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The Case of the PAS and the Dutch Nitrogen Crisis.

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List of abbreviations

AFIs

Abstract Forms of Interaction

CAP

Common Agricultural Policy of the European Union

CDA

Christen-Democratisch Appèl (Christian-Democratic Appeal) (conservative/farmer's political party)

CPT

Causal process tracing

DPAS

Definitieve Programma Aanpak Stikstof (definitive PAS)

EU

European Union

EZ

Ministerie van Economische Zaken (Ministry of Economic Affairs)

EZLI

Ministerie van Economische Zaken, Landbouw en Innovatie (Merger of EZ and LNV)

LNV

Ministerie van Landbouw, Natuur en Voedselkwaliteit (Ministry of Agriculture)

LTO

Land- en Tuinbouw Organisatie Nederland (Organisation representing agricultural businesses)

MER

Milieueffectrapport (Environmental Impact Assessment Report)

MSF

Multiple Streams Framework

NBW

Natuurbeschermingswet 1998 (Nature Conservancy Act of 1998)

PAS

Programma Aanpak Stikstof (Integrated Nitrogen Approach)

PBL

Planbureau voor de Leefomgeving (Governmental Agency for the Environment)

PvdA
Partij van der Arbeid (Labor Party)

PvdD
Partij van de Dieren (Animal Party) (green political party)

RIVM
Rijksinstituut voor Volksgezondheid en Milieu (National Institute for Public Health and the Environment)

VenW
Ministerie van Verkeer en Waterstaat (Ministry of Traffic and Water)

VPAS
Voorlopige Programma Aanpak Stikstof (provisional PAS)

VVD
Volkspartij voor de Vrijheid (People's party of Freedom) (liberal political party)

WUR
Wageningen University of Research (Dutch Agricultural University)

Abstract

The conflict between environmental protection and economic development is dominating the discourse on climate change policy. The case study of the Dutch nitrogen crisis exemplifies this conflict of interests and the government's failure to provide a legal, integrated approach. The present thesis critically examines the events which led to the court case of 2019, declaring the government's approach to reduce nitrogen pollution as insufficient and illegal: *Which factors within the policy design process of the Programma Aanpak Stikstof (PAS) in the years between 2008 and 2015 can be used to explain the Dutch government's failure to design a nitrogen policy in line with the EU Habitats Directive?* This paper argues that clusters of actors which are applied to climate policy on a global level may be useful to understand the role of actors in the policy design process of the PAS at national level. Qualitative evidence is used to analyze the process, including court decisions, press releases, and policy documents. Descriptive findings on three stages within the process are linked in reference to Kingdon's multiple streams framework (MSF) to explain the eventual outcome. The results of the process tracing highlight possible avenues to improve policy design for sustainable agricultural development.

1. Introduction

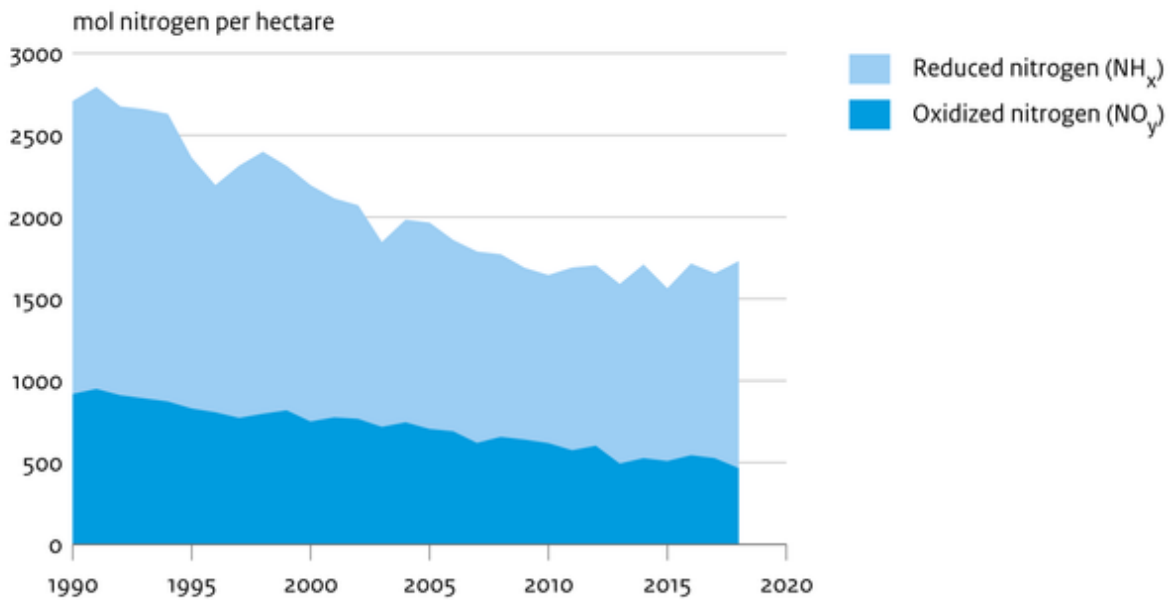
In 2019, the Dutch government's integrated approach to reduce nitrogen depositions near protected nature areas is the subject of a momentous court case (Ministerie van Algemene Zaken, 2022). These depositions account for nitrogen oxide (NO_y) and ammonia (NH_x) (ref. *Fig. 1*), which are compounds of nitrogen. In excess, they may have a negative impact on water quality, public health, and wildlife (WUR, 2022). Nitrogen oxide is also known as a potent greenhouse gas (UNEP, 2023). When speaking of a 'nitrogen crisis', it is those harmful compounds which are of concern. For brevity, this paper only refers to 'nitrogen', in line with the common discourse in media and academia.

The country's administrative court ruled that the government's approach to reduce nitrogen, the PAS, or *Programma Aanpak Stikstof*, is violating EU law (Adviescollege Stikstofproblematiek, 2019). More specifically, it violates the requirements of the EU Habitats Directive, under which designated Natura 2000 areas are protected (RIVM, 2020). This led to what is known today as the Dutch nitrogen crisis. According to the Ministry for Public Health and Environment, more than 40% of the pollution can be attributed to agricultural activities (RIVM, 2019). Hence, the government intends to focus its measures on farmers, who have protested them (Stokstad, 2019). The subject of this case study is the policy design process of the PAS.

1.1 Scientific and societal relevance

The Dutch nitrogen crisis, or *stikstofcrisis*, has been widely discussed in media both nationally and internationally (Stokstad, 2019). Earlier research in public law focuses on the legality of the PAS as an integrated approach, and a few assessments have been published regarding its effect on the Dutch economy and nature (Doorne, 2019) (Stokstad, 2019). Considering the attention paid by the public and media, it is notable how little research has been published on the PAS and its background in recent years: Efforts to reduce pollution levels have been ongoing since 1990 (*Fig. 1*) (WUR, 2022).

Figure 1: Nitrogen depositions in the Netherlands



Source: RIVM 2019

RIVM/nov19
www.clo.nl/en018918

The Netherlands used to be known as a leader within the EU on matters of nature conservation, rapidly institutionalizing the discourse and adopting plans such as the national ecological network (Buijs et al., 2014). However, the discourse has since shifted to pose policies on ecological protection as a threat to economic development (Buijs et al., 2014). This shift affected policy developments that led to the court case in 2019: It was the aim of the PAS to allow room for economic development while reducing nitrogen depositions and keeping Natura 2000 sites intact (Adviescollege Stikstofproblematiek, 2019). To date, there is no research published on the policy process leading up to the PAS from its conception in 2008 to its implementation in 2015. This is the knowledge gap that this paper seeks to address.

The Dutch nitrogen crisis does not stand on its own. While efforts to agree on effective, long-term solutions are still ongoing in the Netherlands, the world at large is facing an urgent need to rethink agricultural practices in face of the climate and ecological crisis (Ministerie van Algemene Zaken, 2020) (Ignaciuk, 2015). A transition toward sustainable food systems could offer beneficial impacts for the reduction of emissions, public health, and biodiversity (Sumter, 2021). In the case of tackling the nitrogen crisis, the impacts extend toward a range of societal issues, reaching from housing shortages to economic uncertainty and political protests (RIVM, 2020) (Stokstad, 2019). Some experts argue that what is currently unfolding regarding the disruptive farmer's protests, illegally high pollution levels and agro-political turmoil may showcase what is awaiting many other countries (Stokstad, 2019). As a major importer and exporter of food and producer of agricultural innovation, the Netherlands represents a key player in the transformation of global food systems (Sumter, 2021). In other words, many countries look to the Netherlands for the successful development of their own sustainable food systems and policies. As a concrete example, EUREGIO, a German-Dutch organization concerned about cross-border cooperation, is aiming to inform about the nitrogen issue in a cross-border context. Therefore, it has an interest in research available in a language understandable to citizens in both countries (EUREGIO, 2023). In summary, analyzing this specific case and providing insight on how to approach a new system from the perspective of policy design and governance could be of great societal relevance.

Existing literature theorizes and debates challenges that arise in the governance of sustainable development at different levels of governance and on different scales (Breuer et al., 2022) (Nhamo et al., 2020). Concurrently, policy remains far behind on addressing those challenges adequately (Stoddard et al., 2021). Even targets alone may be misdirected (Helm, 2010). It is evident that the knowledge available on what measures are needed has not produced the necessary action by those in power to implement it. This failure may occur when environmental matters are treated as a matter of the state and the state solely, as governments lack the "depth and quality of information" to make appropriate decisions (Hepburn, 2010, p.1). This highlights the need to involve different actors in policy design. Tracing the decision-making process of the PAS might offer new insights on this connection between actors' involvement and effective policy design. The mechanisms behind this process of translating knowledge into policy in the context of agricultural governance are often complex and context-dependent (Norton, 2005). Government failure may also be a consequence of policy lock-ins: reinforcing mechanisms which drive stability in the policy landscape and hinder the transformative changes needed in face of the climate crisis (Groen et al, 2023).

Therefore, an in-depth study of this recent case may offer more clarity about how these mechanisms unfold in practice, and what can be done to redirect policy. While some conceptualizations have been developed on the mechanisms of distributing knowledge and power in such a way that the climate crisis remains to be addressed adequately (Stoddard et al., 2021), and many scholars have offered theoretical insights on the process behind goal-setting and decision-making in public administration (Capano et al., 2019) (Kingdon, 2011), there remains the question of how fitting these approaches are for policy processes in sustainable agricultural governance. The present thesis tests a combined, novel approach to assess such processes based on a new and socially relevant case. Crises such as the nitrogen crisis faced by the Netherlands are likely to continue to occur, for as long as there are no suitable tools available to prevent them.

The scientific and societal relevance of this paper is to address this gap and explore missed opportunities in the policy design process which may be utilized by governments to avoid such crises.

1.2 Research aim

This paper seeks to assess the process which led to the current nitrogen crisis. With this research, it may be possible to identify paths to successfully implement the EU Habitats Directive, and ultimately, contribute to the transition toward a more sustainable and healthier food system. The present thesis, conducted in the style of a causal process tracing analysis, seeks to answer the following research question: *Which factors within the policy design process of the Programma Aanpak Stikstof (PAS) in the years between 2008 and 2015 can be used to explain the Dutch government's failure to design a nitrogen policy in line with the EU Habitats Directive?*

To answer the main research question, both theoretical and empirical sub-questions are addressed in the context of this single case study.

Theoretical sub-question:

1. Which factors lead to policy failure from the perspective of policy design?

I address this question in the theory section (ref. 2.2-2.4).

Empirical sub-questions:

1. Which policy measures of the PAS violate the EU Habitats Directive, and how?
2. Which important decisions can be identified within the policy design process relating to this violation?
3. Which actors influenced the choice of policy measures, and how?

To answer these questions, four aspects need to be understood and assessed critically. Firstly, the major *decisions* that formed part of the policy process between 2008 and 2015 are described in detail. Secondly, the *actors* involved in influencing the design of the policy on the issue of nitrogen pollution and agricultural governance. Thirdly, it may become possible to deduce which *alternatives*, specifically alternative choices which may have avoided a crisis, the Dutch government has failed to recognize or utilize, and why, using the Multiple Streams Framework (MSF) (Kingdon, 2011). Lastly, I assess whether the *mechanisms* that can be identified within this long-term process reflect a similar dynamic as that of the failure to address greenhouse gas emissions globally (Stoddard et al, 2021).

2. Theory

In its essence, the present thesis is concerned with the roots of failure in policy design: dissecting a policy design process which led to misalignment with EU law and a seemingly unmanageable environmental crisis. To understand the involved factors, a high level of contextual information and a detailed understanding of factors involved in the policy design are necessary. Therefore, I first introduce the historical context of the PAS. I argue that Kingdon's Multiple Streams Framework (MSF) is useful to assess the policy design process. The aim is to use Kingdon's approach to explain agenda-setting in the context of the PAS and create a causal model through which to understand the policy process in relation to mechanisms of distributing knowledge and power.

To create this model, I focus on the conflict between economic and environmental interests based on an adaptation of the theory of roles of clusters of actors in policy processes developed by Stoddard et al (2021). This novel, combined approach allows to assess factors relating to knowledge and power which create a specific dynamic between actors. The section concludes with a list of expectations on the dynamics between actors to explain the shortcomings of the PAS, based on the theories and information presented.

2.1 Recent changes in Dutch agriculture concerning economic and sustainable development

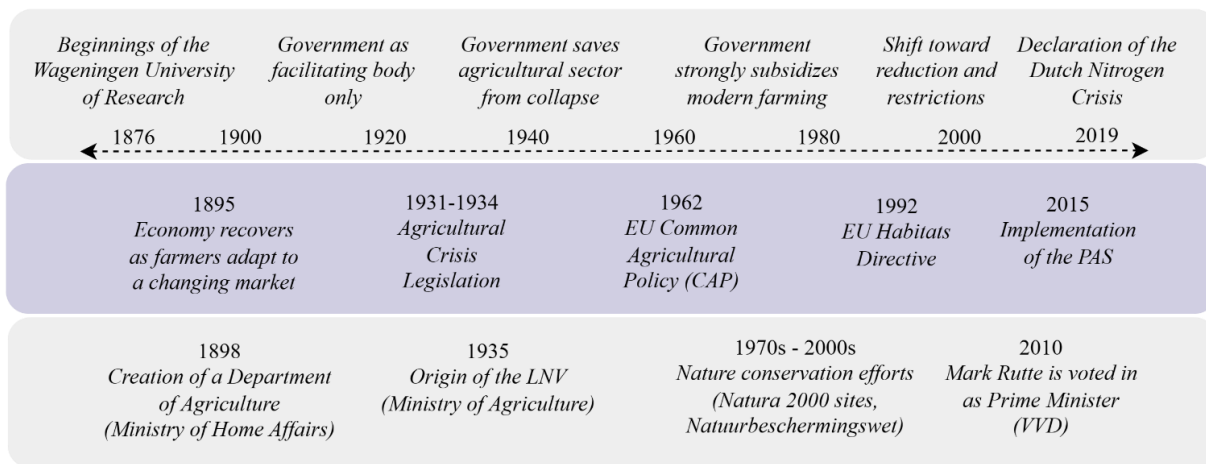
To understand the historical context of the Dutch nitrogen crisis and the PAS, I present an overview of the agricultural, political, and institutional changes affecting the Netherlands' current situation (*Fig. 2*). Dutch agriculture evolved from a longstanding practice of knowledge exchange, starting with the creation of a State Agricultural School in 1876, which later evolved into an agricultural university known today as the Wageningen University of Research (WUR) (Bieleman, 2010). For a few decades, it was farmers themselves who utilized this shared network and knowledge to expand their business and overcome economic hurdles (Bieleman, 2010). At this time, agriculture took the form of small-scale, mixed farms, spread out over the country (Van Der Heide et al., 2011). The government's role had been limited to that of facilitation and oversight (Bieleman, 2010). However, with the economic crisis of the 1930s, the Dutch government eventually decided to intervene and implemented a crisis legislation (Bieleman, 2010). It entailed the use of artificial fertilizers, herbicides, and pesticides to increase production, while keeping prices artificially low (Van Der Heide et al., 2011). In other words, it was thanks to an economic crisis that the Dutch government expanded its role from simple facilitation to great-scale interventions, instating governmental bodies with the authority and capacity to formulate and enforce regulations. Land consolidation projects, part of the crisis legislation and later policy interventions, led to a transformation of the Dutch countryside, enabling more effective use of machines and labor (Van Der Heide et al., 2011).

By the 1950s, the Dutch countryside had been completely transformed and taken over by farming (Bieleman, 2010). Livestock farming and dairy had been a stronghold for Dutch farmers for decades (Bieleman, 2010). However, with the increased use of fertilizers and the possibility of importing feed, the farming landscape changed from diversified farming systems to highly specialized, intensified production of animal products (Bieleman, 2010) (Van Der Heide et al., 2011). Dutch agricultural policy today is framed within the European Common Agricultural Policy (CAP) (Koetse & Bouma, 2022). The CAP had been launched in 1962 with the aim of improving agricultural productivity and the livelihoods of farmers (European Commission, 2023). The Dutch government, for several decades, used this funding to grant subsidies for farmers who used modern methods, increasing production, and decreasing labor costs (Bieleman, 2010). Intensification, mechanization, and resource efficiency were the foundation of a sustainable, comprehensive agricultural policy, yet this also meant that many farmers had to look for new jobs (Bieleman, 2010). In 2007, less than 10% of the Dutch labor force is employed in agriculture, whereas total production had increased tremendously compared to pre-mechanization times (Van Der Heide et al., 2011).

Although agricultural production had become highly efficient thanks to continuous investments and strategic planning, its reliance on artificial fertilizers and focus on animal products posed an environmental threat, which raised concerns among policymakers and the public (Bieleman, 2010). The policy aims shifted from expansion to reduction and restrictions, which, at first, were welcomed despite the cost of such environmental protection policies, as they led to the phenomenon of 'precision farming': even more resource-efficient farming systems enabled by modern technologies (Bieleman, 2010). However, the discourse underwent a change in the 1990s: with the government instating nature conservation sites under the Nature Conservancy Act, or *Natuurbeschermingswet* (NBW), of 1998, which became part of the Natura 2000 network of protected areas as regulated by the EU Habitats Directive of 1992, a growing conflict between the need for environmental protection and the economic interests of farmers, mainly livestock and

dairy farmers, raised questions for how to satisfy both sides when formulating policy (Adviescollege Stikstofproblematiek, 2019) (Buijs et al., 2013). With the instalment of the administration commonly known as Rutte-1 in 2010, a more liberal, conservative government took force and a stance against the previously established course of Dutch nature policy, allegedly disrupting the Dutch ‘social contract’ on nature conservation and the political coalitions supporting it (Buijs et al., 2013) (Ministerie van Algemene Zaken, 2023). The PAS, an integrated approach on nitrogen as one factor within this conflict, had been implemented in 2015, voted in by the Dutch parliament led by prime minister Rutte (Adviescollege Stikstofproblematiek, 2019). As ruled by the Council of State in 2019, the policy did not sufficiently consider the impact of farming activities concerning nitrogen depositions near the Natura 2000 areas of the Netherlands and had to be abolished with immediate effect — another crisis emerged, now both economic and environmental (Adviescollege Stikstofproblematiek, 2019).

Figure 2: Time axis 1876 – 2019



2.2 Theorizing about failure in policy design

Different types of government failure can be distinguished, such as a failure to provide order, social welfare, or public values. Within the academic discourse on the climate crisis, the issue of government failure associated with policy design has not been acknowledged until recently (Helm, 2010). By contrast, policy failure is a more defined concepts, which occurs when the goal of a specific policy could not be achieved (Leong & Howlett, 2021). Both may be interlinked, yet a policy aimed to satisfy the interests of a specific clientele may be successful while simultaneously contributing toward an environmental disaster. In the case of the Dutch nitrogen crisis, the government’s failure may be regarded as designing a policy which the Dutch administrative court ruled as illegal and insufficient to address the need for the reduction of nitrogen (Adviescollege Stikstofproblematiek, 2019). There is a mismatch between the target and the measures.

Mechanisms involved in the policy design may be used to understand why this mismatch occurs. Such mechanisms are commonly conceptualized as abstract forms of interactions (AFI) which result in an observed outcome, and form part of a causal process tracing analysis (Capano et al, 2019). According to this mechanistic view of policy, a policy process leading up to a crisis such as the nitrogen crisis can be analyzed by looking at interactions, e.g., between actors, as part of a causal chain of events (Capano et al, 2019). When reflecting on causal mechanisms behind crises and options to respond to environmental change in the future, counterfactual information may be used to address uncertainties about the processes and patterns influencing change (Ricks & Liu, 2018). Simply put, a causal mechanism and its implications

for improving policy design may be better understood by considering the consequences of alternative interactions.

However, this mechanistic, determinist model may not be sufficient to understand the roots of policy failure. The rational assumptions underlying it are quite reductionist, as they ignore more human, less predictable factors and lead to the exclusion of potentially relevant information (Izdebski et al, 2022). Moreover, policy failure is commonly analyzed under the assumption that governments have good intentions and act rationally, when it may be more useful to assume that the government may not act in good faith and instead, may intentionally avoid outcomes of public value. To explore this 'dark side' of policy making may produce more meaningful learnings to address social or environmental problems (Leong & Howlett, 2021). The agency and ingenuity of actors should not be underestimated. Considering the historical, institutional, and political context of the PAS (ref. 2.1), it is necessary to include a framework which makes this agency explicit.

2.3 Multiple Streams Framework and factors influencing policy design

As discussed, a detailed understanding of context and agency is needed to assess the policy process of the PAS. For this purpose, the Multiple Streams Framework (MSF) can be used in combination with the more mechanistic approach of causal process tracing (Kingdon, 2011). The MSF is an established approach to explain agenda-setting (Ackrill et al., 2013). This approach has been applied to explain national and regional environmental policies (Allen, 2020). In the case of the PAS, this ambiguity and shifting of priorities is evident from the change in discourse on the issue of nature conservation (Buijs et al., 2014). Therefore, the MSF may be used to understand factors influencing policy design beyond the purely rational, mechanistic view.

To understand the process of policy design, the framework distinguishes between three streams: problem, policy, and politics (Hoefner, 2022). The streams are used to explain why some issues become part of the decision agenda, while others do not (Kingdon, 2011).

According to the MSF, decision-makers may change their preferences over time due to various factors relating to the three streams, and rationality is not possible due to the ambiguity of problem-definition (Hoefner, 2022). *Figure 3* illustrates this framework, which is well-suited for case study analysis, specifically to highlight the role of historical contexts and ambiguity in policy development (Ackrill et al., 2013).

The problem stream refers to the changing perceptions and definitions of what the problem consists of. The debate on how to define a problem for political action is in the hands of policy communities. Policy communities consist of academics, public administrators, or interest groups. It may be influenced by limited information, focus events, or feedback (Hoefner, 2022). Policy communities also debate and construct alternatives, solutions in search of problems, as part of the policy stream, determining which approaches may be feasible (Hoefner, 2022). Public opinion and the prevailing political discourse form part of the politics stream (Hoefner, 2022).

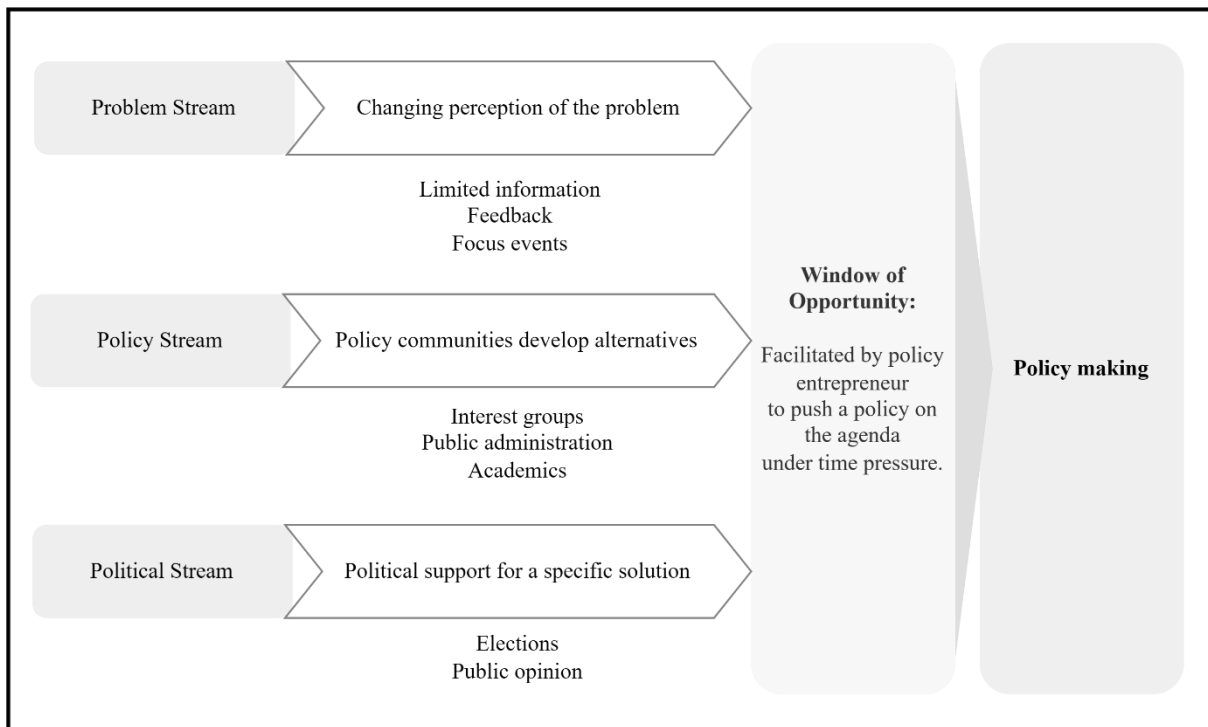
The MSF emphasizes that not only the position of actors may change, but the extent of their agency may as well, depending on the context (Ackrill et al., 2013). This nuance may be useful in understanding the role of actors over time.

Each stream that forms part of the MSF may develop independently, yet impact the final decision (Ackrill et al., 2013). The latter takes place when a window of opportunity is opened, facilitated by a policy entrepreneur (Hoefner, 2022). Such an open window is a rare, short-lived occurrence and the result of a

deliberate effort to couple solutions (from the policy stream) with problems (from the problem stream) and bring this to the attention of powerful actors (the politics stream) (Kingdon, 2011). A policy entrepreneur is one actor, or several actors, who is willing and able to invest resources into setting the agenda and ensures that a majority supports the implementation of the proposed solution (Hoefner, 2022).

To apply the MSF to the policy design of the PAS means to skillfully analyze change in actor’s preferences and strategies at critical moments from within and outside of institutions (Ackrill et al., 2022). It allows to consider political shifts and differences in agency between actors. This may help establish not only which factors were present in guiding the policy design, but also assess and categorize their relative impact on the final decision.

Figure 3: Illustrating the Multiple Streams Framework (Kingdon, 2011)



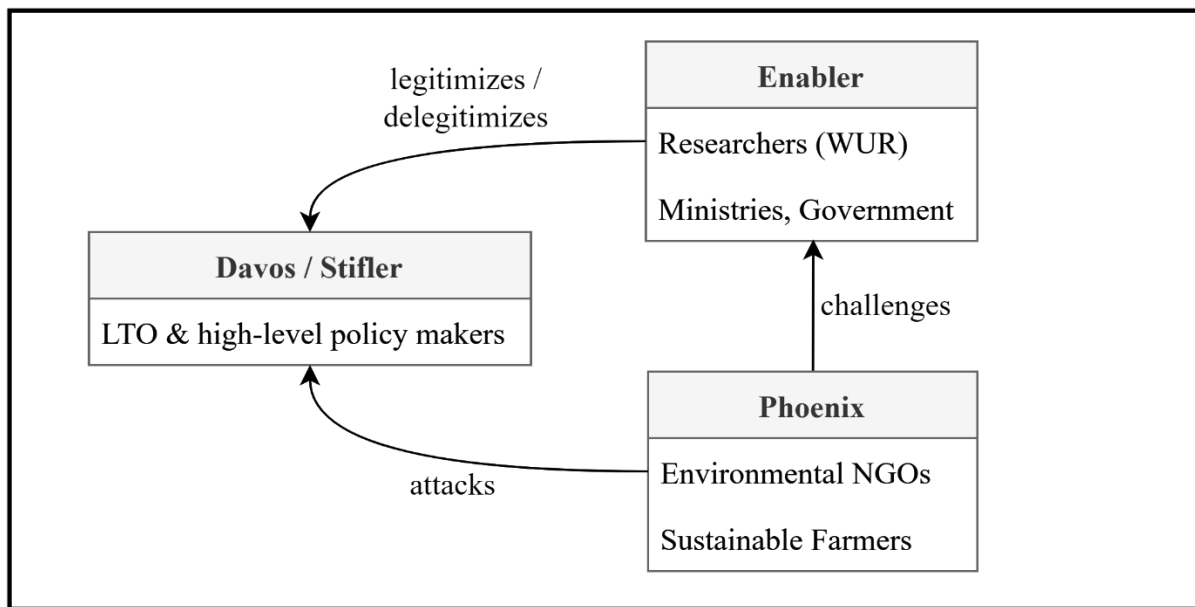
2.4 Modelling dynamics between clusters of actors

A similar question of misalignment, in this case of failing to reduce carbon emissions globally, is assessed by Stoddard et al (2021). The research highlights the conflict between economic and environmental interests of different groups of actors (Stoddard et al, 2021). The authors suggest a categorization of actors or lenses based on their influence on the climate crisis. This approach to institutional analysis and potential reform for improved collaboration also draws from Ostrom’s (2009) work on the Institutional Analysis and Development (IAD) framework, using actors, rules, and norms as a basis for understanding governance and improving results. This conceptualization of clusters may offer a starting point and broad structural framework to understand the relations between different actors in the context of the nitrogen crisis. Therefore, it provides insight into the more systemic factors driving the crisis.

Based on this conceptualization, actors grouped into clusters, play different roles within the norms that govern the distribution of knowledge and power. The Davos cluster represents the power dynamics which uphold the status quo in the interest of the fossil fuel industry, whereas the ‘enabler cluster’ is what grants legitimacy to it. The latter, as the enabler, may also hold power to initiate change; its power is of instrumental value. Enablers hold a high level of technical knowledge and expertise. The norms which govern change are guided by the ‘ostrich cluster’, actors which hinder change, and the ‘phoenix cluster’, actors which enable or catalyze change. Rather than in institutions and instruments, their power lies in ideas (Stoddard et al, 2021).

To understand the systemic context of the policy design of the PAS, I review individual steps within the policy design process in reference to these clusters. I expect to observe a similar dynamic as represented in *Figure 4*.

Figure 4: Clusters behind crises — Expectations on dynamics between actors



Within the context of the policy process of the nitrogen crisis, actors who support the dominant paradigms of the ‘Davos cluster’ are instead referred to as ‘stiflers’. Organizations representing the interests of intensive animal agriculture farmers, such as the LTO (*Land- en Tuinbouw Organisatie Nederland*), may be categorized as such stiflers. While these measures have been targeted toward reducing nitrogen, they have been insufficient; high-level policy makers within the Dutch government may also be classified as stiflers, making decisions within the dominant paradigm of preserving economic interests.

Enablers, on the other hand, do not make decisions and rather validate them or guide them. Researchers of agricultural universities (such as the Wageningen University of Research, or WUR) and non-governmental agricultural organizations may be considered part of this cluster. Their role as enablers of the nitrogen crisis has been challenged by the environmental organizations who have sued the government over their insufficient measures (Sumter, 2021). Hence, these environmental organizations, can be mapped as part of the phoenix cluster. The ostrich cluster may be disregarded for the purpose of this analysis, as its role in guiding policy design is limited.

2.5 Theoretical expectations

The MSF is helpful to theorize about when and how a policy becomes part of the agenda, whereas the clusters may be useful to understand how different groups of actors interact and reconfigure the three streams into a more generalizable model of understanding crises. Hence, I integrate both theories to formulate three theoretical expectations on the role of each cluster in the policy design, based on the background of the PAS and knowledge of the MSF.

1. **Stifler:** Actors in the stifler cluster, i.e., high-level policy makers or ‘policy entrepreneurs’, use deliberate efforts to couple the three streams in such a way that the PAS supports economic interests over environmental protection.
2. **Enabler:** Actors in the enabler cluster were hindered from effectively influencing the policy or problem stream to avoid a crisis due to a dynamic of distributing knowledge and power that the PAS developed under.
3. **Phoenix:** Actors in the phoenix cluster in support of environmentally more transformative approaches were unable to effectively contribute their ideas to the debate on solutions as they did not participate in the policy design process of the PAS.

3. Methods

3.1 Research design

This research focuses on a single case study, the Dutch nitrogen crisis, within a broad scope of contextual information, traced over time. A single case study may be useful to understand causal mechanisms in-depth and contribute to high conceptual validity (George & Bennett, 2005). Following the sub-questions outlined in section 1.2, the analysis includes important decisions taken between 2008 and 2015, involved actors, and their influence on policy design. I use this information to map out the decision-making process behind the Dutch nitrogen crisis and identify factors behind it, testing the expectations formulated in section 2.5.

The research design combines exploratory and explanatory research: exploring the usefulness of established and emerging theories of policy design and failure related to environmental crises and explaining the nitrogen crisis as an outcome of the policy process. I use causal process tracing (CPT), a systematic qualitative analysis using public documents (policy papers, strategic documents) and media articles (ref. *Table 1*). For the proposed research, both generalization and particularization strategies for process tracing are employed: The aim is to understand a particular event through a theoretical lens and refine existing models using empirical evidence. The evidence is provided in form of the interactions between actors, or factors in form of AFIs reframed within the MSF, and the resulting decisions regarding the policy design. Such outcome-explaining process tracing analysis, at a sufficient level of detail, may provide a substantial source of causal inference (George & Bennett, 2005). It is this inference about influential factors that leads to an answer to the main research question.

3.2 Data collection

The documents are selected to provide insight on the relevant stakeholders involved in influencing the government’s approach to the emerging nitrogen crisis. For reasons of feasibility, I select documents from the eight years leading up to the adaptation of the PAS in July 2015 (Adviescollege Stikstofproblematiek, 2019). Inclusion and exclusion criteria are used according to *Table 1* to narrow down the available evidence.

The focus lies on policy papers, advisory documents, public statements, and media articles. Media articles are preferably selected from more neutral and respectable sources. Hence, both primary and secondary sources are utilized for the analysis. Whereas primary sources are used to identify and ascertain key events and involved stakeholders, secondary sources such as investigative news reports provide additional context on the meaning of the events within the larger context of the PAS.

Table 1: Inclusion and exclusion criteria for documents eligible as evidence

Inclusion criteria	Exclusion criteria
Legal texts concerning the EU Habitats Directive and Natuurbeschermingswet (NBW) as released before 2015	Other legal texts or forms of texts adopted after 2015
Draft papers, statements, voting results, and transcripts published in the years 2008-2015, concerning the PAS	Draft papers, statements, voting results, and transcripts published before 2008 or after 2015
Advisory reports from the MER, PBL, administrative court, and taskforces specifically dedicated to the nitrogen issue	Advisory reports concerning any other subject or from any other organization
Court rulings in 2008, 2019 from the Dutch administrative court and the European Court of Justice on the matter of Dutch nitrogen policy	Court rulings from other years
Newspaper articles from <i>Trouw</i> , <i>NRC</i> after the year of 2008, concerning appointed state secretaries of the ministries in charge of the PAS and/or the PAS itself	Any other newspaper, any articles from before 2008
Scientific articles on the topic of political discourse on the matter of nature conservation between 2008 and 2015	Any other scientific literature

In preparation of the CPT, a preliminary document review is conducted as a tool for evidence synthesis. Using this tool, relevant, publicly accessible documents, such as the PAS or the regulation on the protection of Natura 2000 areas, are gathered as evidence. More generally, documents are used as evidence to reproduce a timeline of events leading up to the court case. Four phases are identified as cornerstones of the causal analysis. Hence, an initial review may provide an overview of the available evidence. A focus on a specific timeframe, key decisions, events within that timeframe, and involved actors, is helpful to select from the evidence.

3.3 Operationalization and data analysis

Process tracing, however popular within qualitative social science research, can take many forms in practice. The debate on what constitutes ‘good’ process tracing research design has not been conclusive. As a guideline, seven steps ought to be completed: First, initial assumptions about causal mechanisms are built from theory. Second, a time frame to focus the analysis needs to be determined, and a timeline of events is established. As a third step, causal graphs are constructed to understand the events. In the present thesis, these graphs built upon the conceptual frameworks laid out in the MSF (Kingdon, 2011) and dynamics between clusters of actors (Stoddard et al., 2021). Next, alternative events or choices are identified at each step of the timeline, and the alternative outcomes. Lastly, the available evidence is used to either support or reject the initial expectations (Ricks & Liu, 2018). Using these steps, it is possible to analyze whether the conceptual framework on the causal mechanisms behind an environmental crisis (Fig. 3-4) can be applied to this specific, real-world case (Beach & Brun Pedersen, 2019).

Before presenting the process tracing analysis, I investigate the legal considerations of the PAS and provide a brief overview of events between 2008 and 2015. The policy process is divided into four phases, from which I focus on the first three for further assessment of the policy design. The selected evidence from this time frame is analyzed to first outline important factors and decisions as pertaining to the present outcome in relation to the involved actors, in chronological order. I construct causal graphs of how different actors, factors and outcomes are linked, using the MSF. Actors that *did* and that *are likely* to have impacted the outcome are included based on the assessed evidence. This causal model is used to reflect on the mechanisms leading to the outcome and compare them with the narrative lenses suggested by Stoddard et al (2021). In this process, excluded actors or alternative outcomes are highlighted. The findings are used to formulate answers to the sub-questions (ref. 1.2), reflect on expectations (ref. 2.5), and answer the main research question.

4. Analysis

In the first section of the analysis, I answer the first two empirical sub-questions by describing how the PAS violates the EU Habitats Directive, and how its policy design process can be outlined. The following sections focus on the third empirical sub question on the actors involved in the policy design and the consequential deductions about possible alternative outcomes, leading to an answer to the main research question. Kingdon’s MSF is applied to categorize the influence of individual actors and events on the policy design. The clusters, as adapted from Stoddard et al (2021), are used to match actors accordingly.

4.1 Legal considerations on the policy design of the PAS

In 2019, the Council of State, or *Raad van State*, the highest administrative court of the Netherlands, determines that assumptions underlying the PAS, specifically regarding the impact of future nitrogen reductions, do not meet the requirements of the EU Habitats Directive (Adviescollege Stikstofproblematiek, 2019). This confirmed the ruling of the European court of justice in 2018, brought forward by the NGOs *Mobilization for the Environment* and *Vereniging Leefmilieu* (InfoCuria, 2018).

The documents relevant in determining the legal considerations for nature conservation in the policy design of the PAS are the EU Habitats Directive of 1992, the NBW of 1998, and its renewed version, the *Wet Natuurbescherming*, in force since 2017. An amendment to the NBW, enforced in January 2010, is what put forward the idea for the PAS: The Dutch government faced an obligation to formulate a realistic program to reduce nitrogen for the protection of Natura 2000 areas, to be renewed at least every six years, as stipulated in Art. 19kg (Economische Zaken, 2016). Eventually, this program was formulated and

adopted in 2015. The PAS considered that grazing and fertilization are activities which do not require a permit. This exemption is contrary to the EU Habitat Directive, specifically Art. 6 §3:

“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.” (EUR-Lex, 1992, p. 7)

Grazing and the use of fertilizers near nature conservation sites can be considered as projects, or part of projects, which are likely to have a significant impact on the Natura 2000 sites in their vicinity. Therefore, appropriate assessments need to be conducted, and it has been concluded that in addition to relying on misdirected assumptions, the measures of the PAS do not sufficiently address required assessments (Adviescollege Stikstofproblematiek, 2019). The Council of State, after considering the ruling of the European court of justice, decided that the PAS may no longer serve as a basis for the processing of permits, due to this misalignment (Adviescollege Stikstofproblematiek, 2019). Further, to achieve nature conservation objectives, the PAS ought to include measures to reduce nitrogen immediately. However, in its implemented, phased-out version, these measures were lacking (Adviescollege Stikstofproblematiek, 2019).

4.2 Outline of the policy design process of the PAS

The purpose of the PAS was to provide a comprehensive policy on the regulation of permits for projects that have an impact on nitrogen depositions, such as building construction or farming. This followed from the need for a more streamlined approach on how to process permit applications. The goal, from the very beginning, was to allow room for economic development while reducing nitrogen depositions overall. In this section, I establish the timeframe of the analysis and an outline of the events in the policy design process of the PAS (*Fig. 5*).

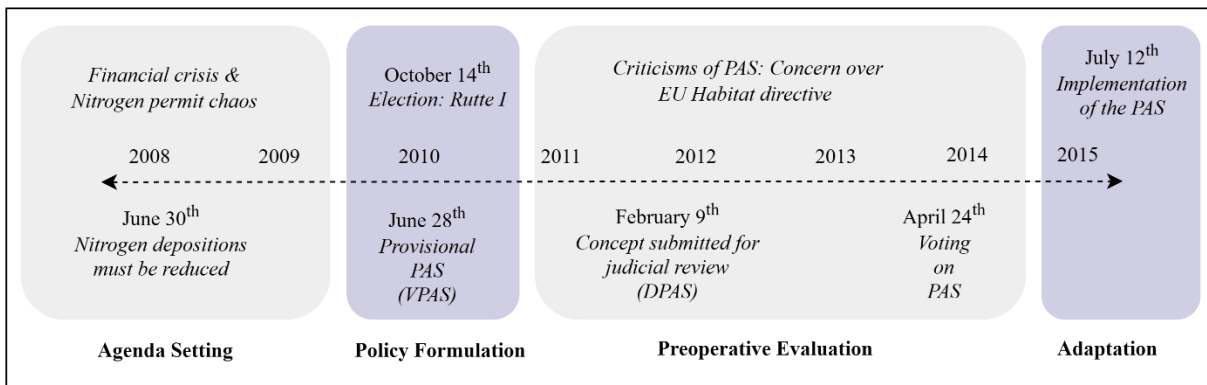
Agenda Setting. The Natura 2000 areas in the Netherlands, established over several decades, bring about legal consequences for projects developing in their vicinity (Adviescollege Stikstofproblematiek, 2019). The development of livestock farming raises concerns (Overheid, 2016). In 2008, the Council of State shuts down a policy framework for the regulation of permits affecting nitrogen depositions, specifically for ammonia, on the grounds of nature conservancy concerns regarding the impact on Natura 2000 areas (LNV, 2009). This complicates the processing of permit applications greatly (Overheid, 2016). The question of how to address nitrogen and nature conservation objectives conflicts with the question of how to recover from the financial crisis. Carlo Trojan, a former high-ranking official of the EU, concludes that it is necessary to reduce nitrogen emissions drastically (Van Bokkum & Leijten, 2021). This is a turning point for nitrogen policy in the Netherlands. Thereafter, in 2009, an amendment is made to the already existing Crisis and Recovery Act, or *Crisis- en herstelwet* (Van Bokkum & Leijten, 2021) (Ministerie van Economische Zaken, 2010). This act, adopted in 2010, serves to support infrastructure development in the Netherlands, including projects which may have an impact on nitrogen depositions (Ministerie van Financiën, 2009) (Ministerie van Economische Zaken, 2010). The amendment includes the commission of a program regarding the regulation of permits and reduction of nitrogen and was introduced by representatives of the parties PvdA and CDA (Van Bokkum & Leijten, 2021). This collides with the beforementioned amendment made to the NBW: The PAS is not only a measure of nature conservation, but also one of economic development (Tweede Kamer der Staten-Generaal, 2010).

Policy formulation. A provisional version is published in early 2010 (VPAS), with the intention of formulating a finalized draft in 2010 (Tweede Kamer der Staten-Generaal, 2010). This is an emergency measure: the economy is under pressure (Van Bokkum & Leijten, 2021). It is also the year of the beginning of the Rutte administration (Ministerie van Algemene Zaken, 2023).

Preoperative evaluation. In the following year, a first critical report on the VPAS was published based on an environmental impact assessment, or *milieueffectrapport*, MER, in Dutch. The report concludes that there are concerns over the legal permissibility of the PAS considering the requirements of the EU Habitat directive (Commissie voor de milieueffectrapportage, 2011). Several other reports and advisory papers confirmed this criticism (Julen, 2019). A definitive draft was submitted to the Council of State on the 9th of February 2012 (DPAS) (Tweede Kamer der Staten-Generaal, 2013). However, criticisms remained (Commissie voor de milieueffectrapportage, 2013) (PBL, 2014). A preliminary draft was submitted in early 2015 (Ministerie van Economische Zaken & Ministerie van Infrastructuur en Milieu, 2015). Again, the MER concluded that concerns have not been eliminated, as published in a report of May 2015 (Commissie voor de milieueffectrapportage).

Adaptation. Finally, in July of 2015, the PAS was adopted shortly after a final draft is submitted, and it allows permits to be granted *under the condition* that future measures would be taken to reduce nitrogen depositions (Adviescollege Stikstofproblematiek, 2019).

Figure 5: Timeline of events in the policy design process, 2008 – 2015



4.3 Actors in the policy design process of the PAS

In this section, I discuss the role different actors, groups, and institutions in the policy design using the MSF, and determine the outcomes by analyzing the drafts at different stages (purpose statements in 2009-2010, official drafts of 2010, 2012, and 2015). I focus on ‘outcomes’ in the sense of concrete events that played a role in neglecting the issue of nitrogen depositions from farming operations near Natura 2000 areas and are a result of interactions between actors. I structure this part of the analysis by breaking the policy design process up in three stages, according to section 4.2.

Agenda Setting. 2008 to May 2010.

The problem of nitrogen depositions and permit applications for new projects found its way onto the government agenda in 2008. Under the *Toetsingskader Ammoniak*, an assessment framework for ammonia, it was suggested that an amendment is made to the NBW to allow for an easier procedure of permits relating to the expansion of livestock operations (Willink, 2009). The proposed amendment built on a report of

2007, written by Alterra, an institute at the WUR, and the ECN, the centrum for energy research of the Netherlands (Gies et al., 2007). However, the administrative court shut down the amendment, arguing that the scenarios described in the report are too optimistic and an implementation of such a law would be in violation of the EU Habitats Directive (Willink, 2009). Therefore, the problem persisted.

State secretary Gerda Verburg (CDA, known as conservative farmer's party) responded to the administrative court's advice in a letter to parliament, aiming to find a solution to the problem (LNV, 2009). Verburg contended that there ought to be room for development, also for the expansion of livestock operations, within the legal framework of the EU Habitats Directive (LNV, 2009). Already before the election of 2012, the conflict between environmental and economic development formed part of the problem. At this stage, Verburg planned to consult the LTO as a representative of the livestock industry, nature organizations, and the government (LNV, 2009). The state secretary commissioned a task force led by former EU official Carlo Trojan, which concluded that nitrogen depositions in the Netherlands must be reduced (Taskforce Stikstof/ammoniak in relatie tot Natura 2000, 2008). Verburg responded to this report in June of 2009 by acknowledging that there is room for a new regulation on how permits should be processed, however, this will only be investigated further after the summer (Verburg, 2008). Earlier, Verburg commissioned a second task force under PvdA member Servaas Huys, *De Adviesgroep Huys*, a rather informal working group producing a report on how a programmatic approach may be realized: within a matter of weeks, the task force concluded that there is room for development, however, the NBW and case law may complicate this and the urgency of the situation may call for changes to the law (De Adviesgroep Huys, 2009).

In November of 2009, Ger Koopmans (CDA) and Diederik Samson (PvdA) suggested an amendment to the *Crisis- en Herstelwet*, an emergency law, and parliament approved it on the 18th (Van Bokkum & Leijten, 2021) (Ministerie van Economische Zaken, 2010). It is this amendment that calls upon government to formulate a programmatic approach to nitrogen, implemented in cycles of a maximum length of six years.

Policy formulation. June 2010.

A preliminary version of said approach is published in June 2010, the VPAS (Tweede Kamer der Staten-Generaal, 2010). Although the LTO and nature organizations were mentioned previously as consulted parties, there is no mention of them in the VPAS (Tweede Kamer der Staten-Generaal, 2010). Mentioned stakeholders are the ministers of the LNV (agriculture, nature, and food quality) and the VROM (spatial planning), as well as the VenW (traffic and water), ministry of economic affairs, and the provinces, represented by the IPO and VNG (Tweede Kamer der Staten-Generaal, 2010). Further, the EU is mentioned as a party who was informed about the VPAS in broad strokes, however, there is no confirmation of the EU's approval (Tweede Kamer der Staten-Generaal, 2010). The VPAS sets the course for the development of a definitive approach.

Preoperative Evaluation. July 2010 to June 2015.

Parliament elections of October 2010 resulted in a new political landscape as Mark Rutte, member of the liberal VVD, becomes prime minister (Ministerie van Algemene Zaken, 2023). The CDA is no longer the leading party in parliament. Under this new administration, the LNV and the EZ merged into a new ministry, the ministry of economic affairs, agriculture, and innovation. 'Nature' no longer formed part of the title and ceased to be part of the top priorities of government (Trouw, 2011) (Julen, 2019). Henk Bleker, himself a farmer from Groningen, became state minister of said new ministry and takes over from Verburg (Trouw, 2011) (Van Bokkum & Leijten, 2021). He aimed to shift the policy discourse further away from nature conservation and toward nature as a resource for use by humans, drastically reduced the budget available for nature conservation, and built strong ties to the livestock industry and farmers (Trouw, 2011).

In March 2011, an independent commission published a critical report assessing the potential environmental impact of the VPAS (Commissie voor de milieueffectrapportage, 2011). The report recommends that to meet legal obligations of the EU Habitats Directive, the PAS should provide certainty about the time in which nature conservation goals are to be achieved, or if not, it may be difficult to defend the licensing of new projects (Commissie voor de milieueffectrapportage, 2011). Like the advice on the *Toetsingskader Ammoniak* of the administrative court, and the later judgement in 2019, the commission referred to Article 6 of the directive in support of their report (Commissie voor de milieueffectrapportage, 2011). The commission, known as the MER, continued to submit reports on behalf of the ministry throughout the development of the PAS.

A first definitive version of the PAS was submitted in February 2012 under state minister Henk Bleker (Tweede Kamer der Staten-Generaal, 2013a). It had a phased-out approach for nature conservation measures, intending to leave room for development while implementing conservation or restoration measures in a later cycle (Tweede Kamer der Staten-Generaal, 2013a).

The DPAS was submitted to the administrative court, which responded two months later by raising concerns about three key features of the DPAS: One, its reliance on the minister of infrastructure and environment to allocate room for development, rather than process permits on a more local level by the appropriate authorities (Raad van State, 2012). Two, that the NBW considers immediate action for the reduction of nitrogen depositions and the restoration of Natura 2000 areas, whereas the DPAS assumes a phased approach (Raad van State, 2012). Three, that the EU Habitats Directive requires certainty about the achievement of nature conservation objectives, and there are concerns about the uncertainty on whether nature conservation objectives can be achieved within an appropriate period, given the preconditions of the current situation in the Netherlands (Raad van State, 2012). In other words, according to the administrative court, the assumptions underlying the DPAS are not compatible with the EU Habitats Directive.

In June of 2012, after the court's evaluation and with the parliament's support, the NBW was changed to allow for a phased-out approach and leave room for development without immediate action on nature conservation (Tweede Kamer der Staten-Generaal, 2013a). Yet, weeks after the amendments, the MER published a report on the DPAS, raising concerns about assigning room for development without a guarantee of achieving nature conservation goals, again on the grounds of the requirements of the EU Habitats Directive (Commissie voor de milieueffectrapportage, 2012). Bleker responded to concerns of the MER in August, ascertaining that in his view, it is possible to proceed with assigning room for economic development and without investing in nature restoration first (Ministerie van Economische Zaken, Landbouw en Innovatie, 2012).

This is the general direction that the policy design of the PAS was headed into as of summer 2012: A phased-out approach giving priority to room for development over nature conservation. Following the re-election of Mark Rutte as Prime Minister in September 2012, Bleker resigned from his position and was replaced with Co Verdaas from the PvdA (Trouw, 2012). However, Verdaas was forced to resign only a few weeks after (Trouw, 2012). The new state secretary, Sharon Dijksma, took his office in December 2012 and remained in office until after the adoption of the PAS (Zuidervaart, 2014). She, also, is a member of the PvdA (Zuidervaart, 2014). Although serving the 'labor party', she was also heading a ministry under a liberal cabinet and thus navigates conflicting interests, with limited knowledge of the subject.

It is known that both Bleker and Dijksma had meetings with the LTO (Van Bokkum & Leijten, 2021). And it was suggested that Gerda Verburg, also, had met with them (LNV, 2009). Yet, Dijksma added 90 more Natura 2000 areas to the network in her time as state secretary for economic affairs, agriculture, and innovation, when there used to be less than 30 under Bleker (Zuidervaart, 2014). It is unlikely that Henk Bleker would have foreseen this to happen. It further complicated the later implementation of the PAS

concerning the development of agricultural activities, as more protected areas meant more concerns about their conservation. In interviews with ecologists in charge of creating an assessment of the Natura 2000 areas as a basis for the PAS, it is revealed that the scientists faced pressure to not conclude that any site would be in too poor of a condition to legally allow for further allocation of room for development (Van Bokkum & Leijten, 2021). The MER submitted their evaluation of the assessment report of the PAS regarding its level of detail and scope in June 2013, emphasizing the need for clarity about how nature conservation goals will be achieved and consider worst case scenarios, rather than be too optimistic (Commissie voor de milieueffectrapportage, 2013). However, the assessment reports were rewritten by ministry officials to fit the optimistic narrative before being handed to the ecologists for signatures (Van Bokkum & Leijten, 2021). Meanwhile in parliament, amendments to the PAS aiming to fix beforementioned criticisms, including an amendment on leaving the authority of allocating space for development in the hands of the appropriate officials, submitted by PvdD member Esther Ouwehand, were rejected (Tweede Kamer der Staten-Generaal, 2013b).

In 2014, Dijkma supported an agreement with stakeholders from the livestock farming sector, including the LTO as well as dairy, animal feed, and poultry industry representatives, to further reduce nitrogen depositions based on voluntary measures (Ministerie van Economische Zaken, 2014). Interestingly, this voluntary agreement contains a paragraph under the article for monitoring, reporting and evaluation which declares that a working group, consisting of all the involved parties of this agreement, including stakeholders of the livestock farming sector, shall create an inventory report based on numbers of third parties to assess both the reduction of ammonia emissions and the amount of deposition and development space made available to the livestock sector (Ministerie van Economische Zaken, 2014). This report, then, within ten days of its submission to the responsible authority at the ministry, is sent to all the involved parties of the PAS (Ministerie van Economische Zaken, 2014).

During a plenary debate of the PAS on April 16th, 2014, Dijkma defended the PAS as she responds to the report of the MER, ascertaining that the assessment report is carried out to the highest standard, and dismissed criticisms of the opposition, gaining support of the parliament (Tweede Kamer der Staten-Generaal, 2014) (Van Bokkum & Leijten, 2021). On April 24th, 144 of 150 members of parliament voted in favour (Tweede Kamer der Staten-Generaal, 2014). Only GroenLinks and the PvdD, parties which are considered 'green', voted against (Tweede Kamer der Staten-Generaal, 2014).

The Planbureau van de Leefomgeving (PBL), in collaboration with Marlies Sander from the WUR, submitted a first critical report on the PAS in October 2014 (PBL, 2014). The report concludes that the assumption that future conservation and restoration measures will effectively undo the damage done by present developments is highly uncertain and that recovery measures are necessary already within the first cycle of implementation (PBL, 2014). As voting had already concluded, there was no official response to this report from the side of the state secretary directed at the parliament. A final draft of the PAS was submitted on January 10th of 2015 (Ministerie van Economische Zaken & Ministerie van Infrastructuur en Milieu, 2015).

The MER, as requested by state secretary Dijkma, submitted a provisional report in March of 2015, highlighting again that it remains uncertain whether nature conservation objectives may be achieved, even considering future measures, specifically considering the potential activities and room for development allowed by the PAS in its current state (Commissie voor de milieueffectrapportage, 2015a). This is not what Dijkma highlighted in her response when addressing parliament in April: based on a single footnote in the report, referring an unspecified case law, it is suggested that there is a chance that the allocation of room for development might not harm the realization of relevant nature conservation goals (Commissie voor de milieueffectrapportage, 2015a) (Dijkma, 2015). Judging by the wording, this is uncertain. The finalized version of this report is published in May (Commissie voor de milieueffectrapportage, 2015b).

4.4 Understanding the policy design process in terms of the MSF

The following figures (ref. Fig. 6-8) translate insights from the previous process analysis (ref. 4.3) into the MSF to explain the emergence of policy windows at different stages of the PAS, starting with the VPAS and ending with its adoption.

Figure 6 visualizes the initial stage of the policy design process. At this point, it was state secretary Gerda Verburg who first explored what an integrated approach on the nitrogen issue may look like. At this stage, the conflict between environmental and economic interests was at the heart of the problem and remains unsolved. It was not clear yet that room for economic development should take priority over nature conservation measures.

Figure 6: The VPAS, explained using the MSF and Gerda Verburg as policy entrepreneur

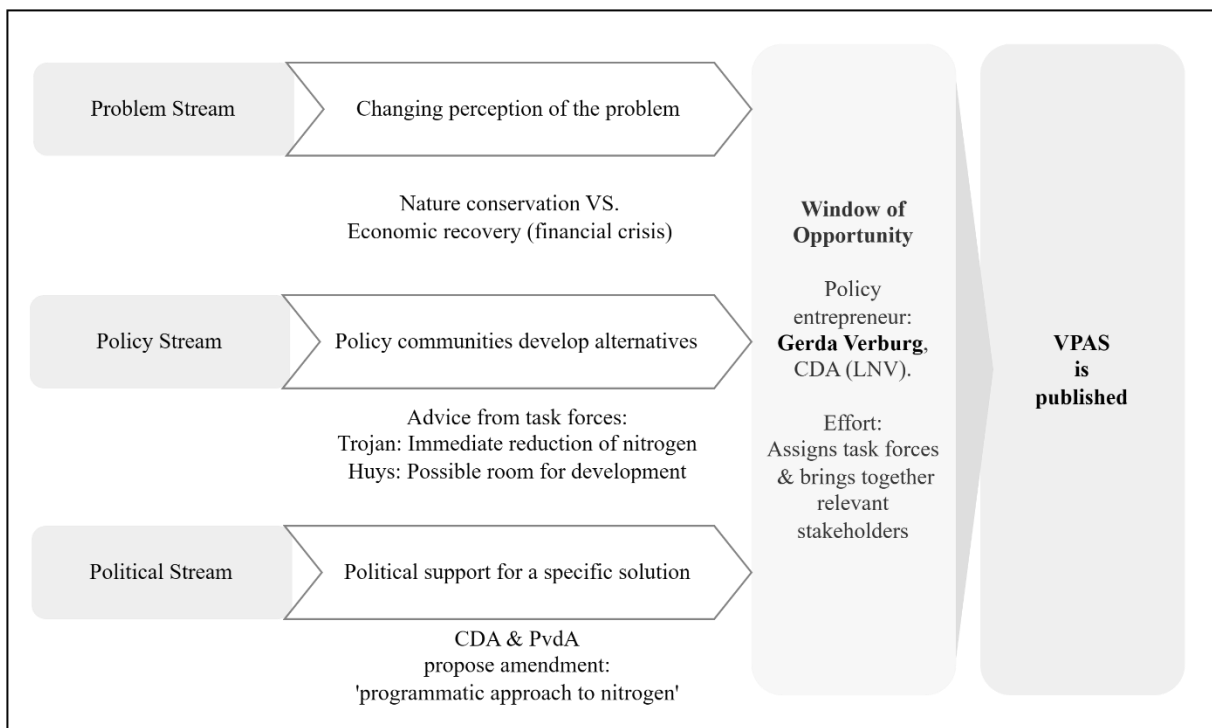


Figure 7 shows the effect of the change of administration following the elections in 2010. Henk Bleker, the new state secretary for a new ministry in charge of the PAS, pushed for 'room for development' and was optimistic about the legal tenability of the PAS. Support from a more liberal administration allows for changes to the NBW to dismiss concerns as the DPAS is published and proceeded with. Although political support played a significant role, this change would not have been initiated without the efforts of Henk Bleker as policy entrepreneur. It was his goal to remove nature conservation from the agenda and prioritize economic development.

Figure 7: The DPAS, explained using the MSF and Henk Bleker as policy entrepreneur

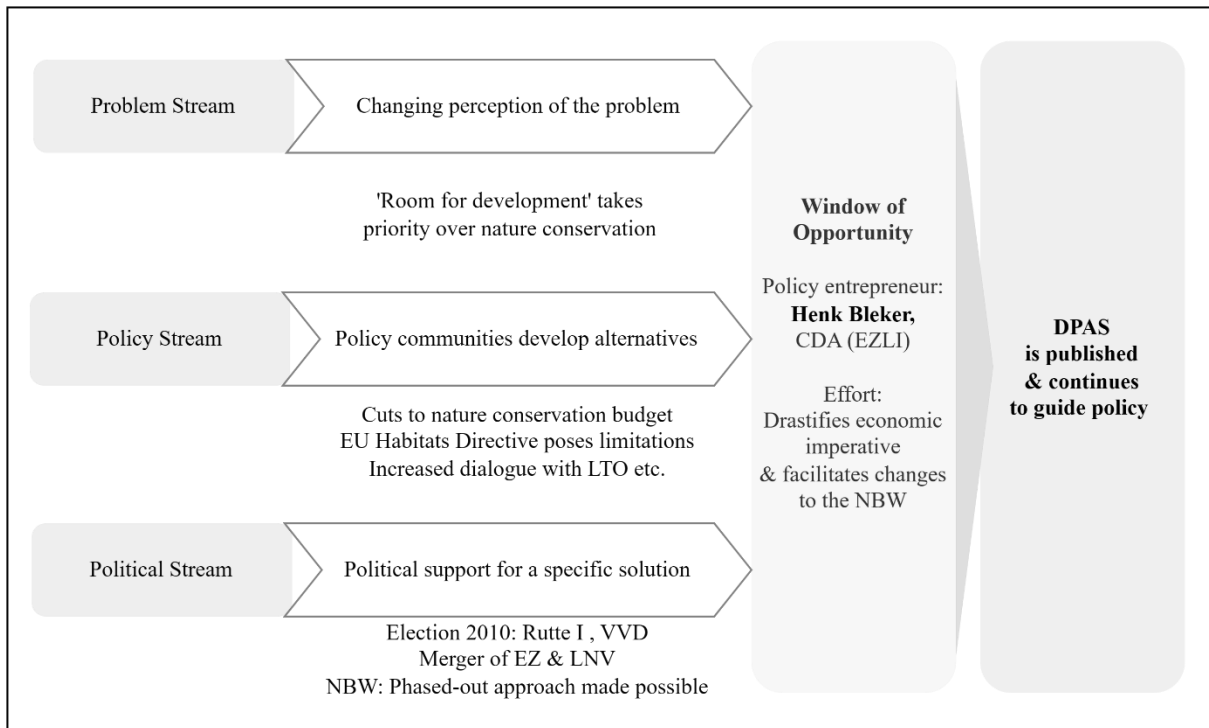
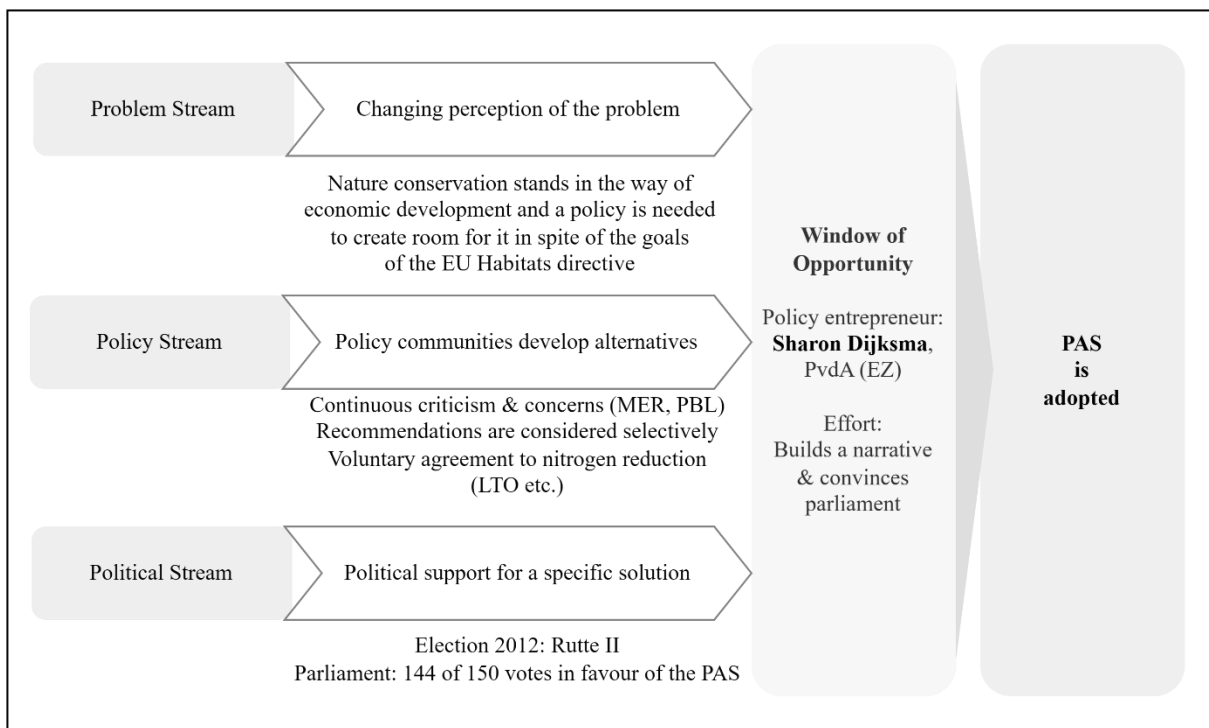


Figure 8: The adopted PAS, explained using the MSF and Sharon Dijksma as policy entrepreneur



The ministry of economic affairs (EZ) was rewriting reports of ecologists, which form the scientific basis of the PAS, to ensure that there is room for development (Van Bokkum & Leijten, 2021). While this is not in line with the goals of the EU Habitats Directive, it is in line with the narrative of this new problem definition: the PAS must be adopted to ensure this, and it must be a measure which can be legally justified under the EU Habitats Directive. Whereas previously, the goal of nature conservation was simply disregarded as to be of lower priority, it now must be artificially removed as a legal concern. Further, the parliament needs to vote in favor of the PAS despite those concerns. This is the challenge that Sharon Dijksma faced as a policy entrepreneur. Yet, due to time pressure and the construction of a politically convincing narrative, the PAS is adopted, as outlined in *Figure 8*.

4.5 Understanding the policy design process in terms of clusters of actors

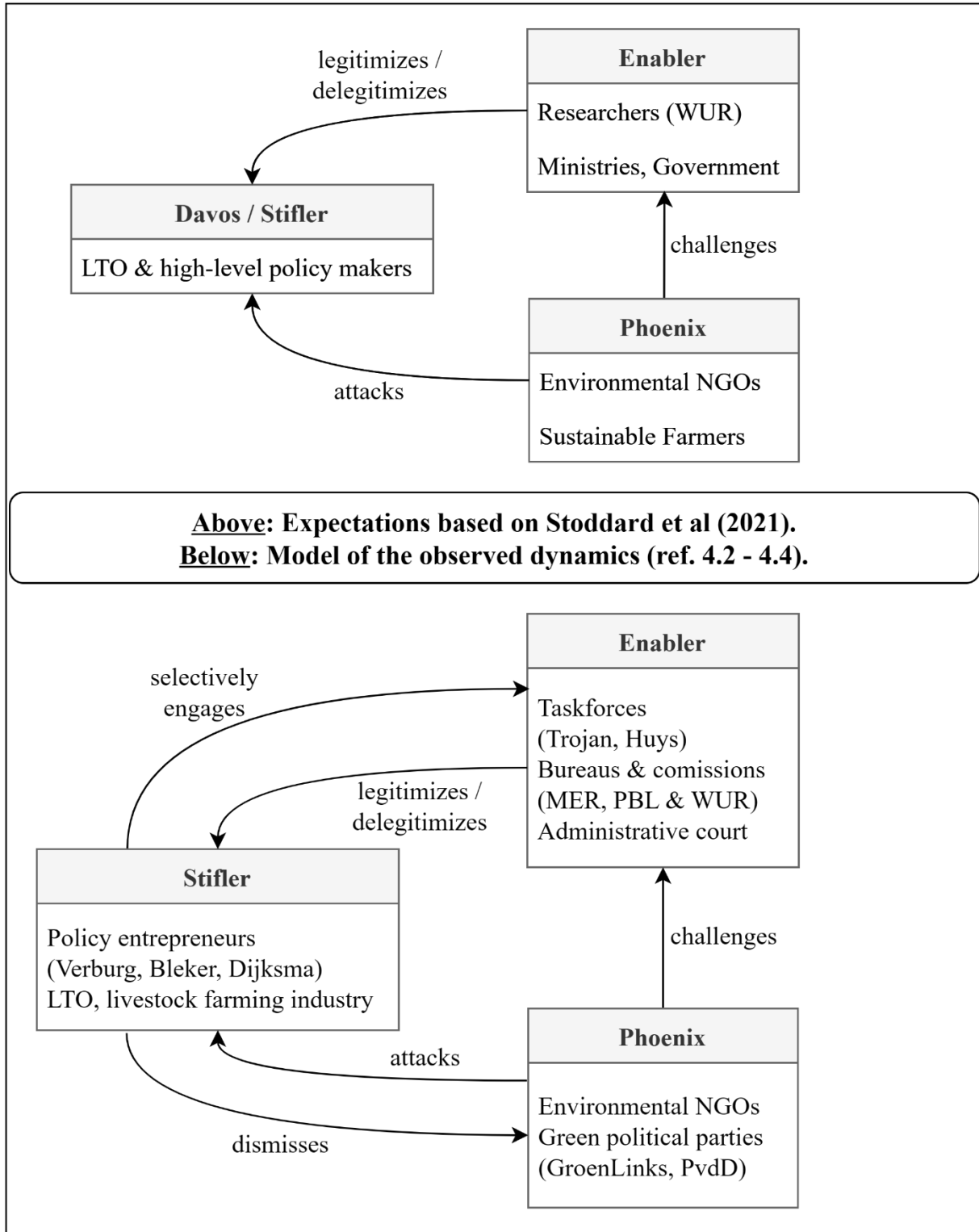
In this section, I use the results of the analysis in sections 4.2 - 4.4 to group actors into the three clusters, building upon the expectations visualized in *Figure 4*. The policy entrepreneurs, as high-level policy makers, are part of the stifler cluster, and so are their respective ministries. Both figures are compared next to each other in *Figure 9*. This figure serves as a model of the observed dynamics between clusters of actors. The model is useful to assess the systematic factors involved in the policy design of the PAS and explain how the mechanisms within this dynamic led to the misalignment of the policy regarding the EU Habitats Directive. Based on this model of the observed dynamics between actors and the insights from applying the MSF to the policy design process at different stages, I determine which factors have been most influential in the development of the PAS. Consequently, I assess which alternative outcomes could have been achieved within this dynamic, under different circumstances. The role of actors, context, and the dynamic itself is reflected on critically.

Although similar, there are some important differences between the expected and observed dynamics (*Fig. 9*). What hindered the phoenix cluster from affecting the policy design of the PAS is that the enabler cluster itself faces a challenge in effectively engaging with policy makers. This is due to the stifler cluster's selective engagement. If a taskforce concludes that nitrogen must be reduced immediately, a second taskforce is set up to create a narrative for room for development first (*Fig. 5*). Legal concerns of the administrative court are not regarded as a reason to PAS change the policy, but to instead to change the law that it falls under (*Fig. 6*). When the MER published critical reports, the ministry in charge of the PAS focused on the information that is relevant to supporting the already existing narrative (*Fig. 7*). The stifler cluster, specifically the policy entrepreneurs that form part of it, hold power over the enabler cluster and the distribution of knowledge to decision-makers.

Therefore, a first key difference is that the stifler cluster is not simply a group of actors resisting change from outside forces. It is instead a powerful, strategic actor which may limit the extent to which other clusters can influence policy through ideas or information. The phoenix cluster may attempt to challenge this development; however, it is hindered in doing so as the stifler cluster is also powerful in dismissing their ideas. This is the second difference between the expected and observed dynamics. A third last, but important difference is that sustainable farmers have been missing from the observed actors involved in the policy design, whereas representatives of the livestock industry are granted an especially powerful status as part of the stifler cluster.

Within this dynamic, the stifler cluster is enabled to reinforce its own narrative. This is evident from the changing conception of the problem: with each stage of the policy design process, the perception of the problem changes further away from nature conservation, and more toward enabling room for economic development (ref. *Fig. 5-7*). This dynamic reached a breaking point with the court ruling in 2019, at which the phoenix cluster succeeds in attacking this narrative. Yet, even within this dynamic, there are ways in which the outcome could have been different.

Figure 9: Knowledge and power dynamics in the policy design of the PAS



What is evident from the assessment using the MSF is that within the policy stream, actors of the enabler cluster consistently criticized the PAS due to legal concerns (ref. *Fig. 5-7*). That this had a very limited effect on the design of the PAS can be explained using both the clusters and the MSF. The outcome could have likely been different if either the definition of the problem had remained consistent with the goals of the EU Habitats Directive and the advice of the taskforce Trojan, or if the politics stream had not formed itself to support the PAS as a measure for economic development. In both cases, the PAS could not have been adopted the way it has been. In the first case, a change can be observed after a second taskforce concludes that there may be room for development. However, it is only after the 2010 elections that this advice is used to construct a new conception of the problem and direct attention toward finding a solution that prioritizes economic development. Under this new liberal administration, Henk Bleker sees an opportunity to set this narrative in action: bringing together all three policy streams to put the DPAS on the agenda and make changes to the NBW. In the second case, a possible alternative scenario could be that the elections in 2010 or 2012 would have resulted in more political support for nature conservation and immediate action on nitrogen reduction as a priority. In this case, a phased-out approach would have likely been rejected, and the actors of the stifler and phoenix cluster might have been in reverse positions, with policy entrepreneurs emerging from the green political parties and pushing for stricter conservation measures.

In other words, under different circumstances and with actors taking different positions, the same dynamic could contribute to a different outcome. However, the politics stream throughout the development of the PAS provides continued support for a solution that allows for the continued pursuit of economic interests. And, curiously, the EU itself appears to have no significant role in affecting this development.

4.6 Main findings

In this section, I summarize the results of the analysis as I answer the sub-questions stated in the introduction (ref. 1.2, *Table 2*) and confirm or reject the expectations as listed at the end of the theory section (ref. 2.5, *Table 3*).

From the perspective of policy design and to understand misalignment with EU law, the factors addressed in the MSF and previous literature on the governance of crises should be considered more carefully in the context of the PAS. This focus is reasonable to assess how the Dutch government came to have misdirected assumptions about the relevance of included measures in addressing requirements of the EU Habitats Directive. The conflict between environmental and economic interests unravels as with each important decision within the policy design process, the PAS grants higher priority to economic development than nature conservation (*Table 2*).

Within this conflict, different clusters interact in such a dynamic that this priority cannot be challenged effectively (*Table 3*).

Table 2: Sub-questions and answers

Sub-question	Answer
<p>Theoretical sub-question:</p> <ol style="list-style-type: none"> 1. Which factors lead to policy failure from the perspective of policy design? 	<p>Policy design may be misguided due to how knowledge and power is distributed, changing definitions of problems, changes in political support, decision-making under time pressure, and the influence of policy entrepreneurs.</p>

Sub-question	Answer
<p>Empirical sub-questions:</p> <p>1. Which policy measures of the PAS violate the EU Habitats Directive, and how?</p>	<p>As described in section 4.1., it is the underlying assumptions of the PAS, including the lack of appropriate assessment for the licensing of livestock operations, which led to the court case of 2019. This judgement is based on Article 3 of the EU Habitats Directive.</p>
<p>2. Which important decisions can be identified within the policy design process relating to this violation?</p>	<p>Important decisions are outlined in sections 4.2 and 4.3 and may be summed up as: formulation of the VPAS, changes to the NBW, rejection of amendments, voting results of the PAS.</p>
<p>3. Which actors influenced the choice of policy measures, and how?</p>	<p>Actors of the stifler cluster, most notably Henk Bleker as a policy entrepreneur, enabled a phased-out approach of the PAS and the prioritization of room for development despite numerous criticisms (ref. 4.3-4.5).</p>

Table 3: Expectations & results

Expectation	Result
<p>Stifler: Actors in the stifler cluster, i.e., high-level policy makers or ‘policy entrepreneurs’, use deliberate efforts to couple the three streams in such a way that the PAS supports economic interests over environmental protection.</p>	<p>Confirmed. The stifler cluster, consisting of the policy entrepreneurs and representatives of the livestock industry, strategically influenced the policy design of the PAS to allow more room for development.</p>
<p>Enabler: Actors in the enabler cluster were hindered from effectively influencing the policy or problem stream to avoid a crisis due to a dynamic of distributing knowledge and power that the PAS developed under.</p>	<p>Confirmed. Actors in the enabler cluster faced challenges in effectively influencing the policy or problem stream as, within the observed dynamic between actor clusters, the stifler cluster used its power to selectively engage with the knowledge presented by the enabler cluster.</p>
<p>Phoenix: Actors in the phoenix cluster in support of environmentally more transformative approaches were unable to effectively contribute their ideas to the debate on solutions as they did not participate in the policy design process of the PAS.</p>	<p>Rejected. Actors in the phoenix cluster did participate in the policy design of the PAS, however, they were still unable to effectively change it.</p>

5. Conclusion

In this last chapter, I formulate an answer to the research question based on the sub-questions and observed results. I include a discussion of the results vis-à-vis existing research and its practical implications. This is followed by suggestions for future research based on the limitations and insights of the present study. Finally, I consider the implications of the findings based on the study's scientific and societal relevance.

5.1 Answer to the research question

The present bachelor thesis investigated the question: *Which factors within the policy design process of the Programma Aanpak Stikstof (PAS) in the years between 2008 and 2015 can be used to explain the Dutch government's failure to design a nitrogen policy in line with the EU Habitats Directive?*

Analyzing the policy design process within this period has been a humbling and repetitive experience. The leading factor behind the government's failure to design a policy in line with the EU Habitats Directive is the role of Henk Bleker as policy entrepreneur in facilitating the DPAS and changes to the NBW. Contributing factors are developments in the politics stream which lead to political support for the PAS and a favorable conception of the problem that the PAS ought to solve. If the changes to the NBW had not been made, for example, there would have been no legal basis for a phased-out approach. More generally, there appears to be a dynamic between clusters of actors which reinforces a narrative in support of liberal, economic interests, and, in part due to this dynamic, a lack or only limited involvement of actors who could effectively challenge this narrative. This narrative clashes with the nature conservation objectives of the EU Habitats Directive.

5.2 Discussion and implications

It is possible to contrast the theory and background introduced in section 2.1-2.4 with the observed dynamics and outcomes. Considering recent developments of agricultural governance in the Netherlands, it is interesting how the PAS mimics a past pattern. As with the drastic measures taken to save Dutch farmers in times of economic crisis in the 1930s, the PAS also emerged during an economic crisis and alongside new institutions with more power to influence agricultural development.

When reflecting on the case of the climate crisis as presented by Stoddard et al. (2021), a key difference between the nitrogen crisis in the Netherlands and the continuously rising carbon emissions is that the Netherlands originally had been an ambitious and active leader in support of nature conservation measures. Yet, the discourse has changed, and the dynamics underlying it have reinforced this new status quo. Hence, it is even more interesting to understand how it may be structures themselves, specifically the structures of the knowledge systems that policy design relies on, could be transformed to escape this trap of lock-in mechanisms (Groen et al, 2023).

The role of inequity within the dynamics of clusters is highlighted as a driver for stability in face of crises (Stoddard et al., 2021). Inequity between clusters allows actors who benefit from the status quo to defend their interests (Stoddard et al., 2021). The social imaginaries of the phoenix cluster, such as the ecologists working on assessment reports or the green political parties, are participating in the policy design process of the PAS, yet there is no basis for cooperative political action. This insight may be connected to the argument that crises are more likely to occur when governments treat environmental challenges as a matter of the state only (Hepburn, 2010).

More explicitly, it is not the lack of involvement of non-governmental actors that leads to failure. It is the vested interests of the powerful stifler cluster that drives governments to include or exclude actors and

knowledge, such that the policy design stands upon a knowledge system which is inherently inequitable. Even if non-governmental actors are involved within this system, their power is too limited to contribute toward transformations. In other words, it is the centralization of power in the stifler cluster that leads to crises.

A rather obvious practical implication of the findings is that scientists who produce environmental impact assessments to inform policy design need to be guaranteed independence, i.e., work at a distance from political influences (Helm, 2010). However, it is difficult to imagine how such protections should be implemented without decentralization, and with decentralization, they may no longer be necessary.

Given the relevance of voting results in determining the political support for a specific solution, it may be useful to consider ways in which voters can be enabled to understand the complexity of the nitrogen issue before it becomes a crisis. As an optimistic take, raising awareness for the cross-border and cross-sectional issue that nitrogen depositions represent may not only produce different voting outcomes, but also entirely different systems of knowledge and arenas of competition as different nations collaborate to address the matter.

A further observation to make is that the EU itself had a very limited supervisory role in the policy design process of the PAS, and that the regulations laid out by the EU Habitats Directive may not offer enough certainty about what is expected from member states. The EU may need to offer more concrete guidance on how laws on environmental protection should be translated into national and regional policy.

5.3 Limitations and future research

The present thesis is a first attempt at systematically analyzing the policy process behind the nitrogen crisis, from the perspective of knowledge and power. This bears the consequence that this is both a new research area, and a new angle, with no established method of analysis. Although the topic is of great salience, the interpretation of the results of this initial assessment could benefit from some critical reservations. In this section, I reflect on the limitations of the presented analysis and suggest areas of improvement for future research.

Any analysis of a phenomenon as complex as the nitrogen crisis will be selective and partial. Due to time constraints and feasibility concerns involved in working on a bachelor thesis, the scope of the literature assessed for process tracing has been narrowed down to only eight years. Future research may consider a discourse and document analysis ranging from the adoption of the EU Habitats Directive in 1992 up to the court case in 2019, to determine whether policy windows could have been opened at an earlier or later stage.

Only publicly accessible documents could be considered for the document analysis, which increases the uncertainty about the extent to which the results reflect the involvement of different actors. As the document analysis relies in part on online data from the 2000s and research on the subject is lacking, there may be gaps within the available evidence. Consequently, the motivation for the highlighted factors is vague. Given more resources, a scoping review on the subject, including non-public and non-digital documents, could be conducted. A systematic literature review may also be implemented.

The analysis aims to provide a sufficient level of detail, and yet may not include every observable, relevant detail within the traced policy design process, and it may not include all relevant actors. These constraints may reduce the validity of the findings. Given more time and higher proficiency in the Dutch language, the research could be supplemented with expert interviews, to confirm whether actors took an active role, how, and why.

While there is some uncertainty about the role of actors, the suggested model of the dynamics between them and its use in combination with the MSF itself contributes to the debate on the transition toward sustainable food systems. The varying knowledge systems underlying policy design in different EU member states may deserve further attention. Therefore, a similar approach could be used in research on other EU member states to understand power relations in the design of agricultural policy. A possible, relevant question leading from this is: How can EU member states transform their institutional design to effectively implement and collaborate on the realization of EU regulations on environmental protection?

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