrial processes, making the name industrial agriculture particularly descriptive and accurate (Gliessman et al., 2023). This form of agriculture will be referred to as industrial agriculture in this thesis. Dutch farmers intensified and mechanised their production to remain profitable, increasing farm size and productivity while reducing labour usage (Meerburg et al., 2009). The Netherlands emerged as a leader in industrial agriculture (Jukema et al., 2023).

While the reconstruction of Dutch agriculture was highly effective in enhancing short-term food security, it is increasingly evident that industrial agriculture is unsustainable in the long term (Meerburg et al., 2009). At the heart of industrial agriculture lies a fundamental contradiction: the very practices, innovations, techniques, and policies that have driven significant increases in agricultural productivity are also undermining its sustainability (Gliessman et al., 2023). These methods have depleted and degraded the natural resources vital to agriculture, created a dependence on fossil fuels, and facilitated a system that concentrates control of food-system infrastructure in the hands of a few, stripping it from farmers who are best suited to steward agricultural land (Gliessman et al., 2023). Consequently, multiple negative environmental and socio-economic effects emerged. In economic terms, these negative impacts are known as externalised costs. Society can temporarily ignore or absorb these consequences, as they are often excluded from the narrow cost-benefit analysis that maintains the economic viability of industrial agricultural operations (Gliessman et al., 2023). Industrial agriculture has proposed several solutions to mitigate its negative effects such as ‘sustainable intensification’, ‘climate-smart agriculture’, and organic monocultures. While these approaches could lower industrial agriculture’s impacts, these solutions tend to address problems in isolation, thereby not reevaluating industrial agriculture and its perpetuating issues (IPES-Food, 2016).

To address the underlying negative effects of industrial agriculture, various esteemed international institutions, including IPES and FAO, have emphasised the necessity for a radical, rather than an incremental, transformation in our food systems (Runhaar, 2021). In their 2016 report, the IPES-Food advocates for a paradigm shift from industrial agriculture to agroecology. The authors argue that merely adjusting practices can enhance some specific outcomes of industrial agriculture but will not address the underlying causes of the negative effects (IPES-Food, 2016).

Also in South Holland, there are calls to change the agricultural system. The province of South Holland describes the problem concerning agriculture as follows: "In its current form, agriculture is not sustainable. The sector, which is largely focused on production for Europe and the global market, is in an economically vulnerable position and has excessively high emissions, impacting the environment. This entails enormous challenges, particularly in the areas of climate, nitrogen, and land subsidence." (PZH, 2020, p.2). Additionally, The province of South Holland aims to be the epitome of circular and innovative agriculture. However, at the same time, fewer resources have been allocated to the agricultural and food transition, insufficient integrated work executed and inadequate (spatial) choices made since 2020 (Randstedelijke Rekenkamer, 2022). Besides, under European regulations, the Netherlands needs to grow its organic sector from 4,4% in 2023 to 15% in 2030 (Ministerie van Algemene Zaken, 2023). Radical change could help the province in solving its challenges regarding water quality and access, nitrogen deposition, sinking soils, decreasing biodiversity, and growing its organic sector. Agroecology could play a role in holistically combating these challenges in South Holland.

Agroecology focuses on diversifying farms and farming landscapes, shortening value chains, reducing chemical inputs, promoting biodiversity, and fostering interactions between species to become productive. Such holistic strategies are essential for building resilient agroecosystems, long-term fertility, healthy food, and secure livelihoods, thereby internalising the externalities (IPES-Food, 2016). Agroecology does not aim to dictate specific practices and setups to foster a sustainable food system. Instead, it offers principles, concepts, and strategies that should serve as the cornerstone of any food production, distribution, and consumption system striving to legitimately replace industrial agriculture (Gliessman et al., 2023).

Transformations to agroecology are difficult to realise because of the presence of lock-ins in the industrial agri-food system (IPES-Food, 2016). The food system consists of numerous stakeholders with various amounts of power, making the system highly complex and resistant to change. Although the province of South Holland is just one actor in the agri-food system, it can exert influence on various aspects to bring about changes. This study will look into the province of South Holland's possibilities to stimulate the transition to agroecology. The agroecological farmers' perspective is central to this thesis as farmers take the key role in agroecology (Visser, 2021).

Scientific Background

In this section, the literature on the field of agroecological transitions will be reviewed. First, the global context will be briefly touched upon. Second, the European context will be discussed. Third, the Dutch context will be elaborated on. Lastly, the South Holland context will be investigated. The literature review will result in the identification of the research gaps.

A bibliometric analysis (IDES & IPES-Food, 2022) showed that agroecology is gaining popularity in the scientific community. The number of publications per year on agroecology rose from 106 in 2011 to 426 in 2021. Nevertheless, the field is still in development. The literature generally portrays agroecology as an ecologically and socio-economically promising alternative to address the issues in the industrial agri-food system. Despite its increasing popularity, there has been little research on agroecology in the Dutch context, where industrial agriculture is the norm.

Various authors researched the transition towards diversified agroecological systems on a global level. (Anderson et al., 2019; Mier y Terán Giménez Cacho et al., 2018; IPES-Food, 2016; IPES-Food, 2018). These articles stress the importance of agroecological transition, identify the lock-ins of the current industrial paradigm, the emerging opportunities, and the pathways to transition towards agroecology. All articles highlight the context-specific nature of agroecological transitions. Interestingly, few of the conducted case studies were in the European context, none in the Netherlands. This is also addressed by Wezel & Bellon (2018) who made efforts to map agroecology in Europe. They highlight that while the development of agroecology has been particularly strong from the beginning in Latin America, there is little known regarding the context of Europe. Only two European countries, France and the UK, have formulated policy plans for developing agroecology (Ajates Gonzalez, 2018). It can be concluded that there is a knowledge gap when it comes to agroecology-related policies in Europe.

Efforts have been made to bridge this knowledge gap. During the first European Agroecology Forum organised in 2017, 310 stakeholders discussed the major challenges and the key actions required to amplify agroecology on the continent. Wezel et al. (2018) summarised these findings, resulting in seven major challenges and local to European key actions, among these are developing a common understanding of agroecology, supporting new and existing agroecological practices, and developing policies to enhance agroecology. Van der Ploeg (2021) dives into the political economy of agroecology in Europe. He argues that agroecology is already effectively changing the social dynamics of production in contemporary agriculture, by analysing the case of the Northern Frisian Woodlands in the Netherlands. Schoonhoven & Runhaar (2017) developed a holistic framework to gain insights into the conditions for adopting agroecological farming practices by farmers, using Southern Spain as a case study. This framework has not been utilised in the Dutch context. Furthermore, Runhaar (2021) identified four critical conditions for agroecological transitions in Europe. His findings are based on a previous study conducted by Runhaar et al. (2020) on the successful industry-wide initiatives to restore grazing practices in dairy farming in the Netherlands. Moreover, the research of Gava et al. (2022) informs policymakers about the policy instruments that stimulate agroecological transitions in Europe. The findings of these studies are often generically formulated, thus indicating the need for context-specific research.

Although two of the above-mentioned papers use the Netherlands as a case study, little research has been conducted on agroecological transition in the Netherlands. Van der Berg et al. (2018) addressed the struggle of new agroecological farmers to gain access to expensive land in the Netherlands. Bakker et al. (2023) researched the personal drivers and triggers of Dutch farmers for transitioning towards agroecological practices. Dekker et al. (2024) investigated the barriers in certification, laws, and regulations for small-scale agroecological farmers that hinder the transition towards sustainable and resilient agriculture in the Netherlands. De Pater & van Bellen (2023) mapped the challenges pioneering farmers face concerning spatial planning in South Holland and how the province and municipalities should change their attitude.

Besides, while nature-inclusive has gained momentum in the province of South Holland (Floors et al., 2023), no targeted policies on agroecology have been developed. Agroecology is not mentioned in any of the official documents of the province. Although some elements in the vision of the province of South Holland (PZH, 2020) can be considered agroecological, the term is not explicitly used. The province has been given the task by the Ministry of Agriculture, Nature, and Food Quality (LNV) to develop its ‘Programma Landelijk Gebied’, an initiative aimed at improving the quality and vitality of rural areas (LNV, 2023). Here again, the term agroecology is not mentioned. To the researcher’s knowledge, no research has been conducted on the transition to agroecology in South Holland specifically.

Research Gap

Two main research gaps can be identified by reviewing the literature. While agroecological transition literature gained momentum globally and to a limited extent in Europe, only a few studies have been conducted in the Dutch context and none in South Holland. Besides, the term agroecology is primarily unknown among civil servants and so far not explicitly used in policies by the province of South Holland.

The framework of Schoonhoven and Runhaar (2017), which forms the basis of this research, has not been validated in the Netherlands, indicating the presence of a contextual research gap. Besides, this framework only takes into account agroecological farming practices and leaves a system approach out of consideration. This research will take a broader approach to agroecology by going beyond the farm gate, adding to the existing framework, while keeping the farmer's perspective central.

Research Objective

This thesis addresses the identified research gaps by 1) introducing the province of South Holland to the concept of agroecology, 2) identifying the context of the agri-food system in South Holland, 3) mapping the barriers and enablers of agroecological farmers in South Holland from the agroecological farmers' perspective, and 4) translating these into policy recommendations for the province to stimulate the transition towards agroecology.

Research Questions

The established research objectives are used as the basis for formulating the research questions that will guide the thesis project.

The main research question is formulated as follows:

How can the province of South Holland stimulate the transition to agroecology?

To answer the main research question, the following sub-research questions are formulated:

1. What is the context of the agri-food system in South Holland?

2. What are the barriers and enablers to adopting agroecology in South Holland?
   2.1. What are the barriers and enablers to adopting agroecology in South Holland from the agroecological farmers' perspective?
   2.2. What is the provincial agricultural policy perspective on these barriers and enablers?
   2.3. How can these barriers and enablers influence the transition to agroecology in South Holland?

The remainder of the thesis takes the following structure. First, the theory and theoretical frameworks will be explained. Next, the methodology, including data collection, analysis, and ethical considerations will be elaborated on. Subsequently, the agri-food context of South Holland and the barriers and enablers will be discussed in the results section. Afterwards, the discussion will answer the research questions, place the findings in the literature, provide policy recommendations and address the generalisability, limitations and areas for further research. Lastly, the conclusion will summarise the findings of the study.

Theory & Theoretical Frameworks

The following section will outline and explain the theory and theoretical frameworks central to this thesis. The theory behind sustainable agriculture and agroecology will be addressed. The theoretical frameworks serve as a lens through which information is structured, enabling the answering of the research questions. First, the concept of agroecology will be elaborated on. Next, the mechanism of the Multi-Level Perspective will be explained. Lastly, the workings of the Onion Model will be clarified.

Sustainable agriculture

There is no agreed-upon definition of sustainable agriculture. This thesis uses the definition outlined in the United Nations Brundland report: "Sustainable agriculture should be able to meet the current needs of society without compromising the ability of future generations to meet their own needs. It should take into account environmental, social, and economic sustainability (WCED, 1987, p.64)"

Agroecology

Agroecology is a dynamic concept that has evolved throughout history. The roots of the concept can be traced back to the food systems of Indigenous People worldwide (IDES & IPES-Food, 2022). Since its initial academic application in the 1930s, agroecology's scope has broadened from field-level practices to encompassing agroecosystems and currently extends to the whole food system (Wezel et al., 2009). This research uses the comprehensive definition of agroecology proposed by S. Gliessman, one of the most prominent authors in the field:

"Agroecology is the integration of research, education, action and change that brings sustainability to all parts of the food system: ecological, economic, and social. It's transdisciplinary in that it values all forms of knowledge and experience in food system change. It's participatory in that it requires the involvement of all stakeholders from the farm to the table and everyone in between. It is action-oriented because it confronts the economic and political power structures of the current industrial food system with alternative social structures and policy action. The approach is grounded in ecological thinking where a holistic, systems-level understanding of food system sustainability is required" (Gliessman, 2018, p.599).

The High-Level Panel of Experts (HLPE) operationalised agroecology into a set of 13 principles to inform policy discussions and increase the understanding of how agroecology can be employed (Wezel et al., 2020). The HLPE principles are (1) recycling, (2) input reduction, (3) soil health, (4) animal health, (5) biodiversity, (6) synergies, (7) economic diversification, (8) co-creation of knowledge, (9) social values and diets, (10) fairness, (11) connectivity, (12) land and natural resource governance, and (13) participation (Wezel et al., 2020). Principles 1 to 7 apply to the agroecosystem and 8 to 13 to the food system. The principles are interconnected and certain principles influence each other. A distinguishing feature of these principles is their generic formulation, which, in practice, allows for local application, resulting in a diversity of agroecological practices tailored to specific local circumstances (Sinclair et al., 2019).

Several sustainable agriculture approaches have emerged from or are grounded in agroecology (Oberc & Schnell, 2020). For example permaculture, biodynamic agriculture, organic farming, and regenerative agriculture all stem from agroecology or integrate its principles and practices (Erisman et al., 2017; Silici, 2014). Agroecology can be considered an umbrella term for various alternatives to industrial agriculture (IPES-Food, 2018).

To enable agroecology, it is important to re-establish a more direct connection between farmers and consumers, and by extension nature (Gliessman, 2016). Consumers should actively value locally and sustainably cultivated food both culturally and economically. The current linear agri-food supply chain considers food eaters as passive consumers and overlooks the inter-relationship between all actors, particularly between consumers and farmers (Mehrabi et al. 2022). Alternative business models shortening the supply chain such as e-commerce, box schemes, farmers' markets, on-farm selling, organised buying groups, and community-supported agriculture (CSA) play an important role in re-establishing this more direct connection (Mehrabi et al. 2022).

Among the sustainable agriculture approaches, nature-inclusive farming has gained momentum in Dutch politics over the last few years. The Ministry LNV has included nature-inclusive farming in its future vision (LNV, 2018). Furthermore, the province of South Holland executed an 'ambtelijke verkenning' on nature-inclusive farming (Floors et al, 2023). There are similarities between agroecology and nature-inclusive as the latter uses certain agroecological principles to achieve a productive farming system such as crop diversity, inputs reduction, recycling, synergies, and biodiversity (van Doorn et al., 2016). However, there are also distinct differences between the two approaches. The main difference is in scope. The scope of nature-inclusive agriculture stops at the farm gate and can therefore exist in the mainstream, industrial, agri-food system (van Doorn et al., 2016). In comparison, agroecology aims to radically restructure the whole agri-food system (Gliessman, 2016).

Notably, agroecology is currently in danger of co-optation by industrial agriculture. Agroecology has gone from being ignored, or excluded by the major institutions governing global agriculture to being acknowledged as one of the possible alternatives available to tackle contemporary agricultural challenges (Giraldo & Rosset, 2017). Although increasing its legitimacy, the interest of major institutions, governments, corporations, and other actors resulted in the danger of co-optation of agroecology. "Institutions have tried to redefine it (agroecology) as a narrow set of technologies, to offer some tools that appear to ease the sustainability crisis of industrial food production, while the existing structures of power remain unchallenged" (Nyéléni, 2015). It is crucial to safeguard the transformative character of agroecology in the mainstreaming process.

Multi-Level Perspective

The application of the MLP framework enables the understanding of the mechanisms driving sustainability transitions of socio-technical systems. Sustainability transitions are "long-term, multi-dimensional, and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption" (Markard, 2012 p. 956). The MLP has been utilised in various studies exploring sustainable transitions in the agri-food system (El Bilali, 2019; Elsner et al., 2023) (El Bilali, 2019; Elsner et al., 2023). The MLP was developed to understand dynamic patterns in socio-technical transitions which evolve through interactive processes across three analytical levels: the socio-technical landscape (macro), regimes (meso), and niches (micro) (Geels, 2011).

The socio-technical landscape is exogenous events and trends that can either generate opportunities for niches or exert pressure for regime change (Geels, 2011; Smith et al., 2010). In the agro-food system context, these trends encompass globalisation, agro-food market internationalisation, population growth, financial crises, dietary and lifestyle changes, (neo)-liberalisation, international agreements, the Common Agricultural Policy, concerns about animal welfare and environmental issues, and climate change (El Bilali, 2019).

The socio-technical regime is the foundational structure that maintains the stability of a socio-technical system by establishing rules and principles that guide the actions of its participating actors (Geels, 2011). Regimes are characterised by their purpose, coherence, stability, non-guidance, and

autonomy (Holtz et al., 2008). In agri-food systems, the socio-technical regime refers to the intensive, industrial agri-food sector, incorporating its practices, rules, infrastructure, food safety regulations, business networks, and (El Bilali, 2019).

Niches represent (radical) innovations shielded from dominant rules (Geels, 2011) and have been defined as changes in "new technologies and practices, new configurations of actor groups, new beliefs and values, new networks, and new policies" (Loorbach et al., 2017). Within the context of this thesis, agroecology is considered the niche. Agroecology has been utilised as a niche in prior transition research (Levidow et al., 2014; Anderson et al., 2019).

According to the MLP, transitions are shifts from one socio-technical regime to another that result from an interactive process between the landscape, regime and niche (Geels, 2011). Niche innovations generate momentum for change, while the landscape changes put pressure on and destabilise the regime, creating opportunities for niches to replace the incumbent regime. Landscape, regime, and niche processes must become aligned for transitions to happen. In practice, socio-technical regimes change at a slow pace as system lock-ins and path dependencies stabilise the regime and create resistance (Melchior, 2021). The resistance arises from elements such as social values, knowledge, practices technologies or policies that stabilise each other. The workings of the MLP framework are visualised in Figure 1.

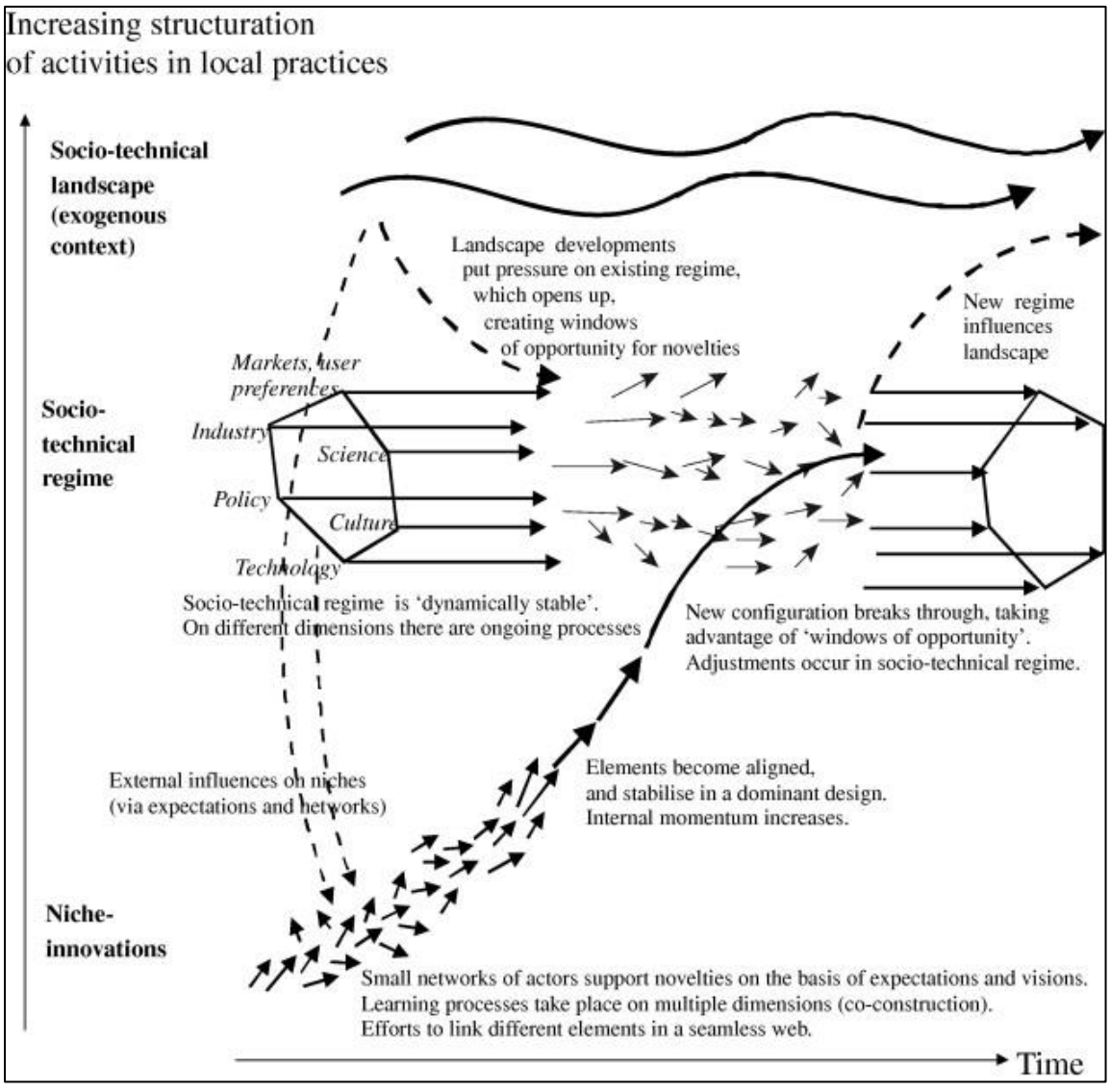

Figure 1. The workings of the MLP framework (Geels, 2011)

The Onion Model

The Onion Model of Schoonhoven & Runhaar (2017) provides a valuable framework for systematically identifying the various factors influencing the adoption of agroecological farming. Furthermore, the framework highlights the connections between these factors and particularly underscores the structural barriers to implementing agroecological farming.

The Onion Model is based on the framework developed by Runhaar et al. (2017), which identifies four conditions that facilitate changes in farming practices. The first condition for the adoption of agroecological practices by farmers is motivation, which can arise either intrinsically or be influenced by external pressures. The second condition necessitates a specific demand for farmers to embrace agroecological practices. The third condition emphasises that farmers must have the capability and resources to implement agroecological farming practices, along with the necessary skills. Lastly, the fourth condition highlights the importance of legitimising agroecological farming, ensuring that it is not hindered or restricted by governmental regulations or societal norms.

Schoonhoven & Runhaar (2017) extend the framework developed by Runhaar et al. (2017) by introducing the 'Onion Model'. This model is used to identify various levels of influence on a specific subject, in this case, the farmer. These levels form layers around the farmer, hence the metaphor of an onion. This addition illustrates the interconnectedness of different factors. The Onion Model is depicted in Figure 2. The three levels of influence are the personal, direct, and distal contexts. The personal context refers to the farmers' internal thought processes. The direct context encompasses elements encountered by farmers in their daily activities, such as opportunities and constraints within farming practices or interactions with family, friends, direct peers, and neighbours. The distal context involves actors and factors that typically lie beyond the direct influence of farmers (systemic environment). Factors and their interconnections are identified by commencing with the barriers and enablers perceived by farmers, then expanding the perspective to encompass both the direct and distal contexts. By zooming out, the identification of more systemic barriers and enablers influencing the adoption of agroecology is facilitated. Using the onion metaphor, this approach means peeling the onion from the inside out.

Thereafter, the factors are categorised to facilitate a systematic identification process. The categories are drawn from the literature that addresses the factors essential for steering a transition towards agroecology (Schoonhoven & Runhaar, 2017). The categories are social (i.e. networks, partnerships), economic (i.e. creating new markets), policy (i.e. regulations), and information (i.e. background knowledge, education).

In short, the Onion Model provides a better understanding of what drives and enables agroecological farming. The results of this tool can be used to (re)design agricultural interventions and policies.

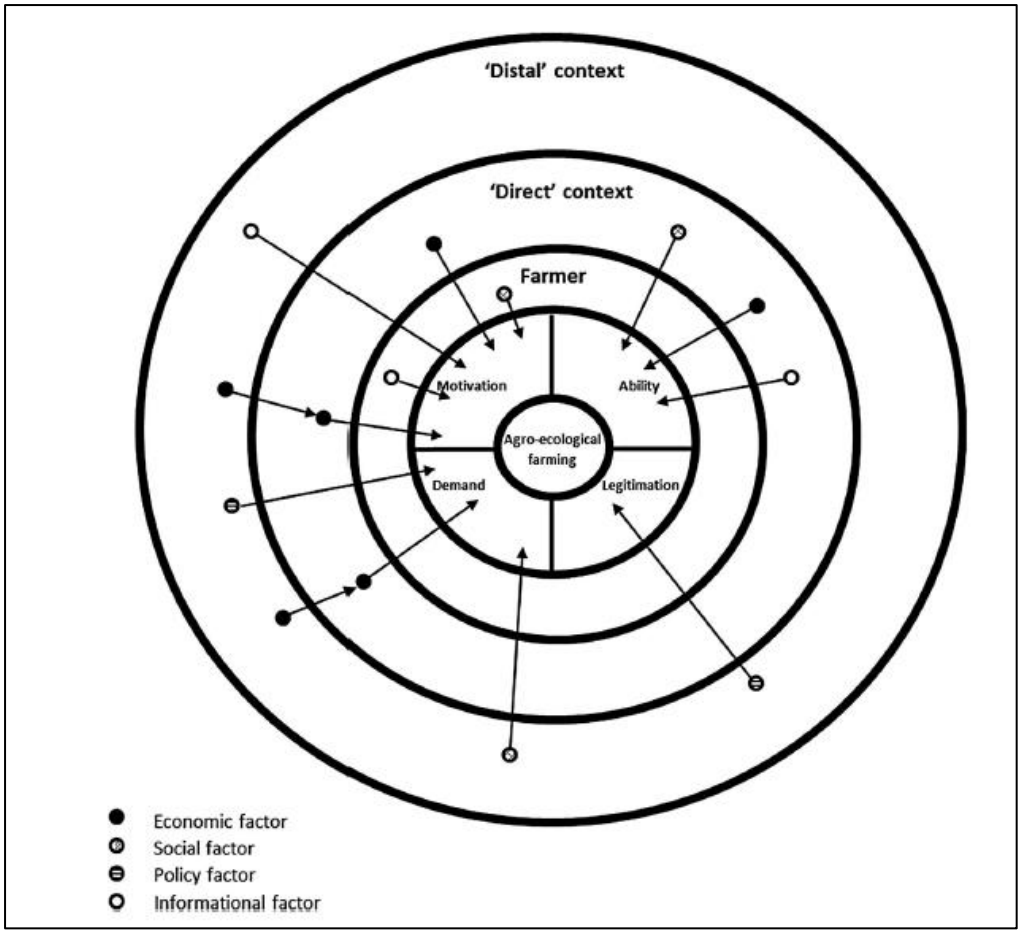

Figure 2. Visualisation of the 'Onion framework' developed by Schoonhoven & Runhaar (2017).

Justification of Combination Frameworks

The MLP framework will be utilised to conceptualise the landscape, dominant regime and agroecological niche in the Netherlands, focusing on South Holland. This conceptualised context enables a better understanding of the current situation over the three analytical system levels. One of the main criticisms of the MLP is the lack of agency (Geels, 2011). While MLP provides a comprehensive view of the workings of systemic change, it lacks depth in capturing the specific local and contextual factors influencing individual actor groups. The MLP is a middle-range theory and could thus benefit from incorporating insights from supplementary theories (Geels, 2011). The complementation of the MLP with another framework is something more frequently done by other transition researchers in the agri-food system (El Bilali, 2019). In this research, the MLP framework will be complemented by the Onion Model by Schoonhoven & Runhaar (2017). The Onion Model focuses on the farmers' perspective of the transition to agroecology, giving agency to this micro-level group and allowing a deeper understanding of the practical barriers and enablers faced at the grassroots level. Combining the frameworks ensures that the on-the-ground experiences of agroecological farmers are central to the higher-level transition process. The MLP and the Onion Model have not been combined in previous research, underscoring the innovative approach of this study.

Methods

This chapter discusses the research methodology, the data collection and analysis, and the relevant ethical considerations.

This research takes a qualitative approach to explore and gain insights into the challenges and opportunities of transitioning towards agroecology in South Holland. A qualitative approach is selected as it enables the exploration of real-world problems and provides deeper insights into them (Tenny et al., 2017). Sub-question 1 was answered by comparing and synthesising the results of a literature review in combination with a semi-structured interview, utilising the MLP framework. Subquestion 2 was answered through semi-structured interviews with agroecological farmers and an agricultural policymaker, utilising both the MLP and the Onion Model. The findings of both literature review and interviews were compared, analysed, and synthesised to answer the main research questions. Figure 3 visualises the relations between the (sub)research questions, the utilised frameworks, and the data collection and analysis methods.

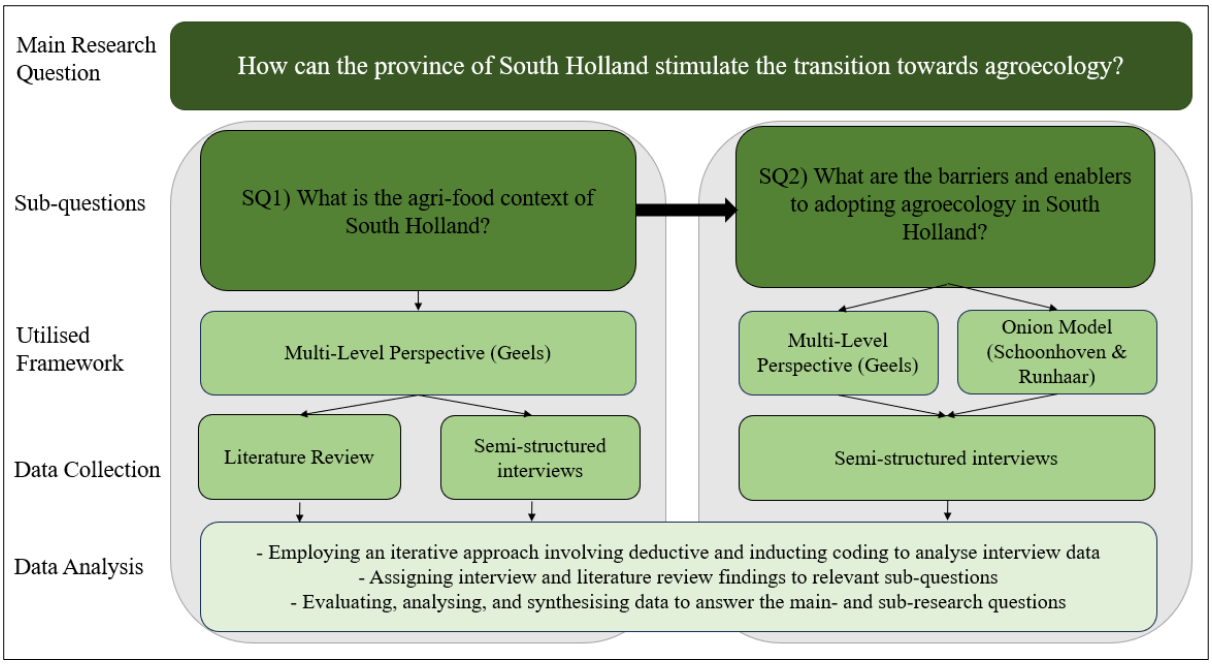

Figure 3. Visualisation of the research methodology.

Data Collection

Literature Review

A literature review was conducted at the start of the research to gain insights into previous studies and the literature gap. The subsequent literature reviews served an important role in answering the subquestions and providing the relevant background information to add to the outcomes of the semi-structured interviews. The selected studies examined agroecology, transition literature, agroecological transitions, barriers and enablers of agroecology, the Dutch food landscape, regime, and agroecological niche, and policy documents. The search engines Google Scholar, Scopus and Ecosia were utilised to find relevant grey and academic literature, reports, and policy documents. The keywords used include, among others: *agroecology, sustainability transition, barriers and enablers, agriculture, governance, policy*, and *system change*, combined with *the Netherlands* and *Dutch*.

Interviews

Semi-structured interviews were conducted with 7 relevant actors in agroecology or policy making. These include 4 agroecological farmers in South Holland, a coordinator of Herenboeren, a prominent figure in the agroecological movement in the Netherlands, and an agricultural policymaker of the province.

The researcher has visited several agroecology-related events in the Netherlands throughout the year, building a useful network. Attending the 'Boerenlandbouw Conferentie', a conference organised primarily for agroecological farmers, proved particularly useful as it secured three interviews. The three interviewees were contacted using a snowball method with contact information provided by previous interviewees. The researcher was a participant in the thesis lab 'Sustainable and Just Landscape Transformation' commissioned by the province of South Holland, through which the agricultural policymaker was contacted. Key characteristics of the farms are displayed in Table 1 and of the interviewees in Table 2.

To ensure a diverse selection of agroecological farmers, the following variables were considered:

- Size of farm in hectares
- Geographical location
- Farming method
- Sales method
- Involvement of volunteers or customers

Table 1. Overview of the key characteristics of the agroecological farms included in this study

Farm	Location	Size in Ha	Ownership or lease	Farming method	Sales method	Established
Hazelland 10	Zoeterwoude	1,5	Lease	Biologisch	CSA	2024
WIJdehorst	Wassenaar	7	Lease	Biologisch	Food boxes	2023
Kwekerij Ekologisch	Roelofsarendsveen	2,3	Owned	Biodynamic	Multiple channels	2007
De groentemeester	Maassluis	0,5	Lease	Biologisch	CSA	2023
Herenboeren	Rotterdam, Leimuiden	+- 20	Owned or leased	Bio(dynamic)	Herenboeren concept	2013

Table 2. Overview of the key characteristics of the interview participants included in this study.

Name	Age	Connected farm/organisation	Function	Education	Other activities
Bas de Groot	47	Hazellad 10	Farmer	Warmonderhof	Active at several agroecology associations
Klarien Klingen	42	De Wilde Peen	Farmer & Activist	University & Warmonderhof	Board member Toekomstboeren
David Leijendijk	47	Kwekerij Ekologisch	Farmer	Horticulture school	/
Erwin de Jong	43	WIJdeland	Farmer	Permaculture course	/
Anne Bruin	45	Herenboeren	Project developer	University	/

Remko Boer	47	De Groentemeester	Farmer	PABO & Warmomnderhof	/
Laura de Vrueh	/	Province of South Holland	Agricultural policymaker	/	/

Semi-structured in-depth interviews were selected due to their flexibility in question sequencing and allowance of follow-up questions (Hennink et al., 2020). The duration of interviews with farmers ranged from 27 to 58 minutes, with the agroecology expert 55 minutes, and the civil servant 102 minutes. All interviews with farmers took place on the farm. During these farm visits, tours were given, interviews were conducted, and help with farm work was given when required. Furthermore, conducting the interviews on location allowed for making field observations. The two interviews that took place online were with the agroecology expert and provincial policymaker. All interviews were recorded for transcription purposes.

Three interview guides for the farmers, the expert, and the agricultural policymaker were developed to ensure all relevant topics would be discussed. The interview guidelines can be consulted in Appendix A. The interview with the agroecology expert gave insights into the agroecological movement in the Netherlands and was used to answer subquestion 1. The interviews with the farmers provided the necessary data to answer subquestion 2 and fill in the Onion Model by Schoonhoven & Runhaar (2017). For these interviews, the questions were structured according to the four categories described by Schoonhoven & Runhaar. The interview with the provincial agricultural policymaker enabled a reflection on the identified barriers and enablers. All interviews ended by asking the same question on how the province of South Holland could support agroecological practices.

Data Analysis

The transcription process consisted of two steps. First, the audio files were transcribed using the transcription software ‘Good Tape’. Second, the transcripts were corrected manually by listening to the recordings. The qualitative data analysis method utilised in this research was thematic analysis. The software Atlas.ti was selected to code the data from the interview transcriptions. The classifications economic, social, informational, and political from Schoonhoven & Runhaar (2017) were deductively used as preliminary themes. The transcripts were iteratively coded through inductive methods, using bottom-up codes derived from the data (Hennink et al., 2020). The inductive methods were used to identify themes within and across the interviews. In the end, the data from the literature review and the interviews were evaluated, analysed and synthesised to answer the related research questions. Appendix B shows the Atlas.ti codebook including the themes, the codes with their descriptions, and the frequency of usage.

Ethical Considerations

Several ethical considerations need to be considered when conducting qualitative research (Hennink et al., 2020). The privacy and dignity of the participants need to be safeguarded. The data was securely stored throughout the research process and subsequently deleted upon completion of the study. Before the interview commenced, the consent form was read out loud by the researcher. The participants verbally indicated their agreement to be referenced by name, to have the interview recorded, and their interest in receiving the results. Furthermore, the consent form outlined the research objectives, scope, interview structure and approximate duration, and the participant’s right to withdraw and adjust answers. The consent form can be found in Appendix C.

Results

Chapter 1: The Agri-food System Context in South Holland

This chapter uses the concepts from the MLP to give an overview of the emergence, development and current state of the Dutch Holland food landscape, regime and niche. This overview provides the context of the Dutch agricultural sector and forms the starting point for answering the subsequent sub-research and main research question.

The Dutch Dominant Food Regime and Landscape

To understand the current situation of the agricultural sector in South Holland, it is crucial to understand its history. Literature on the (Dutch) agri-food system will be analysed to contextualise the dominant food regime and its surrounding landscape (pressures). The scope of this chapter is the Netherlands as South Holland is embedded in the Dutch context. When data on South Holland is available, it will be utilised.

The Dutch agri-food system has changed significantly in recent history. Before the Second World War, Dutch agriculture consisted mainly of small-scale mixed farms with livestock and crops of only a few hectares on multiple-spread plots (Karel, 2010). The agricultural sector changed rapidly after the Second World War as agriculture was in poor condition in the Netherlands (Meerburg et al., 2009). The post-war Minister of Agriculture Mansholt advocated for rapid industrialisation of agriculture to avoid future famines (Riches & Polmowski, 2019). The Dutch government invested heavily in productivity-increasing research, innovation, education and structural support to prevent future food shortages (Meerburg et al., 2009). Policy reforms were introduced to consolidate plots and stimulate high-input specialised and mechanised agricultural production to maintain low food prices and exports (Meerburg et al., 2009). The Marshall Plan of the USA supported these efforts, in which production capital was shipped to the Netherlands and trade agreements signed (Meerburg et al., 2009). Since the 1970s, policies have shifted towards the entire agricultural supply chain, incorporating input producers (seeds, fertilisers, pesticides, etc), processing industries, the retail sector, and knowledge institutes (de Haas, 2011).

At the end of the 1970s, rapidly growing government deficits and debts made further expansion of governmental support to the agricultural sector undesirable and unfeasible (Meerburg et al., 2009). Neoliberalism was considered a promising alternative to balance out governmental budgets (Roseboom & Rutten, 1998). Neoliberalism promotes privatisation, deregulation, such as deregulated (ideally free) international trade, and decreased government intervention. In adherence to neoliberalism, the Dutch government reduced public expenditure and made extensive deregulation and privatisation efforts, including research institutes and their funding, which would continue into the 1990s (Roseboom & Rutten, 1998; Grin et al., 2004). The Dutch agri-food sector became embedded in the world market for two main reasons. First, the EU Common Agricultural Policy (CAP) was reformed in 1992 to make farmers more responsive to the world market and the public's changing demands (Meerburg et al., 2009). Second, the food system was globalised through the liberalisation of global trade and investments contracted in international trade agreements (Robinson, 2018). Agricultural products produced in the Netherlands are exported in high shares, while simultaneously products from elsewhere are imported (Meerburg et al., 2009). In the past, national and supranational (EU) policies had a direct and strong influence on agricultural practices in the Netherlands (Meerburg et al., 2009). However, the Dutch farmers and the government experienced a reduction in their power and influence, as they became increasingly subject to market pressures and corporate interests (Spaargaren et al., 2012).

Currently, the agri-food industry is highly productive and contributes greatly to the economy of South Holland with €4.8 billion in turnover in 2020 (Randstedelijke Rekenkamer, 2022). However, the current dominant food regime resulted in several undesirable consequences, exerting pressure on the system. First, the Netherlands attained the highest density of livestock in the world (Oudman, 2022). Among other negative effects, livestock farming contributes to substantial surpluses of nitrogen-rich manure, adversely impacting the Dutch ecosystem (RIVM, n.d.). In 2019, this culminated in the 'Nitrogen crisis', prompting the government to enforce stricter measures and restrictions upsetting the farmers at large (Stokstad, 2019). Second, the agricultural sector is a large emitter of greenhouse gases, contributing to climate change. Simultaneously, agriculture is vulnerable to the effects of climate change such as extreme weather conditions (Klimaatakkoord, 2019). The extensive use of pesticides and (artificial) fertilisers pollutes water bodies (van Gaalen et al., 2021). In South Holland, the horticulture industry boomed in previous decades, impacting water quality and carbon emissions (Jukema, 2019). Third, the intensive cultivation methods degrade soil fertility, lowering long-term agricultural productivity (WUR, 2023). Fourth, the intensification of agriculture and the use of chemical inputs contribute significantly to biodiversity loss (Brouwer, 2022).

Besides, there are multiple socio-economic impacts originating from the industrial food regime. Industrial farmers are stuck in an ongoing race of scale enlargement by replacing labour with capital (Meerburg et al., 2009). Farmers are experiencing rising production costs while the prices for their produce remain stagnant (van den Berg et al., 2018). Farmers invest in scale enlargement, mechanisation, and intensification to maintain income. To finance these investments, farmers issue more loans at the bank. In 2016, external capital accounted on average for around 31% of the total value of farms, and in 19% of the farms, external capital exceeded equity (van der Meulen & van Asseldonk, 2017). This places significant pressure on farmers to continuously maximise production while minimising production costs. Many farmers struggle to keep up with the ongoing pressure to produce at lower costs and eventually choose to stop. The vacant land is often resold to larger farmers in the vicinity (van den Berg et al., 2018). This is visible in the substantial 62% decline of farms in South Holland when comparing 2023 to 2020 (CBS, 2023), while agricultural land size has only decreased by approximately 12.2% during the same period (CBS, 2023). This trend is expected to continue as only a little over half of the lead farmers of over 55 years have a successor in South Holland (Randstelijke Rekenkamer, 2022). The youth no longer consider managing a large-scale farm an attractive career option. Additionally, the decline in individuals working in agriculture coupled with urbanisation trends and the globalisation of the food system has disconnected Dutch society from agriculture at large (Meerburg et al., 2009). In general, food has become an anonymous commodity as most people do not know or care about the origin and production process of their consumption (Gliessman et al., 2023). The modern diet is increasingly composed of processed foods rich in fat and sugar, products that industrial agriculture is particularly effective at producing, which are significant factors in the rise of metabolic disorders and obesity (Gliessman et al., 2023).

There has been a growing focus on agricultural sustainability in policy discussions at multiple levels in recent years (European Commission, 2020; LNV, 2023; PZH, 2020). Despite the increased attention towards sustainability, no major shift in the industrial food regime has occurred. Critics argue that current (inter)national policies tend to seek solutions within the framework of the industrial paradigm (Eisenmenger et al., 2020). This approach is evident in the response to the nitrogen crisis, where a significant portion of the allocated €24.3 billion for addressing the problem is reserved for technological innovations such as special stable floors and air-washers to mitigate nitrogen emissions (Oudman, 2022). These solutions have the potential to lower impacts in the short term. However, mere technological solutions are critiqued as they may prove disappointing in practice, fail to achieve sufficient emission reductions, perpetuate dependence on the current system, overlook related or underlying issues, and prioritise short-term gains (Oudman, 2022).

Changes in a socio-technical regime occur at a slow pace as system lock-ins and path dependencies stabilise the system and create resistance (Melchior, 2021). These lock-ins and path dependencies

have to be addressed to initiate the transition. To achieve fundamental and structural change, altering the underlying mindset or goal of a system is considered to have the greatest leverage (Meadows, 1999).

Agroecology as a Niche Development

Now the emergence of the dominant food regime, its surrounding landscape and pressures are discussed, it is time to introduce agroecology as the niche development in the MLP. Agroecology is a niche as it diverts from and challenges the dominant regime (Geels, 2011) but also aims to fundamentally and structurally reform the system rules, power relations, and governance (Elsner et al., 2023). Agroecology can be considered a unifying embodiment of other niche developments, such as permaculture and bio(dynamic) agriculture, that operationalise the vision of the concept (Silici, 2014).

The contemporary industrial food system has two main goals: the *maximisation of profit* and the *maximisation of production* (Gliessman et al., 2023). These goals should be altered to initiate a paradigm shift in the food system. Agroecology propagates a food system based on two main qualities: *Sustainability* and *social justice* (Gliessman et al., 2023). Agroecology utilises a broad definition of sustainability. Besides ecology, in agroecology sustainability refers to all desired aspects of society, including economic, social and cultural (Gliessman et al., 2023). Sustainability is a goal to be pursued in the present, not just in the future. To address the inequality in the industrial food system, agroecology stresses the importance of social justice (Gliessman et al., 2023). Social justice can be defined in various ways but generally refers to fairness in the distribution of rights, wealth, opportunity, power, and privileges. Besides sustainability and social justice, agroecology promotes resilience to (environmental and social) challenges, vibrant and prosperous communities, optimal human health, the realisation of human potential, and the reduction of conflicts (Gliessman et al., 2023). All these qualities are difficult to capture in a single phrase. In the words of Gliessman et al. (2023), agroecology aims to achieve a “just and sustainable” food system.

Transforming the food system from industrial to agroecological requires a fundamental paradigm switch and will be a tremendous challenge. To meet this challenge, proponents of agroecology approach the transformation on three fronts simultaneously. In other words, agroecology is a science, a set of agricultural practices and a social movement (Gliessman, 2018).

As a science, agroecology aims to enhance our understanding of the ecological relationships among domesticated agricultural species, their interactions with the physical environment (particularly the soil ecosystem), and their connections with natural systems. It utilises modern ecological knowledge and methods to develop principles for designing and managing sustainable agroecosystems (Gliessman, 2018).

As a practice, agroecology emphasises implementing effective and innovative agricultural techniques that meet current food needs while preparing for more sustainable systems in the future. It values the local, empirical, and knowledge of farmers and promotes the sharing of this knowledge, thereby blurring the line between the production of knowledge and its application (Gliessman, 2018). This approach reduces dependence on synthetic and harmful external inputs, whilst utilising ecological processes and ecosystem services to develop and implement sustainable agricultural practices (Wezel et al. 2014). Examples of agroecological practices include conservation tillage, crop rotation and fallowing, cover crops and mulching, crop-livestock integration, mixing crops in a single plot, integrated nutrient management, biological management of pests, diseases and weeds, and agroforestry (Silici, 2014).

As a movement, agroecology calls for significant transformations in how humans interact with food, the economic and social systems governing its distribution, and the ways food influences power dynamics among different populations, classes, and nations (Gliessman, 2018). The objective is to reshape agriculture to establish locally relevant food systems that enhance the economic viability of

rural areas through short marketing chains, ensuring fair and safe food production (Wezel et al., 2020). This entails supporting various forms of smallholder food production and family farming, advocating for farmers and rural communities, food sovereignty, local knowledge, social justice, local identity and culture, as well as the rights to seeds and breeds. (Wezel et al., 2020).

Agroecology in the Netherlands

The following section will discuss how agroecology is rooted in the Netherlands. This section is based on literature and an expert interview with Klarien Klingen, an agroecological farmer and a prominent figure in the Dutch agroecological movement.

Agroecology has taken root in the Netherlands over a decade ago. In the words of Klarien: “It (agroecology) is fairly new, it has only recently emerged in the Netherlands, let me put it that way. And it is growing rapidly”. Significant efforts are still required to establish a physical and cultural image of agroecology in the Netherlands. This image is slowly forming and becoming more clear. “I wouldn't say that it is rock-solid yet. But fortunately, it is slowly starting to root in the Netherlands” (Klarien, Toekomstboeren).

The scientific interest in agroecology is growing in the Netherlands. The University of Groningen has a research group recently established the research group ‘Agroecology & Sustainable Food Systems’ (RUG, 2024) The research group ‘Farming Systems Ecology’ of the Wageningen University & Research centres around agroecology (WUR, n.d.). Besides, there are individual researchers from various universities with an affinity for agroecology, who publish on the topic.

Agroecology unifies several overlapping agricultural practices in the Netherlands. These are circular agriculture, bio(dynamic) agriculture, permaculture, community-supported agriculture (CSA), pure graze, vegan agriculture, agroforestry, and nature-inclusive agriculture (van den Berg et al., 2018). All these agricultural methods use to a certain degree agroecological practices to become productive. There is also so-called ‘silent agroecology’, encompassing farmers who do not actively classify themselves but unknowingly utilise agroecological practices and principles (van der Ploeg, 2021).

The agroecological movement in the Netherlands is based on the 11 principles of Nyéléni (Klarien, Toekomstboeren). The principles were established through a democratic process with delegates representing diverse organisations and global movements of small-scale food producers and consumers that gathered in Nyéléni, Mali (Nyéléni, 2015). According to Klarien, every context is specific, making some more relevant than others. Hence, a translation to the Northern European context is being developed. Several of the interviewed agroecological farmers named the Nyéléni principles when describing agroecology. The political dimension of agroecology regarding the principle of ‘challenging and transforming power structure’ is especially key to the movement’s development (Klarien, Toekomstboeren). The pertinent lock-ins of the industrial food system need to be addressed to allow agroecology to grow. Furthermore, the principle concerning ‘autonomy’ plays an important role. “That means we, as producers, want to be able to choose how we produce and with whom we collaborate” (Klarien, Toekomstboeren). Moreover, agroecology strives for resilience “Because we produce a wide variety of crops and have numerous different sales channels, and because we interact with a diverse range of people and animals around us, we are stronger in the face of crises, such as the climate crises or the influences of powerful companies and supply chain disruptions ” (Klarien, Toekomstboeren)

There exist numerous different green organisations within agriculture. The agroecological movement’s role is to form alliances with these organisations (Klarien, Toekomstboeren). Through these alliances, the movement aims to effectively challenge the lockins of the current system. Around ten years ago, Toekomstboeren was established, the most one-on-one agroecological association in the Netherlands. Other organisations, while differing in strategy, have the same principles in mind. In 2018, the Federation for Agroecological Farmers was established. The organisations Toekomstboeren,

CSA-netwerk, Biotuinders, BioVegan-netwerk and the BD-vereniging (biodynamic) work together in a federation form to push the agroecological agenda. The agroecological network is a partnership between scientists, activists, NGOs and farmer organisations that was established around two years ago. The voice of the farmers, represented by the federation, is leading in the network's structure as agroecology is about food production. The vision and the guidance come from the farmers, while the other actors fulfil a supporting role.

Agroecology in South Holland

Mapping the presence of agroecology in South Holland is challenging due to its diverse nature. One notable project that deserves attention is 'de Voedselfamilies', which is supported by the province of South Holland. While it does not explicitly use the term "agroecology", de Voedselfamilies aligns closely with agroecological principles. This initiative aims to promote sustainable and equitable food production and consumption within the province. It brings together a range of stakeholders, including farmers, food processors, consumers, researchers, and policymakers. Key aspects of de Voedselfamilies include sustainability, short supply chains, innovation, collaboration, and the reinforcement of local identity (de Voedselfamilies, 2024).

Comparison of Industrial Agriculture and Agroecology

Now the dominant regime and the niche development are discussed, the main difference between them can be highlighted. Table 3 gives an overview of the key characteristics of industrial agriculture and agroecology.

Table 3. An overview of the key characteristics of industrial agriculture and agroecology (Adapted from IPES-Food, 2016).

Industrial Agriculture	**Agroecology**
Key Characteristics	
Monocultures of crops, involving the production of a limited selection of crops, are prevalent at both farm and landscape scales	Temporal **diversification**, such as crop rotation, and spatial diversification, like intercropping and mixed farming, are implemented across different scales: from individual plots and farms to entire landscapes.
The use of **genetically uniform varieties** or breeds primarily selected for their high productivity, broad adaptability to favourable conditions, and capacity to respond well to chemical inputs.	Employing a **wide variety of species** and less uniform, locally-adapted varieties or breeds selected for multiple purposes, including traditional uses, cultural preferences, taste, productivity, and other relevant criteria.
Vertical and horizontal **segregation of value chains**, such as separating animal feed production from animal rearing across different farms, value chains, and regions	Emphasis is placed on natural synergies and the **integration of various production types**, such as mixed crop-livestock-tree farming systems and landscapes.
Highly mechanised systems designed to save on labour in production.	Systems that require **more labour-intensive** methods of production.
Maximising yield or economic returns from a **single product or a limited number of products.**	Maximisation of **multiple outputs or products**.
Intensive reliance on **external inputs**, such as fossil fuels, chemical fertilisers, pesticides, and antibiotics.	Minimising external inputs by focusing on recycling waste within a **full nutrient cycling** framework and adopting circular economy principles.
Producing large volumes of homogeneous products intended for national and international markets, often through **long value chains**.	Production of a diverse range of products that are less uniform, often intended for **shorter value chains**. This approach supports multiple sources of production, income, and livelihood.

Chapter 2: The Barriers and Enablers to Adopting Agroecology in South Holland

This chapter provides an overview of the most important identified barriers and enablers for agroecology and their connections by the agroecological farmers. Figure 4 places the barriers and enablers in the Onion Model of Schoonhoven & Runhaar (2017). The barriers and enablers are categorised as economic, social, information, or policy and will be elaborated on in the rest of this chapter. The chapter is structured as follows: first, the barriers and enablers identified by the agroecological farmer are discussed; next, when relevant, the responses from the agricultural policymaker are presented; and finally, an analysis is provided by the researcher. This format will be applied to all identified barriers and enablers. As described by Schoonhoven & Runhaar (2017), the 'Onion' will be peeled from the inside out, starting with the farmers' context, progressing through the direct context, and ending with the distal context. The analysis will incorporate concepts from the MLP.

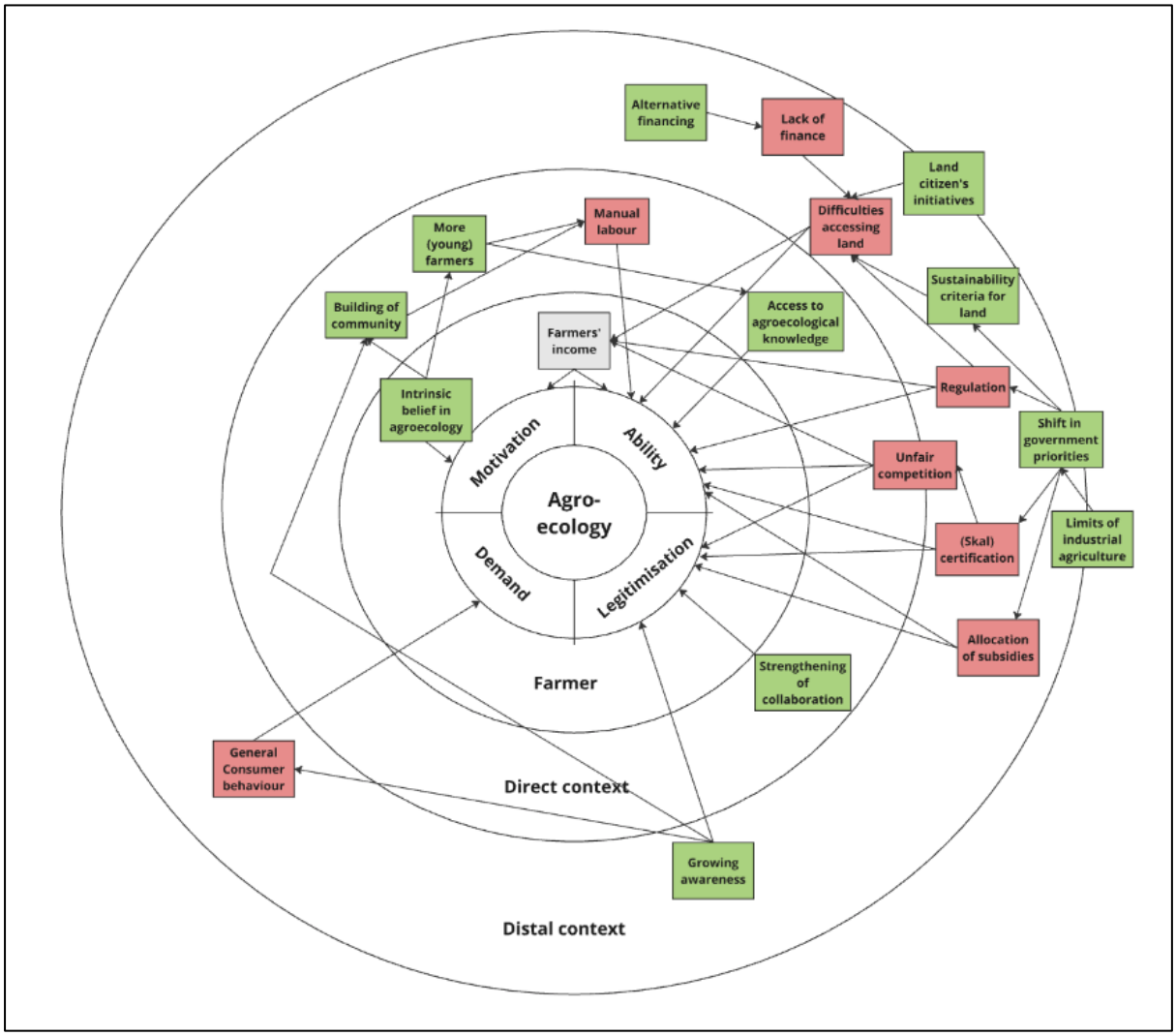

Figure 4. The most important factors impacting agroecology in South Holland, organised according to the 'Onion Model' (Adapted from Schoonhoven & Runhaar, 2017)

Introduction

The interview with the agricultural policymaker of the province commenced about her familiarity with the term agroecology, Laura responded she had not heard of it. “What I find very funny is that there are so many different definitions floating around. And this was yet another one... While it actually all boils down to the same thing... It's all about that transition to more sustainability” (Laura). The presence of many different terms hinders Laura and for some, it is not completely clear what is meant by them. She states “It would really help if there were one nationwide term for the whole transition to sustainable agriculture... It would be very beneficial for all of the Netherlands if we all used the same terminology and also had a shared vision of it”. Such shared terminology and vision would “help farmers anticipate” (Laura). It is important to note that (conventional) farmers often use different terminology than the government and these are not always perceived well. For example, “Circular agriculture often carries a negative connotation... The common perception is that if you make the switch to circular agriculture, it will be financially disadvantageous for the business”.

The province calls the interviewed agroecological farmers “the frontrunners” (Laura) as they already made steps. The province “has them in view” but focuses more on farmers “who have not made the step yet … and how to stimulate them” (Laura). “So we look much broader than just those front-runners” (Laura).

Farmer

Three barriers and enablers were identified in the farmers’ personal sphere. The personal context refers to the farmers’ internal thought processes.

Farmer’s income [Barrier, Economic]. A barrier that starting agroecological farmers face is generating a reasonable income. Bas, Erwin, and Remko have recently established their farm. “I have just started. I have currently 30 members. That is not enough” (Bas, Hazelland 10). “It generates by far not enough. But that's because this is a startup year” (Erwin, WIJdehortst). “Paying myself. That's still a bit of a challenge” (Remko, de Groentemeester). These starting farmers are now focussing on building a strong fundament. Afterwards, they are all convinced to generate a median income within a few years. Tactics to increase income are raising the number of members or vegetable packages and diversifying the income streams. “So, by stacking those revenue models, the turnover increases. I have also made a forecast for the coming years. And eventually, in economic terms, enough money should come out of it” (Remko, de Groentemeester). Bas (Hazelland 10), a CSA farmer, states: “People who can't make ends meet with this is it because they’re in a region with too few consumers ... If you're in the West and you have a sufficient number of consumers at a normal rate, then you can make a decent income from it”. Nevertheless, the low income of the starting years remains a barrier for entrant agroecological farmers.

Farmer’s income [Enabler, Economic]. On the other hand, the income of agroecological farmers can also be seen as an enabling factor when the farm is out of the initiation phase. David established ‘Kwekerij Ekologisch’ 17 years ago and is able to generate a respectable income for himself. Herenboeren was established in 2016 and is financially stable. “I think we have laid a good foundation. Now, we have about thirty farmers in our employment who simply run those farms”. Remko (de Groentemeester) & (Bas, Hazelland 10) want to show that you can also do it as a profitable business project “Because that offers perspective” (Remko). Industrial farmers understand agroecological farmers more when income is discussed. When talking to industrial farmers, Bas (Hazelland 10) has the following conversation: “How much do I earn from it? How much do you earn? How much do you have left at the end of the day? Ah, that. Then I do it smarter. And I don't have a bank. I don't have a mortgage with the bank. How much does your father have at the bank? What? Eight hundred thousand at the bank? Nice, isn't it? And if you take it over, how much does it cost you? Two million? Are you going to borrow two million euros from the bank? Then you're not free for the rest of your life. I am free. And oh yeah, I only work three days a week now. Your turn.

You know? And they understand that". David (Kwekerij Ekologisch) confirms that point: "Ultimately, when they (industrial farmers) realise you're making money from it, that does have an impact". The final opportunities could attract more farmers to adopt agroecology.

Intrinsic belief in agroecology [Enabler, Social]. Agroecological farmers oppose the grain of the global industrial agri-food system, posing ongoing challenges. Nonetheless, a profound commitment to agroecology serves as a strong intrinsic motivator for them. As Anne (Herenboeren) phrases: "There are countless technological solutions, but those won't be enough to solve the problem". The main reason for David (Kwekerij Ekologisch) is "because it is way more sustainable", Erwin (WIJdehorst) thinks it is "important we work towards a better food system", and Anne wants to make "a visible contribution to the agricultural transition". Another driver for agroecological farmers is to bring "production and nature together" (Anne, Herenboeren). With his CSA farm, Remko (de Groentemeester) wants to "show it is possible that your company can truly succeed". The mission of his farm is "To make people aware of living with the seasons, both with flowers and vegetables. To make sure that people know where it comes from, how it's produced, and that through the way you produce it, you can also take care of your environment. Instead of depleting it, so to speak. And that's the connection we're looking for". Additionally, Erwin (WIJdehorst) wants to demonstrate "that it's possible to cultivate nature-inclusive vegetables, fruits, and herbs alongside hospitality. So, inviting people to your land... Providing a rich experience of nature and nutritious, healthy food". After her university studies, Klarien did not want to tell other people what they could do better, especially since many of these problems were caused by Europeans. "So, as a European in Europe, I wanted to try to contribute in my own small way" Klarien (Toekomstboeren) said. The presence of this intrinsic belief in agroecology will play an important role in keeping the engine of the agroecological movement running.

Analysis

Agroecology provides a completely different vision of agriculture and the food system than the dominant regime, industrial agriculture. Numerous changes need to occur for this alternative vision to actualise. The intrinsic belief in agroecology can serve as the fuel for the agroecological movement in the Netherlands to create internal momentum of the niche. However, mere motivation is insufficient to move agroecology towards the new dominant regime. In the initial stages, agroecological farmers often find it challenging to generate a reasonable income. However, as these farms mature and establish a solid customer base, they tend to offer a secure and respectable income. Direct sales ensure that profits go directly to the farmer, bypassing powerful upstream actors in the supply chain. These business models with short supply chains have potential in the densely populated South Holland, destabilising the industry dimension of the dominant regime. Furthermore, the lower capital intensity of agroecological farms results in fewer or no bank loans. Unlike industrial farmers, agroecological farmers face less pressure from debt, which grants them greater freedom to adapt and change. Additionally, the mission of agroecological farms goes beyond generating profit. Agroecological farmers aim to integrate nature and production to raise awareness about the importance of sustainably cultivated food, gradually shifting the culture and user preferences of the dominant regime.

Direct context

The direct context consists primarily of opportunities for agroecology, with four enablers and merely one barrier. The direct context encompasses elements encountered by farmers in their daily activities.

Manual labour [Barrier, Social]. Agroecological farming practices require more manual labour than industrial farms. "Less mechanisation generally means you have also more labour" (Anne, Herenboeren). Although most interviewed agroecological farmers are able to do the work themselves or pool the required labour from volunteers or harvest members, some mention the high manual

labour demand as a barrier. “You simply have to hire professional labour” (Anne, Herenboeren) if the voluntary capacity is not enough. However, “Wages, labour is expensive” and “You need diversity in the people working for you” (David, Kwekerij Ekologisch). David especially foresees a workforce shortage for the upcoming organic and protein transition: “If you want to have 15, 20, or 30 per cent organic farming in the Netherlands, the province of South Holland still has a lot of work to do. Especially if we also need to achieve a protein transition. Then two-thirds need to be crop agriculture. It's a transition within a transition. Don’t forget that. And then we will need so many more hands. Or a few robots that can weed, sow, plant, pixel farming. I don't know. But the first robot that harvests cucumbers or picks tomatoes has yet to be invented. And we've been working on that for 30 years”. To transition towards agroecology, the potential for manual labour should be increased, by more farmers or more volunteers.

Building of community [Enabler, Social]. The significance of agroecology goes far beyond just food production. In the words of Anne (Herenboeren): “Ultimately, it's about people, it's about culture, it's about connectedness. There are many important societal issues at play, which are not only about whether or not you produce food sustainably but actually ask much more”. Anne gives an example of such a societal issue: “The growth of loneliness among people and seeing that something as wonderful as a farm can result in enormous social and voluntary involvement, yes, that is very special. And I think that everything you can do in that regard, with food, is also very beautiful”. Remko (de Groentemeester) tries to achieve the same community feeling at his CSA “In the season ... we organise all sorts of events. With that, we try to attract as many people as possible”. These activities help create awareness concerning food and mobilise volunteers to help with farm work. Anne (Herenboeren) is confident in the enthusiasm for the concept of Herenboeren: “At the moment, we have about 30 to 35 groups spread throughout the Netherlands saying we would want to have a Herenboer farm. So, there is still sufficient interest in that regard, yes”. David (Kwekerij Ekologisch) plans to increase the number of people volunteering by providing “discounts on groceries” and “senior daycare” in the future. The involvement does not have to be so direct. “If you prefer to have your groceries delivered, that can also be sustainable and local” (Anne). The building of this community feeling and localising the food supply chain impact the relationship between farmers and consumers. As David (Kwekerij Ekologisch) phrases: “Not for the world market. No, for the local market. And then you also regain the respect of the farmer and respect for the farmer”. The building of food communities could ignite the fire of agroecology and attract more customers and volunteers.

More (young) farmers [Enabler, Social]. Agroecology pledges for more farmers to achieve a sustainable food system. As Klarien (Toekomstboeren) states “There is a sort of strange illusion in the right-wing BoerenBurgerBeweging (BBB) that they are defending the sector. But what they are really defending is scaling up even more, which in principle causes many people to go bankrupt and find no successors. And we are very much in favour of having more farmers”. Although farming as occupancy has become less popular among young people over the past decades, there is a growing group of individuals who want to become agroecological farmers. “The Warmonderhof (bio-dynamic agricultural school) currently educates about 30 to 40 people per year, all of whom are potentially young farmers. Just look at that” (Bas, Hazelland 10). Agroecology has the potential to attract more workforce to the agricultural sector.

Access to agroecological knowledge [Enabler, Informational]. Agroecological farming practices require specialised knowledge to become productive whilst excluding synthetic inputs. According to the interviewed agroecological farmers, there are plenty of ways to acquire this knowledge. All farmers mentioned that experience is key to agroecological farming. As David (Kwekerij Ekologisch) states: “I think that three-quarters, maybe even 80%, is just experience, experience, experience”. Furthermore, The internet is mentioned as a useful information source. “there is a lot to find on the internet” (Erwin, Wijdehorst), “a lot of Google” (David, Kwekerij Ekologisch), “YouTube videos of all kinds of farmers around the world” (Remko, de Groentemeester). Besides, books such as “De moestuin bijbel by Nauk” (David, Kwekerij

Ekologisch) and “Het handbook van moestuiniers by van Veld” are mentioned as valuable sources educational resources. To speed up the learning process, Remko, Erwin and Bas have followed the Warmonderhof (biodynamic school). The Warmonderhof “has been my greatest source of information” for Remko (de Groentemeester). One of the most useful is the community support among alumni of the Warmonderhof. “I'm in an app group with almost all Warmonderhof students. There are nearly five hundred people. A lot of knowledge is shared there. Yes. And I just have to ask a question, and I get three answers immediately” (Erwin, WIJdehorst). The availability of agroecological knowledge and the presence of a community of practitioners can function as an important lever in the adoption of agroecological practices.

Strengthening collaborations [Enabler, Social]. Agroecology is relatively new to the Netherlands. There is a general sense among the Dutch population that the BBB represents the farmer. Bas had the following talk with a stranger: “Oh, so you are a farmer. I (stranger) have voted for you. I think, yeah, not for me”. Consequently, “we also need to make a different voice heard. Right now, we are all in very small clubs” (Bas). Bas voices the importance of strengthening collaborations: “In the larger narrative, such as sitting around the table with The Hague, we are currently too fragmented. So, we really need to bring that together more... Lobbying in Brussels is also absolutely necessary”. Strengthening collaborations is what Toekomstboeren and other agroecological organisations are working towards. “We have collaborated extensively. It is very good and necessary that there are ... all these greenish clubs. But to truly challenge capitalism and power structures, forging strong alliances with social justice organisations is crucial. They are not doing that. So, that is what we need to do, and what we are working on” (Klarien). Bundling the powers of green agriculture organisations under the numerator agroecology will help strengthen the voice of the movement.

Analysis

The operationalisation of agroecology requires a shift from heavily mechanised farming practices to more manual labour. Technology can still play a role in agroecological farming but should not rely on fossil fuels and suit diverse agroecosystems. Currently, most investments in technology are directed towards highly specialised technologies designed for monocultures. Shifting the focus to technology suited for agroecological farming could help break the path dependency of the technological dimension of the dominant regime. However, these technologies are not yet widely available necessitating more manual labour. The upcoming organic and protein transition, requiring even more manual labour, generates landscape pressure that can provide agroecology with a window of opportunity. More farmers in the agricultural sector enables them to act as better stewards of the land, increasing the sustainability of farms.

On the one hand, the increasing demand for manual labour could be satisfied by the growing number of food communities formed through agroecological formats. Through voluntary work, members of these communities connect with the food and each other. This connection could help solve other important societal challenges, such as loneliness, but requires an integrated approach by policymakers to support it. The established culture around food through agroecology could create mutual respect for farmers and customers. Consequently, the culture of the dominant regime changes and the market for agroecological products increases.

On the other hand, the rising demand for manual labour could be met by an increase in agroecological farmers. Contrary to the trend in industrial agriculture, which predicts a decline in the number of farmers, there is a growing group of (entrant) farmers who seek to adopt radically different practices. These farmers should have the opportunity to start small-scale farms or join existing projects. More farmers would result in better land stewardship, as greater care could be given to the land.

Agroecology requires specialised and localised knowledge. Fortunately, there is a wealth of knowledge about agroecological farming within the community, globally and locally. The expansion of the agroecological community and the peer-to-peer sharing of their expertise could influence the

educational dimension of the dominant regime. To gain novel knowledge, farmers should be able to experiment. Experimentation takes time and brings risks. Farmers should be supported by innovation subsidies that allow for real experimentation. Agroecological principles could be incorporated into the curriculum of conventional agricultural schools to further increase the number of sustainable farmers.

There are several niches regarding sustainable agriculture in the Netherlands. The voices of these separately are not loud enough to challenge the dominant regime. Agroecology can align the multiple niches and establish a dominant design to increase the internal momentum. As a result, more influence can be exerted on national and European politics.

Distal context

Most of the identified barriers and enablers occur in the distal context. In other words, these factors lie beyond the direct influence of farmers and can be considered systematic.

Difficulties accessing land [Barrier, Economic & Policy]. To be able to start farming sustainably, you need agricultural land. However, almost all interviewees mentioned access to land as the greatest barrier to agroecological farmers. “I hear that many farmers are searching for a piece of land” (Erwin, WIJdehorst). This barrier consists of two parts. First, the *price of agricultural land* is high in the Netherlands. Anne (Herenboeren) explains: “Land is scarce in the Netherlands. There is a lot of pressure on space. A lot of pressure on agricultural land, which leads to a lot of speculation. So what you see is that land prices, well, in the past decades, have skyrocketed ... and that means, of course, that land is very expensive”. Agroecological farmers work primarily outside the conventional economic system and are therefore less able to buy or lease land for these high prices. Second, *short-term lease contracts* are prevalent in the Netherlands. An explanation for the prevalence of short-term contracts is outdated lease legislation. “The lease legislation in the Netherlands is from the 19th century and does not align well with contemporary contracts. So, it is not worthwhile for parties to enter into a regular lease contract because you have to ask for too little rent and you can never get rid of the other parties. This means it is always worthwhile for lessors to enter into short-term contracts. And that is not interesting for us, because we are going to invest in the place, in your soil, and so on” (Anne, Herenboeren). Other farmers also mention the importance of long-term contracts. “If you want to have a somewhat ecologically sustainable or biodynamic system, you simply need a minimum of 5 to 7 years” (Kwekerij Ekologisch). “You want to invest in the soil life. That takes a few years and is not immediately paid back” (Klarien, Toekomstboeren). Besides building up the soil life, Remko (de Groentemeester) stresses that long-term lease contracts enable farmers to build on their income security. Furthermore, Remko (de Groentemeester) stresses the importance of importance of *long-term urban farming projects*. “If you want people to do more about how their environment looks, to bring out the green in people, the climate friendliness, the smartness about their food, it is necessary to bring it close to people. The supermarket is around the corner, very convenient. These kinds of places (urban farming projects) should be also made on the corner” (Remko, de Groentemeester). The government appoints fallow plots primarily temporarily. Remko (de Groentemeester) argues “No, designate those places and ensure that you can really work on them for a long time ... You don’t need a lot of space. On 0,5 or 0,3 you can already do something”. To sum up, the price of agricultural land should drop and the lease terms extended to give space for agroecological farmers.

Lack of finance [Barrier, Economic]. It can be a challenge to finance agroecological projects. Agroecology is new and financial institutions are hesitant to invest because of the perceived risks. Although Herenboeren is now financially stable, they “still had quite a challenge to secure investments a few years ago” (Anne, Herenboeren). More recently, Erwin needs to raise substantial funds to continue. However, conventional loans at a bank are not attractive because “The interest burden and the risk of this business would already be quite challenging with a bank. The interest rates they ask significantly impact the finances and cash flow”. Financing should be made more accessible to agroecological farmers to allow the growth of agroecology.

Alternative financing [Enabler, Economic]. However, there are alternative ways to finance agroecological projects emerging and small-scale farms only require low investments. Erwin (WIJdehorst) tries to "raise a loan from an informal investor but at a much lower interest rate. So, it's more about goodwill that I'm asking for. And that the additional return they would normally expect goes directly into biodiversity". However, these private funds are limited. Furthermore, initiatives to finance land are emerging, in which capital is raised through obligations. Herenboeren has "established the land foundation Aardpeer" and developed "A solid collaboration with ASR, which is one of the largest institutional investors with a significant portfolio of land, and they also have a sustainable ambition" (Anne, Herenboeren). The two CSA farmers did not need bank loans because of the low required investments. "The capital I raised from harvest members, along with a small amount of money I had already accumulated from my previous business, allowed me to start. So, I didn't need a loan from the bank" (Remko, de Groentemeester). "I don't need to go the bank. I just loaned myself once a bit of money" (Bas, Hazelland 10). The emerging alternative financing methods and the low required investments enable agroecological farmers in their practices.

Land citizen initiatives [Enabler, Social]. Concerning the struggle to access land, Aardpeer, Land van Ons, Lenteland, Stichting Kapitaloceen are organisations where farmers and citizens come together and create solutions. These organisations raise capital to remove land from the free market and allocate it to agroecological farmers. According to Klarien (Toekomstboeren), "these initiatives display the resilience and creativity of society … but also show the failure of the government to give space to sustainable agriculture".

Shift in governmental priorities [Enabler, Policy]. The government has to shift its priority from "never hungry to never sick" (David, Kwekerij Ekologisch). According to David, the government should stop "thinking in big, big, and big" but instead "look at what is sustainable for the next 30 to 40 years, not for the next two, three years". Klarien (Toekomstboeren) observes that "everything is very much focused on conventional and on the old-fashioned farming methods" and considers governments and institutions to be an "opposing force" in the agricultural transition. The government focuses on technological fixes instead of system change. David gives an example "On paper, a Combined Heating and Power (CHP) is extremely sustainable. But we don't need heat to produce food. Right?". Concerning agroecological farming, the government should shift "what is not possible to what is possible" (David, Kwekerij Ekologisch). "They (government) really want to preserve how it has always been. While there's also a future to consider. The Netherlands really needs to plant many more trees, improve soil organically, and increase the resilience of soil and crops so that we can continue to grow. Without pesticides and artificial fertilisers. And it hasn't quite landed yet that you also need help from provinces" (Erwin, WIJdehorst). This shift in priority could have an amplifying effect on the transition towards agroecology.

Sustainability criteria for land [Enabler, Policy]. "The Province of South Holland still has quite a bit of land in its portfolio" (Anne, Herenboeren) which could be valuable land for agroecological farmers. "Lease lands owned by government agencies must be publicly tendered. So anyone can participate... It sounds fair ... And according to the Didam ruling, it is possible to establish sustainability criteria. According to the law, they can simply state that on this land, no spraying is allowed. On this land, only so much nitrogen is permitted. After that, people can publicly bid on those lands with those criteria known" (Klarien, Toekomstboeren). These public tenders are good for "transparency" (Anne, Herenboeren). However, you see that "those sustainability criteria are not given or they are in favour of conventional" Klarien (Toekomstboeren). As David (Kwekerij Ekologisch) phrases "No, it's about money. And whoever offers the most, gets it. Not the one who treats the soil best". However, that is not always the case. "In Enschede, it was simply awarded through a public tender, but because Herenboeren scored so well on all those sustainability and social criteria... Even though there were a hundred parties that submitted bids" (Anne, Herenboeren). Anne noticed that "Provinces are really looking for better societal and sustainability criteria". The

development of good sustainability criteria for land tenure can help agroecological farmers access much-needed land.

Response Agricultural Policymaker

When asked about the barrier access to land, Laura responds: “We recognise the problem you are describing”. Land to buy or lease is “actually too expensive” (Laura). She explains: “That has partly to do with the fact that leases are always put on the market. So, you have to go through a public tender process. Some governments then say whoever pays the most gets it. That’s not always the case, but it is sometimes”. As a reaction to the questions about the land in ownership of the province, Laura answers: “You say the province owns a lot of land. I doubt that a bit. Or at least not that much. When I look at all the leased land in South Holland, we are actually a small player. We don't have that much. We have about a thousand hectares of land that we lease out without any specific policy goals attached to it”.

The province primarily leases land short-term “because leasing is not a means to an end” (Laura). The province often leases land short-term to be able to sell it later again or give another function. “We have a land bank where those lands are temporarily placed to assess where we can eventually utilise them. This isn’t limited to agriculture alone” (Laura). Leasing is considered an “intermediate solution” and “so you don’t allocate for the long-term (Laura). There are discussions about this topic within the province as they recognise the problem. “We (the province) lease small plots of land for one year. So that provides absolutely no security at all. Therefore, we are discussing whether it can be made long-term. In that case, it would be for a maximum of six years. Longer than six years becomes very difficult for us, because then you fall under a different lease regime” (Laura). To be able to lease land long-term, “We first need to have our policies in order” (Laura). Laura believes long-term leasing by the province will come but it needs time.

Concerning urban agriculture, the province is “enthusiastic” and “it’s something that we strongly support” (Laura). Laura mentions possibilities to support urban agriculture in accessing (long-term) land. The province could protect initiatives by designating those plots as agricultural land in the ‘omgevingsverordening’. “Then, it becomes land that is no longer suitable for other purposes” (Laura). However, the plots suitable for urban agriculture are “incredibly sought after. Everyone is competing for them. Also housing development, recreation, and nature preservation” (Laura). Another possibility for the province to help urban agriculture initiatives is financial. “There should be somewhat of a financial compensation from the province to establish these initiatives well. An that’s not there yet” (Laura). There a some subsidies for individual initiatives available but Laura questions “Whether they can find the right path with us”. The provincial policy toolkit is not equipped for it yet.

When asked about sustainability criteria on provincial land, Laura replies: “We do indeed have criteria when we lease land. It somewhat depends on the location of the plot. For instance, if a plot is in the area or on a meadow bird area “we prescribe no genetic pesticides, no synthetic fertilisers, and require organic certification to qualify. These types of elements are often included in the lease conditions” (Laura). However, these sustainability criteria are applied more for other reasons, such as nature preservation, and “Not so much from the perspective of the farmer's interests” (Laura).

To solve the problems concerning access to land for agroecological farmers, Laura concludes: “Different parties must collaborate. So, we also need to collaborate with ‘Staatsbosbeheer’, ‘Natuurbeheer’, and other landowners. Together, we need to establish common rules. Yes, but we're simply not there yet”.

Analysis

The province recognises the identified barrier to accessing land. Several solutions are outside the power of the province. Modernising the agricultural lease legislation to make regular (long-term) lease contracts more attractive is not within the jurisdiction of the province. Additionally, the province

has little influence on reducing the price of agricultural land. Besides, the financial institutions lack the incentive to finance agroecological farmers. Here again, the province is not able to influence this barrier. These systemic factors inhibit agroecological farmers from accessing land at large.

Nevertheless, there is slow momentum building within the niche that tries to destabilise the dominant regime. The lower required investment for agroecological farms gives an advantage over capital-intensive industrial agribusinesses. Furthermore, alternative methods of financing are emerging but these still rely primarily on idealism. Moreover, active citizens are currently experimenting with innovative solutions to access land. It is important to recognise that these initiatives emerged not due to policy support but out of dissatisfaction with the current system.

Currently, the policy dimension of the dominant regime is designed to support industrial agriculture. This dimension slowly starts to destabilise. Understandably, the province has to balance the interests of various stakeholders. However, if the province wants to accelerate the food transition and tackle its various challenges, a shift in provincial priorities is required. This shift in priorities could spark resistance. Hence, it is important to vocalise the necessity of looking beyond technical solutions and promoting system change. The province leases its land primarily for the short term as it is seen as an intermediate solution. There is an internal discussion around the topic. Advocate in these discussions the importance of long-term affordable lease contracts and the implementation of good sustainability criteria. These criteria should be centred around the agroecological farmers' interests as those are in line with nature preservation goals. Sustainability criteria are already present in public tender processes for plots close to meadow bird areas. The introduction of these kinds of sustainability criteria for all lease contracts can provide access to much-needed land for entrant agroecological farmers and impact farmers' income in general. The successful tender of Herenboeren in Enschede could serve as an example. Although the province owns a relatively small amount of land, a thousand hectares already provides many (young) agroecological farmers with the opportunity to start small-scale sustainable farms. Plots close to close to residential areas are especially valuable to reserve for urban agriculture projects to enhance awareness and local markets. The agricultural policymaker recognises the importance of such projects. However, these plots are highly contested due to their popularity. The agriculture department could spread awareness of the importance of urban agriculture within the province through information sessions. Several pilot projects should be initiated to prove the effectiveness of urban agriculture. Moreover, the province can play a facilitating role in coordinating landowning organisations to establish common lease rules, thereby providing a more structural solution.

Regulation [Barrier, Policy]. The farmers mention a multitude of regulatory barriers. These will be highlighted in the next paragraphs.

First, Although there is understanding, several agroecological farmers consider the **government too reactive**. "In my opinion, the government is very reactive. And that is understandable because it is very complex" (Anne, Herenboeren). "You can't blame the government for that, because policy always naturally lags behind reality" (Bas, Hazellad 10 & Klarien, Toekomstboeren). However, the reactive attitude slows down the transformation. "The pace, in my opinion, is not fast enough. It seems that a sense of urgency is sometimes lacking" (Anne, Herenboeren). For example, the vision in the area of farmer Bas (Hazelland 10) is outdated and does not allow for a zoning plan change (bestemmingsplan). However, the development of the new vision is already four years behind. He argues "Let's use a temporary solution through a 'kruimelregeling' for five years. In that, you can do reversible things ... But don't immediately start saying, yeah, we haven't finalised it yet, so you need to go now". Bas (Hazelland 10) states: "We are the frontrunners, so we naturally always take the hits in that sense. So that's pretty crappy. Try to be a bit more lenient for once … let's just start first". The government should not cling to the past but have its eyes on the future.

Second, **strict spatial ordinance** hinders agroecological farmer from attaining the required zoning plans and permits to run their business effectively. There is an understanding, "Spatial planning in the

Netherlands is just very difficult. You see a lot of layering of many regulations, all with the best intentions. And it's logical too, because, yes, we have a lot of people and little space, so you quickly get in each other's way. But it does mean that sometimes adding new things is, well, difficult" (Anne, Herenboeren). As a consequence, agroecological farmers are not allowed to diversify their activities which is crucial for their financial sustainability. As a farmer says: "What they (the government) should encourage is that, as a farmer, you are allowed to engage in a variety of activities to run a profitable business. I cannot live on vegetables and herbs alone. No, I would also like to be able to rent out the shed. And I would also like to create a pick-your-own garden. And I want to have a shop and a café. And perhaps even facilitate agritourism" (Erwin, WIJdehorst).

Third, agroecological farmers frequently struggle with attaining necessary **permits**, especially when it comes to small non-heated greenhouses. Here again, there is some understanding. "The dilemmas that such a permitting process encounters, I'm not saying, oh, well, I think it's really stupid or something, I understand it because it's simply a matter of weighing the final interests. Yes, from my perspective, the importance of producing sustainable food is somewhat greater or higher than whether something else is beautiful or ugly" (Anne, Herenboeren). Bas (Hazelland 10) states the importance of greenhouses: "For our small-scale farm, a greenhouse, it doesn't have to be a very large one, is simply essential for the food transition". Agroecological farmers stumble into "a grey area" (Anne, Herenboeren) in the permit application. Sometimes municipalities are willing to help and in other places, farmers run up against limits. Herenboeren can afford the costs of the comprehensive planning process, while for individual farmers it is often more uncertain whether they actually get the permit.

Fourth, **the cultural-historical view of meadows** hinders certain agroecological practices. The province and municipalities have decided that they want to keep the openness and sightlines of the meadows. As a result, "You can't just set up a forest there. And certainly not a food forest. Or at least, you can't build vertically there" (Erwin, WIJdehorst). Remko (Groentemeester) states: "In my opinion, there is far too much attachment to that cultural-historical value. It's an image from 1850 that people cling to desperately when we should be moving forward". Remko (de Groentemeester) advises the province to allow and "pilot project" and protect them from complaining neighbours. Clinging to the past inhibits the transition towards more sustainable farming practices.

The fifth obstacle for agroecological farmers is the **separation between agriculture and nature**. The agroecology expert understands "where it comes from on paper", however, "But in practice, it means that we keep people away from nature. And that is something we label as nature. To protect species. And by doing so, we actually encourage other areas, which we then call agricultural land, to be polluted without restraint… we need to get away from that separation thinking" (Klarien, Toekomstboeren). By incorporating nature into agriculture and agriculture into nature, a "win-win" (David, Kwekerij Ekologisch) could be created. Erwin (WIJdeland) experiences this separation thinking as restricting: "To ultimately run a nature-inclusive agricultural business. And nature-inclusive means a lot of biodiversity, but also that it can be profitable there. And not just on agricultural activities".

Lastly, David stresses the importance of **enforcing environmental regulations**. He mentions that livestock, horticulture and other industries frequently exceed environmental regulations but are not fined. "Yeah, I just can't accept that. So then the government, they have to enforce it. Guys, this is not acceptable. This must not happen. Here a fine" (David, Kwekerij Ekologisch). Instead of reacting to complaints, David pledges a more proactive stance by the government in enforcing environmental regulation.

Response Provincial Agricultural Policymaker

The province's reactive stance might be attributed to the ambiguity surrounding its role in the agricultural transition. Laura admits "That we (the province) are sometimes searching for our role" in

the agricultural transition. “We have actually several roles” (Laura). On the one hand, the province has a supporting role as they facilitate the ongoing ‘gebiedsprocessen’. On the other hand, the province has more of an executive role. “for that, various policy tools still need to be developed. A lot of it is mainly subsidies, but also research. We are also very much focused on knowledge development. Besides, we are developing policies” (Laura). The transition in South Holland is particularly challenging due to the province's dense population, creating “tensions” (Laura) between housing and agriculture. “So that role is not just one role. There are many different roles and many different interests that we are working on. And it is not always very clear what exactly the task is. That makes it extra complex” (Laura).

The province has land with a nature destination and land with an agriculture destination. “So, on one hand, that formally, it's separated. It's either nature or agriculture, formally. But at the same time, you see that informally, this separation is becoming less clear, even in agricultural land. So, we also pay a lot of attention to improving biodiversity on agricultural land”. When asked about introducing a new category of agriculture with nature, Laura responds: “We want to do that. But it costs a lot of money... That means you have to depreciate those lands. Because they become less valuable for the farmer. The yield is also different. And that requires money. And that is not yet available nationwide”.

The recreational areas in South Holland are under pressure. There are too few recreational possibilities for all the people living here. “Agriculture could represent a very interesting recreational function” (Laura). “Recreation and agriculture can often coexist very well in rural areas. However, this happens limitedly ... Such integrated thinking is not yet commonplace, but it is increasingly gaining momentum (Laura).

When an agroecological farmer wants to place a small-scale greenhouse, the zoning plan is the major barrier. Zoning plans are set by the municipalities. “It's mainly the municipality that decides here, not the province. As a province, we do have frameworks in place, and these are meant to maintain the physical living environment. So, these frameworks are not focused on what is important for the farmer, but more on the rural area—how do we keep it attractive? But within our frameworks, quite a lot is possible” (Laura). However, “We have cleared away many scattered greenhouses in the past” (Laura) because of the degradation of the landscape. “And so, we now also have in our environmental assessment that no scattered greenhouses are allowed” (Laura). The province recognises the importance of small-scale greenhouses for agroecological farmers. “This topic is currently under review with us” (Laura). The province has to make a trade-off between the appearance of the rural areas and the needs of small-scale farmers. “With our next (policy) revision, that will be adjusted. And if all goes well, as the discussions are ongoing, we plan to allow small-scale greenhouses” (Laura). In that case, small-scale greenhouses will be on the farmyard, which is a maximum of two hectares. However, Laura adds: “Don’t see it solely as a matter of the province. Municipalities are often very cautious as well. While provincial regulations allow for quite a bit, municipalities tend to be quite hesitant”. She mentions two explanations for the municipality’s hesitant stance. The municipality is “afraid of complaints from neighbours” and has its main focus on the town centres and “less on the rural area” (Laura).

When asked about the cultural-historical view, Laura responds: “The province does want to preserve the open landscape as much as possible”. The reason is that “We believe that the polder landscape has significant scenic value in South Holland” (Laura). To preserve this scenic value, the province outlined guidelines for the landscape quality that municipalities should adhere to. The municipalities assess whether it fits within these guidelines and are checked by the provincial spatial planners. “There is often a discussion between the two civil servants about whether this is still desirable within such a polder structure … You simply don't want (tunnel) greenhouses everywhere. It really depends on the specific situation” (Laura). Laura reacts to the notion that the province clings to the past instead of looking at the future as follows: “That's somewhat true. They do have a point. Okay. We are very much committed to that polder structure, you know, the polder structure as it originated in the past”.

Analysis

There are systemic regulatory barriers in the policy dimension within the power sphere of the province that hinder agroecological farmers and perpetuate the dominant regime. A shift in governmental priorities could help alleviate these. The agroecological farmers would appreciate the proactive stance of governmental bodies that support their practices. The regulatory frameworks set in place by the province focus on maintaining the physical living environment and not what is important for the (agroecological) farmer. Although quite much is possible in these frameworks, too often agroecological farmers struggle to acquire the required permits and zoning plans from the municipalities. Understandably, the province and municipalities have to balance the interests of various stakeholders. However, the transition to a more sustainable food system should be a high provincial priority to ensure long-term food security. The attractiveness of a landscape is subjective and can evolve. Compared to expansive monocultures, a small-scale greenhouse or a multifunctional farm might enhance the landscape's value if well placed. 'Kruimelregelingen' could ensure that frontrunners can experiment with reversible actions while new visions are developed. The diversification of activities is crucial for the financial, environmental, and social sustainability of agroecological farms.

The social nature of agroecological farms can help the province create much-needed recreational activities in South Holland. An integrated approach could help the province fulfil its various roles and allow recreation and agriculture to coexist. The coexistence of the two could stimulate the growth in awareness and help build communities around food. This approach could reduce the gap between urban and rural areas, enhance the respect for farmers, increase direct sales and tackle other societal problems. Consequently, the increased urban-rural connection could help agroecological farmers access (voluntary) manual labour and enthuse the younger generations for the occupations of farming.

The cultural-historical view is set in place to preserve a landscape ideal from previous centuries. An alteration of this view should allow sustainable agricultural practices such as agroforestry, while maintaining their essential value. A long-term vision of open meadow areas could help guide the process of developing a future-proof cultural-historical view. The cautious position of municipalities could be reduced by active provincial support of pilot projects and more collaboration between the two governmental bodies. The province indicates their focus on knowledge generation. Scientific studies proving the effectiveness of agroecological practices could justify the province's supportive position.

The formal separation between agriculture and nature disadvantages agroecological farmers as they standardly incorporate nature in their agroecosystems. Comprehensively, the associated costs hinder the government from depreciating these lands. When financial means become available, agricultural land around Natura2000 areas should first be transformed into a third category 'agriculture with nature'. Furthermore, the environmental regulations should be more rigorously monitored and enforced to ensure industrial farmers do not exceed permissible levels. This will undermine the legitimacy of the industry dimension within the dominant regime.

The gap between farmers and the government [Barrier, Policy]. Several interviewed farmers stressed the gap between farmers and the government as a barrier to supporting their practices. According to them, policies, laws and regulations do not align with the reality in the field. Klarien (Toekomstboeren) phrases it as follows: "There is a very fundamental, systemic gap between the office and the field. And that is also what conventional farmers face. They feel misunderstood, unseen, and unheard by the people who make decisions in offices". It touches her that civil servants at the office, with the best intentions, sometimes come up with measures that not only are outdated but often also unrealistic. Someone working in the field would immediately see whether a measure would work. Currently, the farmer is seen as passive and waiting to be helped. This "should be turned around" according to Klarien (Toekomstboeren). David (Kwekerij Ekologie) advises civil servants to

go to the farmer. “Call the farmers. Hi, do you have an idea for your business? … They all have an idea” (David, Kwekerij Ekologie). To add some nuance, it depends on the civil servants. For example, Remko (de Groentemeester) “had an appointment at the town hall with several people. Somen of green and someone of permits. We put our heads together”. Another example of a successful bridging of the gap is given by Bas (Hazelland 10) “A landscape architect from the province, all difficult, difficult, difficult. Then he came here, and I explained what we were going to do, we were going to feel it too. So we walked over here, and we looked around. In the end, he drew up a plan. It’s 100% our plan. It's great that he thinks it's his plan. But initially, he was sitting behind his desk, received that report, and said no. Even though he hadn’t seen it at all”. The gap between farmers and civil servants should be bridged to allow for more streamlined policymaking.

Response agricultural policymaker

Laura recognises the gap between (municipal) civil servants and farmers as a hindering factor as well. “It's not always about restrictive regulations. Sometimes, it's also about communication. If farmers and the municipality can sit down together and make good agreements, that's key. However, it's often challenging to engage with the municipality in an open dialogue and get a seat at the table. So, solving the issue isn't just about changing rules. It's also about finding each other” (Laura). Laura gives an example, a farmer wants to place a greenhouse “And the municipality or the specific civil servants are very busy or simply don't have a strong connection to the rural areas. Consequently, such initiatives often stall due to bureaucracy. Yet, if those civil servants take the time to visit a farmyard, they might suddenly realise the potential for progress”. The municipality has the authority in this matter. The province wants to offer “a sort of coach for farmers who have concrete plans, offering them a coach can help them understand exactly what barriers exist and what they need to do to resolve them and engage effectively with the municipality” (Laura). Through the Zuid-Hollands Programma Landelijk Gebied (ZHPLG), the civil servants and conventional farmers are more in contact with each other. “So the notion that we don't know what's going on, I don't entirely agree with that” (Laura). However, the province has less contact with agroecological farmers “because they are the frontrunners, we do as a government indeed pay less attention to them. We are primarily focused on bringing along those lagging behind” (Laura).

Analysis

Although efforts are made to bridge the gap between industrial farmers and civil servants, it is important to also include agroecological farmers. A farm visit by a civil servant enhances the understanding of the farmers’ perspective and makes policy more streamlined with practice. In agroecology, the farmer is seen as the centre around which research, laws and policies should be developed. Besides providing a coach to farmers, civil servants should be actively supported and given the time to make these field trips. Particularly during the ZHPLG, the interests of agroecological farmers should be acknowledged and incorporated into the process. Especially since they are seen as the frontrunners. The involvement of agroecological farmers helps destabilise the policy dimension of the dominant regime and creates a window of opportunity for the frontrunner to become legitimised. The strengthening of collaboration within the agroecological movement enhances the visibility and reachability of agroecological farmers. Contact these farmers as there are many good ideas present among them which could be utilised. The successful permit process of Remko could serve as an example.

Allocation of subsidies [Barrier, Policy]. In general, subsidies in the Netherlands are designed for large-scale industrial farmers with a low diversity of crops or products. For example, the CAP subsidies are allocated per hectare which is disadvantageous for small-scale farmers (Klarien, Toekomstboeren). Besides Erwin, most interviewed agroecological farmers actively chose not to use structural subsidies for several reasons. First, subsidies restrict the freedom of the farmer “Because there is always someone watching you, it has to be like this or that is not allowed” (David, Kwekerij Ekologisch) and “there are all sorts of requirements attached to that... And sometimes that can be

quite limiting" (Remko, de Groentemeester). Bas (Hazelland 10) gives an example of this concerning innovation subsidies. Agroecological farmers need to innovate to gain knowledge. "You have to state in advance what you are going to do and what the results are" (Bas, Hazelland 10) during the application process. "If you have innovation, it also means that the conclusion can be that it failed. That's what innovation is" (Bas, Hazelland 10). He understands that if an innovation fails, funding should decrease, but a slightly different direction of the innovation should still be supported. Bas advises the government to incorporate more trust into subsidy application processes, which "gives more space for real innovation". Second, Herenboeren consciously refrains from using CAP subsidies to avoid "dependency on subsidies" and to make a statement that the industrial agricultural paradigm is "not a great system" (Anne, Herenboeren). However, "There are individual farms that sometimes apply for subsidies. Yes, that is all fine" (Anne, Herenboeren). Third, the administrative load of subsidies such as the 'gecomineerde opgave' is high and complex. "Many farmers complain about how long it takes to fill out those applications" (David, Kwekerij Ekologisch). Especially agroecological farmers experience this barrier as they cultivate a high variety of crops. "I think I grow 80 different crops and then you have to tell which crop you do" (Remko, de Groentemeester). For this reason, David (Kwekerij Ekologisch) does not want subsidies because "It costs me more time than I financial gain". Lastly, language should play a less important role in subsidy application processes. "You see that those who receive the subsidies are always the same people. Because they know the words. It is always language" (Bas, Hazelland 10). In short, subsidies need to be designed differently to make them actively support agroecology.

Response agricultural policymaker

Laura remarks "There are numerous subsidies available currently. It's quite a complex landscape of subsidies". The national structural subsidies regarding sustainability measures are "Very complicated to apply for". Laura explains "They are all based on European regulations so we are bound to many conditions". "I completely understand when farmers say they're not enthusiastic about it ... Because the subsidy conditions and application forms are not very user-friendly ... However, we can't change that" (Laura). Laura thinks it is oversimplifying when it is said that subsidies are based on mistrust. "But when they say it's very unfriendly for users, I can definitely relate to that" (Laura). The province itself has several subsidies available, also for small-scale projects. The province tries to be user-friendly and not set too many conditions for these subsidies. But here again, the province is bound to European regulations. The province wants to think and help along, but they cannot do that for every farmer because of the scale of these subsidies. "We also organise contact moments and drop-in sessions to support farmers and guide them. However, it remains a complex web of regulations" (Laura). "The only thing we indeed try … is to look how we become more user-friendly" (Laura).

Analysis

Agroecological farmers struggle to access financial resources. Although alternative financing methods are emerging, these are limited. More financial resources would stimulate the transition towards agroecology. In this matter, the responsibility is mainly for the financial sector and outside the influence of the province. Additionally, changing the CAP subsidies allocation from hectare-based to for example ecosystem services has to be approved on a European level. However, the government could play a supportive role through subsidy allocation. In general, the current allocation of subsidies is designed for large-scale industrial farmers with few crops and less for small-scale diverse agroecological farmers. The design of subsidies should be reconsidered by taking agroecological farmers' interests into account who diverge from the industrial model through diversification. While being outside the influence of the province, changing the CAP subsidies allocation from hectare-based to for example ecosystem services would benefit smaller-scale and diverse farms. Concerning innovation subsidies, the province could take a more flexible approach to support pioneering farmers to experiment. Here again, the province is bound to European regulations, restricting its freedom. However, the European policy landscape is becoming slowly more agroecology-orientated, which could provide possibilities. Furthermore, the effort to make subsidies more customer-friendly should be continued.

Skal certification [Barrier, Policy]. All agroecological farmers produce organically or even more sustainably. However, not all choose to become Skal certified due to the *high administration* and *associated costs*. This affects small-scale farmers especially. A CSA farmer explains: “The reason I'm not organic certified is that I simply don't want to deal with the paperwork and the associated costs” (Remko, de Groentemeester). Instead, CSA farmers communicate their practices more directly because of the close contact with the customer. David (Kwekerij Ekologisch) is frustrated with the extremely procedural methodology of Skal. “It is control for the sake of control. And that is how people (certifiers) are trained nowadays. Check, check, check. Have we checked everything? Yes, okay, then we are done. But are we really done? Then we come up with a new check. And we need to stop that” (David, Kwekerij Ekologisch). Erwin sees the value of Skal certifications. However, he said aggravated “Skal is a non-profit organisation, but they send invoices for every hour and every little thing” (Erwin, WIJdehorst). A certification inspection of Erwin was stopped because a document was not completely correct. “The documents that I would send later would cost 120 euros per hour to review. So I said, you know what, just cancel it completely” (Erwin, WIJdehorst). Besides, “you can only sell after three years your products as biological” (Klarien, Toekomstboeren), bringing financial risks while bridging the time gap. Changes to the Skal certification methodologies should be implemented to make them more accessible for agroecological farmers.

Response agricultural policymaker

Laura mentions the importance of certification systems such as Skal “because you need to be able to assess transparently”. However, “At this moment, we do not see it as our role to initiate a discussion about the certification being incorrect. The question is whether it should be the province’s responsibility or if it falls under the national responsibility of LNV. But we can certainly lobby towards LNV, as we do have contacts there. We can advise LNV to take action on this matter” (Laura).

Analysis

Certifications are important levers for consumers to value sustainably cultivated products, thereby supporting farmers. However, the current method of organic certification demotivates (agroecological) farmers to certify themselves. Changes to the certification method are required to grow the share of organic farmers. The province could initiate a lobby at the Ministery LNV to take action on the matter.

General consumer behaviour [Barriers, Economic]. Although most interviewed agroecological farmers are able to sell their produce, the general consumer behaviour is labelled a barrier to the further development of agroecology. The Dutch population eats a lot of processed or comfort food, which negatively affects agroecological farmers. “People eat food that is composed, making it so unrecognisable. That indirectly affects the primary food producers” (David, Kwekerij Ekologisch). Furthermore, people got disconnected from local traditional seasonal vegetables and the rush of life inhibits getting to know them. David gives an example: “So, okay, then you have to learn again, what do I do with those salsifies (schoorseneer)? And then, if you have two or three kids whining and you've had a bad day at work, then you don't feel like peeling that salsify”. Moreover, “the average meal has travelled a lot of kilometres. Why not from the village here?” (David). Changing the diet of the Dutch population to more local, seasonal, and less processed food will remain a challenge.

Growing awareness [Enabler, Social]. According to Klarien (Toekomstboeren), “The realisation that biodiversity, clean drinking water, and carbon in the soil are what we need as a society” is essential to agroecology’s advancement. She believes “it is becoming more clear to everyone that we have a biodiversity crisis” and that “pesticides are a problem”. “People in the city will understand that we need and want biodiverse landscapes that mix nature and agriculture” and that “there will be support for this” (Klarien). “The next step is to make it a reality” (Klarien). However,

Klarien is afraid “that people in the city strongly believe that organic is better. And that biodiversity is better. But they don't dare to say anything about it. Or they find it complicated or something like that. That they just let it be”. To make agroecology thrive, this inactivity should be translated to proactivity in both consumer behaviour and regulation. She argues “We need carbon in the soil and clean drinking water, so give agroecology the space it needs. It is not that difficult, right?”.

Unfair competition [Barrier, Ecomoic & Policy]. Agroecological farmers experience unfair competition on two fronts, namely *price* and *influence*. Industrial farmers can produce cheaper as they do not account for externalities in their pricing. “If you start growing just organic or biodynamic vegetables without synthetic fertilisers or pesticides, you can’t really make a living in the Netherlands currently. This is because those who pollute the earth produce as cheaply as possible and use labour in poor conditions. That's not fair” (Erwin, WIJdehorst). Erwin when discussing organic certification adds: “I find it unfortunate that as organic farmers, we have to bear the costs for it. It should be the other way around”. Furthermore, the international free trade agreements disadvantaged locally and sustainably produced products. “Produce from South America ..should be priced according to the European market standards. That way you create an equal playing field” (David, Kwekerij Ekologisch). David also explains that you get unfair competition by making organic agriculture pay for the certification and giving energy tax cuts in the horticulture industry. Besides, the influence of large corporations is accused of the current way agriculture looks. The large corporations “are sitting at the table with the LNV ... this is shady, it's behind closed doors. They have all the power... The ones that make money from agriculture” (Klarien, Toekomstboeren). In brief, the advantages in price and power of industrial agriculture are currently holding back the growth of agroecology.

Limits of industrial agriculture [Enabler, Economic]. David (Kwekerij Ekologisch) foresees that the industrial agricultural paradigm is “running against limits”. As he metaphorically phrases: “I don’t think the shore turns the ship, but the ship turns the ship”. Agriculture in the Netherlands is currently mainly focused on exports. “The required labour will soon become so expensive... That the product will have to become so expensive... If you still want to make a profit on it, it won’t be economically viable anymore... To produce something for an export market using fossil fuels, artificial fertilisers, and pesticides. That won’t be possible soon. So that ship will run into itself there, plain and simple” (David). If in the Netherlands costs rise, “then we can’t produce extremely cheap any more” (David). Consequently, other countries will start producing themselves. As an example, David mentions the rising gas costs of the Dutch horticulture sector. To bring it back to the metaphor: “But of course, it takes extremely long before the ship turns” (David). The Dutch government can actively support the turning of the ship.

Response agricultural policy maker

The province is not able to influence the international market. However, “We really try to support local initiatives, including with subsidies that are very accessible” (Laura). The ‘voedselfamilies’ is such an initiative, which aims to stimulate and facilitate local markets. Although there have been numerous successful local projects, further development is lacking. “We should look at how we can further develop the success stories across South Holland … That has a lot of potential” (Laura). Laura admits an area of improvement for the province. “Once a subsidy is completed then our policy department should actually take that on. To assess, what have we learned from this? And how do we proceed from here? Unfortunately, that final step is often neglected. Centralising the knowledge management is not adequately addressed, and that is a concern” (Laura). This knowledge is useful not only for the province but also for other stakeholders.

Analysis

The dominant regime favours industrial agriculture in the market, industry and policy dimensions. For various reasons, the general consumer behaviour of the population is not yet compatible with agroecology. Although awareness among Dutch citizens is slowly growing that the food system needs to be changed, actively changing the population's diet remains challenging as people have gotten used to the convenience of the industrial food system. A more local, seasonal, and less processed diet is a prerequisite for (agroecological) farmers to produce sustainably by creating a market. The continuation of awareness initiatives like the 'voedselfamilies' could play a role in changing the general diets. Nevertheless, making the general diet compatible with an agroecological food system will remain a tremendous challenge. The government should acknowledge that the industrial model is and will run upon limits in the future and start considering agroecology as a promising alternative by providing active support. Reducing the unfair competition on both fronts, price and influence, is outside the influence of the province through the international and governmental system embeddedness. The province could contribute to the local context by enhancing the effectiveness of support for local initiatives. Centralising and sharing the generated knowledge from pilot projects with other parties is essential to maintaining the momentum of the agroecological niche.

Discussion

Theoretical Contribution & Societal Implications

This research investigated how the province could stimulate the transition towards agroecology in South Holland from the perspective of agroecological farmers. Subquestion 1 examined the emergence and current state of the Dutch/South Holland food landscape (pressures), regime, and niche. This analysis revealed how the Dutch agricultural sector successfully transformed from small-scale mixed farms to larger-scale efficiency-oriented industrial farms. In the process, farmers and the government experienced a reduction of influence to (international) market pressures and corporate interests through liberalisation policies. Consequently, several interrelated environmental and socio-economic challenges emerged, pressuring the dominant regime. Altering the underlying goals of the agri-food system from profit and production maximisation of industrial agriculture to sustainability and social justice of agroecology could initiate a paradigm shift. However, the required changes to realise this paradigm shift are fundamental and will pose tremendous challenges. Agroecology is a small and novel but relatively quickly emerging niche attempting to challenge industrial agriculture. Subquestion 2 builds on these results, by identifying the barriers and enablers and the connections agroecological farmers face in the personal, direct, and distal context in South Holland. A provincial agricultural policymaker reacted to the most relevant barriers and enablers to allow a thorough analysis using the concepts of the MLP. The enabling factors in the personal context are the intrinsic belief in agroecology and the farmers' income, impacting the motivation and ability of farmers. In the direct context, the high manual labour demand hinders the ability of agroecological farmers. However, the intrinsic belief in agroecology helps build communities around food and enthuses more (young) individuals to become farmers providing more manual labour possibilities. Furthermore, strengthening collaborations legitimises the agroecological movement and access to agroecological knowledge increases farmers' ability. The distal context hosts most barriers and enablers. The general consumer behaviour restricts the demand, while the growing awareness increases the market and legitimises agroecology. The main systemic barriers are difficulties accessing land, regulations, (Skal) certification, and allocation of subsidies. Difficulties accessing land hinder the ability of agroecological farmers and are obstructed by the lack of financial possibilities. Alternative funding opportunities, novel land initiatives, and sustainability criteria could enable agroecological farmers to access land. The government should acknowledge that industrial agriculture is and will run upon limits in the future and begin actively supporting alternatives by shifting its priorities accordingly. Consequently, effective sustainability criteria for land should be developed, and regulations, certification and subsidy allocation altered to favour agroecological farmers. These changes impact both the ability and legitimisation of agroecological farmers. The systemic unfair competition negatively affects the farmers' income, ability and legitimacy and must be addressed to give space to agroecology.

Although the agroecological niche is slowly gaining momentum and landscape pressure has started to destabilise the dominant regime, the three analytical levels are not yet aligned to transition the socio-technical regime. The agri-food system is complex and embedded and the pertinent lock-ins and path dependencies make it resistant to change. A clear example of this resistance to change is the collapse of the 'landbouwakkoord' in which farmers, the government, and other relevant stakeholders attempted to reach an agreement on the future of the Dutch agricultural sector. Currently, various actors with various degrees of influence benefit from maintaining the status quo. Furthermore, it is important to note that the South Holland agri-food system is embedded in the Dutch, European and global food systems, reducing the influence sphere of the province. To enable a paradigm shift from industrial agriculture to agroecology, more windows of opportunity must arise. Nevertheless, the province could stimulate the local momentum of the agroecological niche and destabilise the

dominant regime on multiple dimensions by considering the identified barriers and enablers and implementing the policy recommendations.

Most previous studies on transitions towards agroecology did not consider the Netherlands, let alone South Holland, in their scope (IPES-Food, 2016; IPES-Food, 2018; Mier y Terán Giménez Cacho et al., 2018; Anderson et al., 2019). However, all these studies highlight the context-specific nature of agroecological transition.

Multiple identified barriers and enablers overlap with results from previous studies concerning the agricultural transition conducted in the Netherlands and South Holland. Van den Berg et al., (2018) agree that one of the greatest obstacles for entrant agroecological farmers is access to land in the Netherlands. The authors pledge to de-liberalise the land market, implement sustainability criteria, and support alternative forms of land ownership to give space for truly sustainable agriculture. Van der Ploeg et al. (2019) affirm that agroecological farming could support farmers' income in dairy farming in the Netherlands, indicating the economic potential of agroecology. In line with this research, Dekker et al. (2024) identified the financial and administrative burden concerning organic certification and governmental laws and regulations as pressing barriers for small-scale agroecological farmers. In addition, they highlight that the Netherlands is the only European country not subsidising organic farmers. For example, the European subsidy 'Payments for Small Farmers' (PSF) is not translated into Dutch policy. The report by de Pater & van Bellen (2023) indicates that the challenges faced by "pioneering farmers" are largely comparable to those encountered by agroecological farmers. Their results also highlight the conservative and reactive attitude of governmental bodies, the cultural-historical view of meadows, the gap between farmers and civil servants, the division between nature and agriculture, permits, zoning plans, and the shift in government priorities are touched upon. The 'ambtelijke verkenning' by Floors et al. (2023) confirms that most barriers of nature-inclusive farmers are similar to agroecological farmers. This is logical as nature-inclusive farming can be considered an operationalisation of agroecology.

This research differentiates itself from previous studies by specifically focusing on the agroecological farmers' perspective of the agricultural transition in South Holland. A comprehensive list of barriers and enablers for agroecological farmers has been developed, including the interrelatedness of the factors and the respective personal, direct or distal context. The identified barriers and enablers were reflected on by a provincial agricultural policy-maker to provide nuance and a better starting point for developing policy recommendations, a step not performed in other studies. The research is unique through combining the MLP and the Onion Model. The MLP provided the theoretical framework to describe the high-level system context and dynamics of transitions. The MLP was complemented by the Onion Model, to consider the specific local and contextual factors and give agency to agroecological farmers, ensuring this grassroots-level group is central in the transition process. A few limitations of combining the frameworks were discovered during the research. MLP emphasises systemic changes across multiple levels, while the Onion Model focuses on local contexts and individual agency, which can create conflicts in priorities or analyses. Additionally, the Onion Model places an overly strong focus on agroecological farmers, potentially overlooking the views of other stakeholders and broader systemic influences in the context of the agricultural transition. Furthermore, the integration of the MLP's multi-level analysis with the context layers of the Onion Model adds complexity to the combined framework, posing challenges for stakeholders in terms of understanding and effective implementation. Besides, the Onion Model has been tested in a new context. Although useful in visualising and connecting the barriers and enablers, the Onion Model can become too complex when a high number of them are identified. Besides, classifying barriers or enablers in economic, social, informational, and policy can be a challenge as they could overlap multiple classifications. In addition to the original model, the colours red (barrier) and green (enablers) were added to indicate whether a factor is an enabler or a barrier, enhancing clarity.

(Policy) Recommendations

Despite its growing popularity internationally, agroecology is not yet explicitly incorporated in policymaking in South Holland. It is important that the province acknowledges the limitations of industrial agriculture and shifts its priorities accordingly. Embracing agroecology as a promising alternative agricultural paradigm could help the province to solve its sustainability challenges. Based on the identified barriers and enablers, several recommendations are formulated to aid the province of South Holland's transition to agroecology

Access to land

Agroecological farmers struggle to access affordable land with long-term contracts. The province should lease out its land for a minimum of six years to provide agroecological farmers security, enabling them to invest in the soil life, their business, and the community. Effective sustainability criteria should be developed and applied to all tendered land. Plots should be designated for urban farming projects because these are crucial in bringing sustainable food production closer to residents. Moreover, the province should play a facilitating role in coordinating landowning organisations to establish common lease rules.

Regulations

The current regulations focus on preserving the status quo. This conservative stance should shift to a more proactive approach. While it is understandable that the province considers the interests of various stakeholders, developing a sustainable food system should be a high priority to ensure long-term food security. The attractiveness of the landscape is subjective and can evolve over time. The province should construct a vision for the open meadow landscape in 2050 that includes elements such as agroforestry, small-scale greenhouses, and multifunctional farms. In the meantime, frontrunner farmers should be allowed to experiment with reversible activities through 'kruimelregelingen'. Additionally, the province should rigorously monitor and enforce environmental regulations for industrial farmers, ensuring no thresholds are exceeded.

Integrated approach

The goal of agroecology aligns with multiple of the province's goals. Agroecological farmers go beyond a mere focus on profit and production maximisation and aim to bring nature, food production and people together. The province should develop an integrated approach to agriculture to support this process. Agriculture and recreation can coexist, increasing food awareness and helping solve important societal challenges. To operationalise the integrated approach, agroecological farmers should be allowed to diversify their activities through a more lenient attitude in permits and zoning plans by the province.

Bridge the gap

Policies developed in the office often do not align with the realities in the field. A better connection between civil servants and farmers could foster mutual understanding. Although efforts are made to bridge the gap between industrial farmers and civil servants, agroecological farmers feel largely unheard. The agroecological movement is growing and collaborating more, thus becoming more reachable. Civil servants should be actively encouraged and supported to visit agroecological farms. Furthermore, including the interests of agroecological farmers in the ongoing ZHPLG is an excellent opportunity to give these frontrunners a voice. Additionally, bridging the gap between consumers and farmers could re-establish the connection between food growers and eaters. Consequently, consumer awareness is enhanced, potentially changing the general population's diet and increasing the market for agroecological products. While the province already supports local initiatives with short supply chains, this support should be more effectively organised by centralising and sharing the generated knowledge with relevant stakeholders.

Subsidies

The current allocation of subsidies is designed to support the status quo, industrial agriculture. To effectively address the underlying problems of agriculture, subsidies should prioritise fostering system change rather than incremental changes such as technofixes. As the current financial sector is reluctant to finance agroecological projects, subsidies could assist entrant agroecological farmers pass the initiation stage. Innovation subsidies should be structured to allow agroecological farmers to truly experiment and generate valuable knowledge. The province should lobby the Ministry of LNV to translate the PSF of the CAP into Dutch policy. Moreover, the province should continue its efforts to make subsidy application procedures more costumer-friendly.

Certification

Certifications are important to aid customers in valuing sustainable cultivated food and help the share of organic farmers grow. The current (organic) certification methods discourage agroecological farmers from certifying, even though they produce organically or more sustainably. The certification should become less administrative and more focused on the process of the farmer. The costs of certifying should be on polluters instead of sustainable farmers, or alternatively, the government could consider to subsidise the certification process. The province should lobby at the Ministry of LNV to reform the Skal certification system. Another option is to allow emerging participatory guarantee systems (PGS) in which certification is done democratically by involving relevant stakeholders.

Generalisability, Limitations & Future Research

The study encounters several factors impacting the generalisability. The research had a limited sample size of six agroecological farmers because of the time-intensive nature of the farm visits and provision of farm work. This limitation may raise concerns about the representativeness of the findings for the agroecological sector in South Holland. However, despite the limited sample, consistent themes emerged across interviews, suggesting that these findings capture significant commonalities within the local agroecological community. Besides, only one agricultural policymaker of the province of South Holland has been interviewed, raising concerns about the representativeness of the provincial perspective. Given the context-specific nature of agroecological transition, generalising the results beyond South Holland is difficult. Nonetheless, South Holland is integrated into the broad Dutch, European, and Global food systems, making some identified systemic barriers applicable to other regions. The study interviewed diverse agroecological practitioners, including two CSA farmers, a representative from Herenboeren, and three individual farmers, one of whom operated a larger-scale greenhouse. Furthermore, the locations of the interviewed farmers were dispersed across the province.

Notably, the research did not include interviews with agroecological dairy farmers, a prominent sector in South Holland. Additionally, it did not capture the perspectives of industrial farmers trying to transition to agroecological practices. This study focussed specifically on the “frontrunners” who have already made the transition, shaping the scope and applicability of the findings. By interviewing only individuals already involved in agroecology, the study could have an inherent bias. The perspectives and opinions of the interviewees might be too optimistic, thereby not fully capturing the challenges of agroecology in the Dutch/South Holland agri-food system. It is important to consider the viewpoints of agroecology critics to bring nuance to the upcoming transition. Furthermore, the study did not include the perspective of consumers on agroecology. There are discussions on the inclusivity of agroecology. Although not always the case, agroecological products are often higher priced as among other factors they account for the externalities in the production process. Additionally, agroecological projects such as Herenboeren and to a lesser extent, CSA farms require upfront monetary payments to support the farms and farmers, potentially excluding people with low incomes. Initiatives with solidary payment are being developed and implemented to address this limitation. Agroecological products do not always align with mainstream outlets. Some alternative business modes necessitate more customer involvement and travel time, hindering individuals with little time. Moreover, agroecology promotes a diet with local and seasonal products, possibly not aligning with consumer preferences. Based on scientific literature conducted in other contexts, the underlying assumption of this study is that agroecology is the desirable agricultural paradigm for the Netherlands. The scope is this thesis was not to verify this assumption.

Several areas could benefit from future research. The research’s goal was to explore how the province could stimulate the transition towards agroecology in South Holland from the agroecological farmers’ perspective. This study provides a list of barriers and enablers translated into policy recommendations. How to operationalise these recommendations into effective policies requires future research. Furthermore, it would be interesting to include the perspectives of larger stakeholder groups in the transition research to enrich the list of barriers and enablers. Examples are agroecological dairy farmers, industrial farmers, food processors, distribution actors, consumers and critics. This way, a more comprehensive and complete view of the immense transition towards agroecology can be developed. Furthermore, future research could dive into how agroecology can become inclusive to all layers of society. Additionally, the underlying assumption should be tested in the Dutch context with its unique environment, culture, business orientation, etc.

Conclusion

The research aimed to explore strategies for stimulating the transition to agroecology in South Holland from the agroecological farmers' perspective. The research methods compromised a literature review and semi-structured interviews with agroecological farmers, an expert, and a provincial policymaker in agriculture. The study described the emergence of the industrial agri-food system in South Holland, highlighting landscape pressures and the development of the agroecological niche. The study advocates shifting the agri-food system's underlying goal from profit and production maximisation towards sustainability and social justice to initiate a paradigm shift. The required changes are fundamental and will be a tremendous challenge. Agroecology tries to realise this shift on three fronts simultaneously: as a science, a set of agricultural practices, and a movement. Additionally, the research identified key barriers, enablers, and connections in the transition to agroecology in South Holland from the perspective of agroecological farmers. An agricultural policymaker reacted to the most relevant barriers and enablers to consider the province's perspective. The analysis applied concepts from the MLP to deepen understanding of how the province can foster this transition effectively. The MLP was complimented by the Onion Model, which was tested in a new context. Although proving useful, the combination of both frameworks comes with several limitations.

It can be concluded that the agri-food system is highly complex and embedded, while lock-ins and path dependencies make it resistant to change. The landscape, dominant regime, and niche are not yet aligned to shift the socio-technical regime from industrial agriculture to agroecology. Although the province of South Holland is just one of many actors in the agri-food system, it can influence various aspects to stimulate the agroecology niche's momentum and the transition to agroecology at large. Agroecology could be the unifying terminology in the agricultural transition, under the condition its transformative nature is ensured. By synthesising the study's findings, policy recommendations were formulated specifically for the province of South Holland. These include facilitating long-term access to affordable land for agroecological farmers, revising regulations to support forward-thinking practices, and adopting a holistic approach to agriculture that integrates lenient permitting and zoning practices. Furthermore, the province is encouraged to bridge gaps between civil servants, farmers, and consumers to align policy with practical realities and expand the market for agroecological products. Moreover, the province is recommended to restructure subsidy allocation to prioritise systemic rather than incremental change. Finally, lobbying at the national level to reduce the administrative burden and costs of organic certification processes could further support agroecological farming practices. It is important to note, that more recommendations are possible if the perspective of other agroecology stakeholders, besides farmers, are considered. Further research should be conducted to expand the scope beyond the agroecological farmers' perspective and operationalise the policy recommendations.

The current agri-food system in South Holland has developed not as an inevitable evolution, but through deliberate policies promoting scale enlargement and liberalisation. Agroecology, in contrast, has emerged in response to dissatisfaction with existing agricultural practices rather than active government support. It is now imperative for the government to support this sustainable approach with effective policies and funding. Embracing agroecology can enable South Holland to develop an agri-food system that is socially just, sustainable, and resilient.

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Appendix A

All interview guidelines are written in Dutch as all participants were from the Netherlands.

Interview Guideline Agroecological Farmers

Onderdeel 1

Achtergrondvragen:

Kan je wat over jezelf vertellen?

- Wie ben je?
- Wat is je leeftijd?
- Wat hebt je gestudeerd?
- Waarom ben je agroecologische boer geworden?

Kan je wat over de tuinderij vertellen?

- Hoe telen jullie?
- Hoeveel hectare hebben jullie?
- Hoe zetten jullie je producten af?
- Hoe lang ben je betrokken bij de boerderij?
- Zijn jullie gecertificeerd?
- Welke plannen hebben jullie op de tuinderij?
- Welke problemen/uitdaging heb je op de boerderij (in algemene zin)?

Onderdeel 2

Nu gaan we door naar het onderdeel waar ik op 4 categorieën dieper inga. De catogerieën zijn social, informational economisch en politiek

Sociaal

Experimenteren jullie veel op de tuinderij?

Als jullie nieuwe dingen uitproberen, wat vinden de buren ervan?

Werk je samen met buurboerderijen? Zo ja waarvoor?

Hoe informer je de consument over het productieproces?

Wat voor sociale evenement worden op de tuinderij georganiseerd?

Informationeel

Is het makkelijk om informatie vergaren of de agroecologische boeren praktijk? Wat zijn de bronnen?

Hebben jullie hiervoor hulp of workshop ontvangen van iemand of een organisatie?

Economisch

Heb je een management system op de boerderij?

Hoe kom je aan kapitaal?

Wat voor contract hebben jullie tot de grond (pacht of kopen)?

- Bij pacht, voor hoe lang loopt jullie pacht contract?
- Was dit process moeilijk?

Wat zijn de kosten per hectare? Wat is de inkomst per hectare?

Genereerd de boerderij genoeg winst om van de te leven?

Wat gaat er goed op economisch vlak?

Wat gaat slecht op economisch vlak? Kosten, prijzen, subsidies, etc

Krijg je subsidies? Zo ja welke?

- Zijn er verplichtingen verbonden aan deze subsidies?

Politiek

Krijg je ondersteuning van de overheid?

- Zo ja wat voor?

Zijn er praktijken die de overheid wilt dat jullie implementeren?

Is er wetgeving waar jij tegenaan loopt?

Waarmee zou de provincie Zuid-Holland jullie kunnen ondersteunen?

Overig

Welke vraag heb ik niet gesteld die je nog wel wilt beantwoorden?

Einde

Nogmaals bedankt voor je medewerking! Als u later nog vragen of opmerkingen heeft, kunt u bereiken via de contactgevens die je van mij hebt.

Interview Guideline Agroecology Expert

Onderdeel 1

Ik begin eerst even met een paar introducerende vragen.

Zou je kort kunnen zeggen wie je bent, wat je leeftijd is en wat je beroep is?

Onderdeel 2

Dat zijn mijn introducerende vragen. En nu ga ik naar de hoofdvragen en ben waar ik benieuwd naar ben wat jouw kijk daarop is.

Wat is volgens jou agroecologie?

Zou je wat kunnen vertellen over de ontwikkelingen die er in de afgelopen tijd zijn geweest rondom agroecologie in Nederland?

Wat is volgens jou het verschil tussen agroecologie en natuurinclusief?

Welke verenigingen initiatieven zijn er in Nederland die agroecologie ondersteunen?

Wat is er volgens jou nodig om agro-ecologie van niche naar mainstream te krijgen in Nederland?

Welke rol kan de provincie spelen om agro-ecologische boeren te ondersteunen?

Overig

Welke vraag heb ik niet gesteld die je nog wel wilt beantwoorden?

Einde

Nogmaals bedankt voor je medewerking! Als u later nog vragen of opmerkingen heeft, kunt u bereiken via de contactgevens die je van mij hebt.

Interview Guideline Agricultural Policymaker

Agroecology

Bent je bekend met de term agroecologie?

Zo, nee leg beknopt uit:

Agroecologie is een fundamenteel alternatieve visie die krachten van duurzam landbouwmethoden die synthetische inputs uitsluiten (i.e. biologisch, biodynamisch, agroforestry, permacultuur, ?natuur-inclusief) bundelt en de verbinding tussen boer en consument hersteld. Het voedselsysteem moet weer voornamelijk lokaal geproduceerd en meer seizoensgebonden worden.

Het verschil tussen agroecology en natuur inclusief. Natuurinclusief kan vallen onder agroecologie omdat het bepaalde agroecologische principes gebruikt om een productieve boerderij te krijgen, zoals crop diversity, het verminderen van externe inputs, circulariteit, synergies en biodiversiteit. Het grootste verschil is in scope. De scope van natuur inclusief eindigt bij de boerderij en kan dus bestaan binnen het huidige voedselsysteem. Daartegenover doel agroecologie het hele agri-food system restructureren en gaat dus verder dan alleen de boerderij.

Heb je hierover vragen?

Achtergrond vragen:

Kan je kort vertellen wie je bent en wat je functie is binnen de provincie Zuid-Holland?

- Naam
- Woonplaats
- (Studie) achtergrond
- Functie

Welke rol neemt de provincie op zich bij de landbouw transitie?

De geïdentificeerde barrières:

Toegang tot grond

De grootste barrière die door agroecologische boeren wordt genoemd is de toegang tot grond. Grond is te duur en de pachtcontracten zijn vaak kortlopend.

Zuid-Holland heeft veel grond in bezit.

Wat houdt de provincie tegen om duurzaamheids- en maatschappelijkijke criteria op te stelle tijdens het uitbestedingsprocess?

Wat houdt de provincie tegen om langdurige pachtcontracten uit te geven?

Wat voor invloed kan de provincie uitoefenen om stadslandbouwprojecten te ondersteunen?

Verbeteringen overheid:

Agroecologische boeren vinden dat de overheid te reactief is en te weinig proactief. Zo worden niet de benodigde vergunningen uitgegeven. Sluiten de bestemmingsplannen niet aan bij de diversiteit aan activiteiten die nodig zijn om een agroecologische boerderij financieel rendabel te maken. Verder zijn bepaalde wetgeving gefocust op het behouden van het huidige, zoals het cultuur historisch uitzicht en de scheiding tussen landbouw en natuur, i.p.v. de toekomst. Hierdoor wordt het aanleggen voedselbossen en kleinschalige koude kassen vermoeilijkt.

Hoe probeert de provincie meer toekomstgericht te zijn? En tegen welke opstakels lopen zij?

Wat is de houding van de provincie met betrekking tot kleinschalige koude kassen op boerenerven?

Wat is de houding van de provincie tot het diversificeren van activiteiten op boerenerven?

Wat is de houding van de provincie tegenover het cultuur historisch uitzicht? Voedselbossen?

Wat is de houding van de provincie tegenover de scheiding tussen landbouw en natuur?

Meerdere agroecologische boeren gaven een kloof te voelen tussen ambtenaren en hunzelf. Dit zorgt voor onbegrip voor bepaalde beslissingen.

Hoe is het contact tussen de ambtenaar en de boer?

Komen ambtenaren vaak over het boerenerf?

Contacteren ambtenaren boeren proactief om hun beleid te toetsen?

Certificering

Agroecologische boeren produceren op een ecologisch verantwoordde methode en hangen vaak biologische principes aan. Echter kiezen niet alle agroecologische boeren ervoor om Skal gecertificeerd te worden door de te hoge kosten en de vele administratie. Daarnaast vinden de boeren het scheef dat zij moeten betalen, terwijl de vervuiler dat niet hoeft.

Aangezien de Skal een semi-overheid organisatie is, kan de provincie een rol spelen in het hervormen van Skal? Zo ja, wat?

Oneerlijk concurrentie met gangbare boeren

Agroecologische boeren ervaren een oneerlijke concurrentie met gangbare boeren. De gangbare boeren gebruiken chemicaliën en importeren onduurzame voeder/inputs uit bijvoorbeeld Zuid-Amerika, waardoor ze goedkoper kunnen produceren. Daarnaast kunnen gangbare boeren meer bieden op grond Verder voelt een agroeocoligische boer dat de gangbare boeren niet goed genoeg worden gehandhaaft op overtredingen.

Welke rol kan de provincie innemen om de oneerlijke concurrentie tegen te gaan?

Subsidies

Meerdere agroecologische boeren geven aan niet gebruikt te willen maken van structurele subsidies, omdat ze onafhankelijk willen zijn en het papier werkt te ingewikkeld door de vele verschillende

gewassen. Voor innovatie kan subsidie echter wel erg helpen. Innovatiesubsidies zijn te restricterend en zijn gebasseerd op wantrouwen volgens een geïnterviewde, wat de innovatie vermoelijkt.

Is er een mogelijkheid om (innovatie) subsidies meer te baseren op vertrouwen en vrijheid te geven?

De markt

Ondanks veel agroecologisch boeren het lukt om hun producten af te zetten, voorzien ze de nadruk op internationale handel en het eetgedrag van de algemene Nederland als een barriere voor de verdere groei van agroecologie.

Kan hier de provincie een rol is spelen?

Overig

Is er een vraag die ik niet hebt gesteld maar die nog wel graag wilt beantwoorden? In andere worden, wil je nog iets kwijt.

Ik wil een presentatie over mijn eindresultaten geven op een van de agroecologische boerderijen die ik heb bezocht. Zo wil ik de ambtenaar de boer op brengen. Dit al gecombineerd gaan met een rondleiden van de boer.

Heb je tips voor mij om dit te organiseren?

Bedankt voor je meedewerking! Bij interesse stuur ik het eindverslag naar uw toe.

Appendix B

Atlis.ti Codebook

Themes Codes	Description	Use frequency
Agroecologie		40
Definitie	The definition of agroecology given by the interviewees	26
Praktijken	The agroecological practices used by the farmers	7
Beweging	The agroecological movement in the Netherlands	4
Ontwikkeling	The development of agroecology in the Netherlands	3
Achtergrondinformatie	The background information of the interviewees and their respective farms, including farming methods, future plans, etc	44
Enabler	The identified enablers by the interviewees	161
Bewustzijn	The increasing awareness among Dutch citizens	10
Certificeren	The proposed improvements to certification methods	5
Eetgedrag	The changes in eating habits that could enable agroecology	4
Financiering	The alternative financing possibilities for projects	11
Grond	The way land should be differently organised	28
Kennis	The presence and sharing of knowledge sharing among practitioners	16
Inkomsten boer	The income of matured agroecological farmers	12
Motivatie	The motivation of all interviewees	15
Samenwerken	The way collaborations could strengthen agroecology	8
Sociaal	The social benefits of agroecology	12
Limiet industrieel	The limits of industrial agriculture	5
Subsidies	The proposed subsidy allocation improvements	7
Regulatory	The proposed regulatory improvements	28
Barriers	The identified barriers by the interviewees	123
Buiten de hokjes	The ways agroecological farmers fall outside conventional boxes	5
Certificiering	The current certification methods hinder organic farming	9
Financiering	The conventional finance system disadvantages agroecology	4
Grond	The factors inhibiting agroecological farmers from accessing land	14
Inkomsten boer	The income of entrant agroecological farmers	3
Kloof	The gap between farmers and civil servants	8
Mankracht	The need for manual labour for agroecological practices	8
Markt	The current demand for agricultural products is not in line with agroecology (local, seasonal, sustainable)	13
Oneerlijke concurrentie	The unfair competition present for agroecological farmers	10
Regulatory	The regulatory barriers by the government, including attitude, spatial ordering, permits, etc	38
Subsidies	The current allocation of subsidies hinders agroecology	11

Appendix C

Informed Consent Form

Bedankt voor uw deelname aan het met het onderzoek! Mijn naam in Niels Tabingh Suermondt en ik ben een masterstudent Industrial Ecology aan de universiteiten Leiden & Delft. In mijn scriptie, onderzoek ik hoe de transitie naar agroecology versneld kan worden in de provincie Zuid-Holland. Het onderzoek heeft meerdere doelen. Ik wil de term agroecology introduceren bij de province, waar deze term nog vrij onbekend is. Daarnaast wil ik in kaart brengen waar agroecologische boeren tegenaan lopen in Zuid-Holland. Deze punten zal ik vertalen naar aanbeveling die ik aankaart bij de provincie. Het interview begint met achtergrondvragen over u en uw tuinderij en zal vervolgens overgaan naar de vragen rondom de barrieres en mogelijkheden die u ervaart. De deelname aan dit interview is vrijwillig en u kunt stoppen op elk moment zonder een reden op te geven. Voel je vrij om te zeggen wat u wilt. U heeft het recht om naderhand uw antwoorden in te zien en zo mogelijk te wijzigen. Het interview duurt ongeveer 40 tot 60 minuten.

Het interview zal worden opgenomen voor transcriptie doeleinden. De geluidsopnames worden verwijderd na het uitvoeren van het onderzoek op 24 juli 2024. **Geeft u toestemming om het interview op te nemen?**

Ja/nee

Uw persoonlijke gegevens zullen met zorg worden behandelt in overeenstemming met de algemene verordening gegevensbescherming (AVG). Ik zal referen naar antwoorden uit dit interview in mijn onderzoek. **Geeft u toestemming om bij naam te worden genoem in het rapport?** Er is ook de mogelijkheid om anoniem te blijven.

Ja/nee

Verder kunt na het afronden van het onderzoek het rapport toegestuurd krijgen. **Heeft u hier interesse in?**

Ja/nee

Voordat we aan het interview beginnen, heeft u vragen?