JUSTICE AND PARTICIPATION IN TACKLING THE NITROGEN CRISIS

ANALYZING STAKEHOLDER PERSPECTIVES THROUGH STORYLINE ANALYSIS

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ABSTRACT

This research report dives into the personal experiences of stakeholders in the nitrogen crisis from a perspective of justice and participation. In an attempt to solve the communicative dissonances that currently prevent progress in the crisis, stakeholders in the province of Gelderland are inquired about their perspectives. Three different stakeholder groups have been identified in this research: Authorities, Agriculture, and Nature. Sixteen semi-structured interviews were conducted, and the resulting data was used to develop a storyline analysis. In support of the stakeholder interviews, more than twenty official documents related to the nitrogen issue were analyzed as well. The resulting five storylines present the most important recurring experiences of stakeholders, which concern a critical stance of the government, the negative effects of polarization and framing, the presence of common ground concerning what a just approach to the crisis should entail, the multi-interpretable nature of justice as a concept, and finally, the presence of a jungle of communicative dissonances in both literature as well as practice. Concludingly, this research indicates that injustices are experienced by most stakeholders, which often concern participation. Researchers and planning practitioners are therefore recommended to further explore how participation in the nitrogen crisis occurs in practice, how stakeholders come to different understandings of concepts like justice, and finally explore new ways of stakeholder interaction that facilitates finding a common understanding of other perspectives to be able to make progress in solving the nitrogen crisis.

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INTRODUCTION AND PROBLEM STATEMENT

One of the many wicked problems that currently troubles the Netherlands concerns the surplus of nitrogen it produces. Although this issue in itself is anything but new, since its origins can be traced back to the second half of the twentieth century (van der Ploeg, 2020), it was only relatively recently dubbed a national crisis. In 2019, the Dutch Council of State ruled the governmental plan to reduce nitrogen emissions, the Programma Aanpak Stikstof (PAS, Program Approach Nitrogen in English) insufficient (Van Damme et al., 2021). As a result, thousands of nitrogen-emitting projects were unable to be realized, effectively crippling a substantial part of the economy. Efforts to get everything back on its feet while also reducing the amount of nitrogen emitted were made, but these faced significant backlash and have not been able to resolve the crisis (Selnes, 2023; van Dijke, n.d.).

NITROGEN: THE HAGUE'S HOT TOPIC

Nearly six years after its "birth", the end of the nitrogen crisis remains out of sight as the debate on which policy approach to take is far from settled. When reviewing recent news coverage, the divide between political actors becomes evident. In the House of Representatives, not just opposition parties are critical of new plans proposed by ministers, coalition parties are skeptical and growing increasingly impatient towards the way the cabinet is attempting to free the country from the crisis as well (RTL Nieuws / ANP, 2025). This is more than desirable for the House of Representatives, entrepreneurs and farmers alike, since many projects to be realized currently require a nature permit, which slows down the process of completing projects or even prevents realization entirely when projects are located close to nature areas (Slomp, 2025). Outside the political sphere, other voices of discontent can be heard as well. The Court of Central-Netherlands deemed the fact that the current cabinet has been unable to make clear decisions "unexplainable to society" (van der Plicht, 2024b). Lastly, farmers report their frustration with the current uncertainty and the alleged postponement of proper solutions to the many aspects of the crisis that make it difficult for them to run their businesses (van der Plicht, 2024a).

Femke Wiersma, the current minister of Agriculture, Fisheries, Food Security and Nature, recently declared to have found a possible solution to this permit issue by establishing a so-called arithmetic lower limit, allowing projects below this limit to be realized without requiring a nature permit. The House is fearing for a repeat of the PAS case, however, while also addressing the lack of nitrogen reduction measures in the minister's proposal. Even the claim that the approach is scientifically substantiated is being questioned by research institute RIVM, while some academics doubt the legitimacy of such a lower limit entirely (Spekschoor, 2025). With the House expecting a concrete package of policy proposals at the start of April at the latest, and with the developments of the crisis of the last five years in mind, one can conclude the future to be uncertain at least. Especially since the court-ordered deadline for reducing nitrogen levels (as to not exceed Critical Deposition Values) in 50% of all sensitive Natura 2000 areas by 2030 creep closer every day, the need for a steadfast approach is critical (de Rechtspraak, 2025).

INVOLVEMENT OF THE AGRICULTURAL SECTOR

The frustration towards current unclarity surrounding nitrogen policy is not limited to the political side of society, however. Nitrogen is a sensitive topic among other actors as well, especially the agricultural sector. Livestock and arable farming namely rely on the application of manure and artificial fertilizer, which are both necessary to sustain production levels and hereby a financially viable business (Wageningen University & Research, 2019). However, the total amount of manure currently applied has a variety of negative effects on the environment due to its resulting emissions of nutrients, among which nitrogen plays a key role in affecting the environment. Eutrophication, deterioration of air and water quality, and reductions in biodiversity on both farmlands as well as adjacent protected nature areas are just a selection of identified issues that originate from excessive amounts of nitrogen (Erisman et al., 2002, 2005).

Shortly after the ruling of the Dutch Council of State in 2019, the political party D66 suggested that the total amount of livestock should be cut in half to reduce nitrogen emissions (NOS, 2019a). Hereby, the fuse of many farmers was lit as their frustration with precarious policy, a lack of (financial) support for innovating, and a disproportionately negative image of farmers as the main contributor to all experienced problems, at last turned into physical protest. On Tuesday, October 1st, farmers drove hundreds of tractors to The Hague to express their concerns on the Malieveld (NOS, 2019b). This was but the first of many similar protest actions organized by farmers: every step taken towards reducing nitrogen with new policy was met with resistance and critique (van Dijke, n.d.). Regardless of whoever is 'right' or 'wrong' in the nitrogen debate, or who is to be deemed 'guilty' of all currently experienced problems, it should not be surprising that the debate is often centered around farmers and their influence on the environment. After all, the agricultural sector is responsible for nearly half of the total nitrogen deposition in the country (CBS, n.d.). Reducing the complexity of the nitrogen crisis by only blaming farmers for their emissions, does not do the rich history of the problem justice. In an effort to encapsulate all major events that led to the current state of the problem, a historical timeline is included in the second chapter of this research.

A DIFFICULT ROAD AHEAD

At the bottom line, the Netherlands cannot evade the ruling of the Council of State, nor the EU Directives on which that ruling was based. Therefore, policies will have to be developed that encompass change to, among other sectors, the agricultural sector. History has shown this to be a difficult endeavor, as proposed measures that are more drastic are met with fierce protest from farmers, while a more laid-back approach to tackling the crisis is criticized by the court of The Hague. Very recently, the efforts of the current cabinet to reduce nitrogen deposition was found to be insufficient. Policies to achieve the 2030 goals are lacking and the funding for tackling the crisis has been reduced from 25 to 5 billion euros by the new cabinet. Therefore, the court has now also imposed a penalty of 10 million euros if the State fails to reduce the nitrogen overload in 50% of the critical nature areas by December 31st, 2030. While Greenpeace, which filed the case, was content, the State was less so, exclaiming it being demanded an impossible task by the court. CEO of Greenpeace Andy Palmen furthermore expressed concern for the inevitable consequences of the court's decision for farmers (van der Plicht, 2025).

Whatever measures will be developed and whenever they will be implemented, it seems unlikely that this will go without any trouble. As explained in a case study of manure excesses in Overijssel by Boersma et al. (2024), tensions are present between a variety of stakeholders. Provincial authorities, nature organizations and farmers are all involved in the issues at hand but diverge strongly in perception and perspective. From the interviews conducted in this case study, it became apparent that farmers perceive provincial policies (which are essentially derivatives of national policy) to be focused on the short-term only, lacking an integral, long-term vision which farmers need to adjust their business practices. Furthermore, complying with policies results in numerous practical struggles: nitrogen measures can be confusing and therefore difficult for farmers to correctly comply with. And while several farmers have stated their willingness to collaborate with authorities in finding solutions to the crisis on a local level, these efforts are not sufficiently addressed by those authorities, showing a communicative gap between both parties (Boersma et al., 2024).

So, where do we go from here? The government seems to be stuck in a dilemma, having to choose between complying with EU guidelines and hereby being forced to implement changes nationwide that will likely only widen the gap between government and farmers, or refusing to comply with EU policies and facing the consequences of failing to limit nitrogen emissions. It is therefore worthwhile investigating how new policy can be developed that allows the Netherlands to meet EU guidelines while simultaneously benefiting from sufficient societal support to execute said policy. The question of how this can be achieved remains unanswered, however. Scientific literature is abundant on nitrogen excesses and their negative consequences (Belinskij et al., 2019; Erisman et al., 2001, 2002, 2005; Hoes et al., 2022), as well as on possible solutions to the resulting problems. Commonly recurring suggestions within literature concern a more collaborative, communicative and integral approach (Hoes et al., 2022; Mehrabi et al., 2020; Ryan & Hoes, 2024; Selnes, 2023; van Dijk et al., 2018; Van Lint & Tanja, 1998), a technological and innovation-oriented approach (Boezeman et al., 2023; Erisman et al., 2005; Lamkowsky et al., 2024; Lekkerkerk, 1998; Ondersteijn et al., 2001), an approach proposing institutional change (Aarts & Leeuwis, 2023; Boezeman et al., 2023; Erisman, 2021; Erisman et al., 2002, 2005; Lamkowsky et al., 2024; Ryan & Hoes, 2024; Sliggers, 2004; van Dijk et al., 2018; Vermunt et al., 2022), or a combination of these approaches. A detailed description of these proposed ideas can be found in Appendix A.

STRENGTHENING THE SUPPORT BASE

Evidently, numerous sources suggest the need for collaboration and cooperation between a wide range of stakeholders. To quote Vermunt et al. (2022): "To that end, the design of new business and organizational models, as well as policy-making, need to take place in dialogue with those who are directly affected by them" (p. 13). For such an integrated approach to be successful, acceptance of policy among involved stakeholders is one of the prerequisites according to Erisman et al. (2001). Since this is often not a given in the context of the nitrogen crisis, as can be deduced from the numerous protests of farmers as well as from research (Boersma et al., 2024; van Dijke, n.d.), it becomes necessary to increase the support base for policy among not just farmers, but other stakeholders as well. Scientific literature that investigates the sociological dimensions of the crisis, specifically research that intends to explore how the support base for new nitrogen policy can be strengthened, is scarce, however. This is surprising, given the obvious controversial nature of the crisis as multiple sources have already indicated: stakeholder perspectives vary strongly, with tensions, polarization, and a deteriorating support base among stakeholders as a result (Boersma et al., 2024; De Lauwere et al., 2016; Ryan & Hoes, 2024; van der Ploeg, 2020).

This research therefore seeks to contribute to filling the knowledge gap concerning the ways by which support for nitrogen policies can be increased. It must be noted however that the scope of this research does not entail finding a solution to the whole nitrogen crisis, nor does it attempt to investigate every possible way of increasing support bases among stakeholders. Instead, it takes a more specific approach by zooming in on the communicative dissonances present among stakeholders. These dissonances have been identified by Boersma et al. (2024) in the case of Overijssel, where a lens of environmental justice was applied to elaborate on issues concerning the provincial manure surplus problem. Such dissonances, which resulted in experienced cases of injustice, tensions between stakeholders, and consequently a limited support base for nitrogen policy, can be understood to consist of one or both of the following elements:

- Insufficient or unsatisfactory communication, collaboration or cooperation between different stakeholders
- Varying perspectives, beliefs, understandings, experiences, worldviews, languages, or ways of working

This research describes the dissonances present in other cases as well as the cases of injustice they might result in. By making these often implicitly present dissonances more explicit by elaborating on them, I hope to contribute to resolving them. The importance of finding ways to cross gaps between stakeholders and establish a broader support base for new policies is also expressed by van Leeuwen (2024). Identifying and explaining communicative dissonances gives academics as well as practitioners a starting point for conversations, which should positively affect the development of better nitrogen policies. Concretely, this research investigates the lived experiences of stakeholders involved in the nitrogen crisis through a theoretical lens of citizen participation and social justice. Sherry R. Arnstein's theory on citizen participation (Arnstein, 1969) combined with Nancy Fraser's theory on justice (Fraser, 2009) as proposed in the work of Blue et al. (2019), is used to elaborate on the discrepancies between perspectives. Both theories can be applied to practical cases to shed light on the ways by which people collaborate with others. Since a lack of meaningful participation can cause dissatisfaction among relatively powerless actors (Arnstein, 1969), the concept of the participation ladder is relevant to apply to the nitrogen crisis where such dissatisfaction is currently experienced by, among others, farmers. Social justice as described by Fraser (2009) is a useful theoretical framework to investigate cases of injustice, and hereby assist in developing a just approach to the nitrogen crisis. Since participation is one of the three main pillars of the social justice framework, the combination of both theories as proposed by Blue et al. (2019) makes for a logical approach to the investigation of the nitrogen crisis and its surrounding controversial and sensitive debate.

RESEARCH OBJECTIVES AND QUESTIONS

This research investigates the communicative dissonances present among stakeholders in the nitrogen crisis. It does so by inquiring about the lived experiences and perspectives of these stakeholders through a lens of participation and justice. Hereby, the research aims to overcome boundaries between stakeholders, providing practitioners as well as academics with knowledge that is valuable for making nitrogen policy that is likely to benefit from a broad stakeholder support base. The scope of this research includes the province of Gelderland, which includes a variety of stakeholder groups (e.g. government, agricultural sector, NGOs). Concludingly, the external objective of this research can be defined as follows:

> *To resolve communicative dissonances in the nitrogen crisis that currently prevent a broad support base for nitrogen policy*

The following internal research objective connects to this:

> *By investigating the lived experiences of the nitrogen crisis in the province of Gelderland from a perspective of participation and justice*

To achieve these objectives, this research attempts to answer the following research questions:

> ***GRQ:*** *how is the nitrogen crisis experienced in the province of Gelderland from a perspective of participation and justice?*
>
> > ***SRQ 1:*** *how do stakeholders in the province of Gelderland experience the nitrogen crisis from a perspective of participation and justice?*
> >
> > ***SRQ 2:*** *how do provincial policy documents that address nitrogen incorporate justice and participation experiences of stakeholders?*
> >
> > ***SRQ 3:*** *how do current stakeholder experiences fit within the historical context of the nitrogen crisis?*

REVIEWING THE HISTORY OF THE NITROGEN PROBLEM

To paint a clear picture of the current situation in which the Netherlands finds itself, it is valuable to compile the key historical events that together constitute the development of the nitrogen problem. To this end, a comprehensive overview of the last 75 years is given, capturing critical periods in time such as the hegemony of the Green Front (Selnes, 2023), the establishment and abolishment of the PAS (Erisman, 2021; Van Damme et al., 2021) and the numerous protests organized by farmers (van Dijke, n.d.). Hereby, the complexity of the crisis can be better understood, both by policy developers as well as other stakeholders such as farmers. Finally, this recollection of events can be used to investigate if and how current lived experiences as reported by interviewed stakeholders can be traced back to the past. This will provide me with an answer to my third sub-research question. A visual representation of the history of the nitrogen crisis can be found on the next two pages.

Reflecting on the history of the nitrogen problem, several developments are especially noteworthy. For example, the shift in agricultural policy development, which originally entailed technocratic decision-making where strong consensus among stakeholders resulted in less debate about agricultural strategies, allowing agricultural stakeholders and the government to establish policy that benefited society the most. As years went on, the negative effects of these developments in the sector became increasingly important within the societal debate. This stronger environmental awareness was translated into agricultural policy itself, and the stakeholders involved in this issue also grew in variety, since society now recognized the effects of agriculture on the country as a whole (Selnes, 2023).

The recent history of the nitrogen problem also explains some of the frustration among farmers that exists today. Specifically, this concerns the significant investments in more sustainable, environmentally friendly technology which farmers were required to make to comply with agricultural policy. Since the rules changed over the years, however, farmers had to keep investing in newer innovations. In the end, this costly process resulted in the termination of smaller farming businesses (Aarts & Leeuwis, 2023).

The main takeaway from the timeline presented below, as also stated by Hofs (2019), is that the current issues experienced in the Netherlands are not new in the slightest. The manure surplus and its accompanying problems have been addressed since 1965, but strategies to solve these problems or policies to steer the agricultural sector and its development into a more sustainable direction, have been undermined ever since.

Historical development of the **Nitrogen Crisis**

1944

1944-1945

Dutch famine during World War 2 (Verzetsmuseum, n.d.).

1

1945-1950

"Nooit meer honger" ("Never hungry again"). Sicco Mansholt's agricultural policy of intensification and modernization of agriculture with a massive upscaling of both food production as well as nutrient pollution (Erisman et al., 2005).

2

post-WW2

The Marshall plan is introduced, which mechanized and intensified agriculture, resulting in an increase in nitrogen emissions (Erisman, 2021).

In policy development, the hegemony of the Green Front rules: a technocratic coalition of government and agricultural stakeholders aimed at developing agricultural policy that prioritizes efficiency and productivity. The Front leaves little room for debate, effectively depoliticizing the topic of agriculture, as the coalition is strong enough to achieve consensus among decision-making parties. Non-agricultural actors are excluded from the so-called "iron triangle of firm collaboration between administration, and corporate business: the Ministry of Agriculture; the parliamentary specialists, and the agricultural interest organizations." (Selnes, 2023, p.4).

From 1965 onwards

Civil servants from the ministry of Agriculture warn for the detrimental consequences of the growth of both the agricultural sector and the manure surplus, but their warnings are ignored (Hofs, 2019).

1970-1980

Start of the recognition of agriculturally related environmental issues (Selnes, 2023).

1972

The foundation for Nature and Environment publicly addresses the risks attached to unchecked application of manure, which is however met with resistance from the agricultural sector (Hofs, 2019).

1970

Description of the manure surplus in the report "De Afvoer en eliminatie van mestoverschotten van een Adviescommissie van het ministerie van LNV" (Hoes et al., 2022).

1974

Publication of the Nota Intensieve Veehouderij, the first policy report by the Ministry of Agriculture to address the problems related to nitrogen emissions. (Directorate-General for Environment, 2025a)

3

1979

Adoption of the EU Birds Directive, a piece of legislation that is meant to protect and preserve nature areas, along with the Habitats Directive (Kort, 2019).

From 1980 onwards

Societal concerns regarding the detrimental effects of agriculture on the environment are growing (Aarts & Leeuwis, 2023).

1984

Minister of Agriculture Gerrit Braks attempts to stop the growth of the cattle farming industry by prohibiting the expansion of businesses. His efforts are to no avail, however (Hofs, 2019).

1987

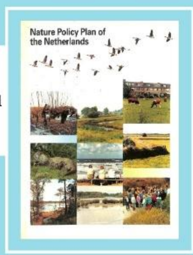
The Dutch Manure and Fertilizers Act is implemented, limiting the amounts of fertilizer that could legally be applied in agriculture (Hoes et al., 2022).

From 1990 onwards

Agriculturally related environmental problems become a major public concern (Selnes, 2023).

1990

Publication of the Dutch Nature Policy Plan, the first of its kind that addresses the problems resulting from agricultural activities (Aarts & Leeuwis, 2023).



4

1991

The EU Nitrates Directive is implemented, which describes the maximum amount of nitrogen applicable per hectare from animal manure (170 kg/ha). The Netherlands is excepted from this directive by means of a derogation, allowing the nation to apply 230-250 kg/ha due to less runoff occurring on the grasslands present there (Hoes et al., 2022).

NATURA 2000

5

1992

Adoption of the EU Habitat Directive. This will become crucial in the development of the nitrogen crisis, as it prescribes the need for member states to take sufficient measures to protect natural values in designated Natura 2000 areas (Directorate-General for Environment, 2025b; Raad van State, n.d.).

Introduction of the Nitrate Directive by the EU, one of the two measures that, according to Galloway et al. (2021), was mainly responsible for nitrogen emission reductions. The other concerns the MINAS tool, which was put in action in 1998 (Galloway et al., 2021).

1998

MINAS, a mineral accounting system that incorporates data of inflow, outflow and acceptable losses of nutrients, is established to which farms will have to comply in 2002 (Sliggers, 2004).

Agricultural policy is currently focused on two main problems: manure and pesticides. Policies aimed at reducing nitrogen emissions lack sufficient support to enforce them, unless they are backed by scientific evidence. A shift in policy creation occurs from strict rules towards more self-regulation. This is accompanied by growing environmental awareness and room for tailor-made policy, co-produced by relevant stakeholders from the start. (Van Lint & Tanja, 1998).

MIneralen **A**angifte **S**ysteem
(Mineral Declaration System)

2001

Minister of Agriculture Laurens-Jan Brinkhorst criticizes the option for the agricultural sector to become more sustainable my means of self-regulation, as a result of lacking willingness within the sector (Hofs, 2019).

1990-2001

Measures are implemented to limit nitrogen emissions, but they lack overwhelming success due to less than desirable effectiveness (Erisman et al., 2001).

2002

The implementation of new policy that prescribes the maximum amount of manure applicable per hectare is scheduled. A manure surplus as well as an agricultural transition answering to this problem is predicted to happen in the future (Ondersteijn et al., 2001).

2003

The European Court of Justice judges that the Netherlands' emissions are too high based on the Nitrates Directive and hereby essentially declares the MINAS invalid (Hofs, 2019).

6

2014

After having achieved a 60% reduction in ammonia emissions relative to 1990, the upscaling of dairy farming results in nitrogen levels rising again (Stokstad, 2019).

2015

The Programmatic Approach on Nitrogen, or PAS (Programmatische Aanpak Stikstof), is established, with the premise of businesses compensating for nitrogen emissions by promising future reduction measures (Erisman, 2021).

2016

Interviewed farmers report to be more aware of manure (i.e. its use and disposal) than they were 20 years ago (De Lauwere et al., 2016).

2017

A buy-out scheme for dairy farmers is established with support from the dairy sector itself to prevent losing the agricultural derogation (Boezeman et al., 2023).

In the new coalition agreement, technical measures are proposed and preferred over volume restrictions in terms of harmful emissions originating from the agricultural sector (Boezeman et al., 2023).

2018

A ruling of the European Court of Justice states that Natura 2000 areas are insufficiently protected by Dutch laws from nitrogen depositions (Van Damme et al., 2021).

2018-2019

A "fundamental rethink of manure policy" (p. 2) is held by the national government in collaboration with other actors in an effort to settle the debate on sustainable agricultural policy (Ryan & Hoes, 2024).

7

2019

The PAS is declared invalid by the Dutch Council of State, marking the unofficial start of the nitrogen crisis. A commission led by ex-minister Johan Remkes is established to develop a new nitrogen reduction strategy (Van Damme et al., 2021).

The coalition agreement Rutte III promises "no generic livestock reductions or mandatory buyouts" (Boezeman et al., 2023). A political party that presents itself to represent farmers' interests, the BoerBurgerBeweging or BBB (FarmerCitizenMovement), is established.

October 1st
First large-scale farmer protests, where most farmers attribute the direct cause for their actions to the proposition of the political party D66 to halve the total amount of livestock (Dollen, 2019; NOS, 2019b).

November
Coalition parties agree on a proposal of short-term oriented "fixes" to the nitrogen problems, such as reducing the speed limit to 100 km/h, a measure similar to what the commission Remkes advised a month earlier (Stokstad, 2019; van der Goot, 2019; Winterman, 2019).

8

2020

Cabinet Rutte III announces the Structural Approach Nitrogen (Structurele Aanpak Stikstof): money is made available for voluntary buyouts (Boezeman et al., 2023).

June 8
The final advisory report of the Remkes committee is presented (van Dijke, n.d.). Four main issues with the PAS are identified by the advisory board led by Johan Remkes, which was installed to develop an advisory report for dealing with the nitrogen problems in the long term (Remkes et al., 2020):

1. No real long-term choices were made
2. An integral approach to the nitrogen problem was lacking
3. No use of complex systematics was made
4. The value of nature was insufficiently protected

9

2020-2021

The degree of voluntariness of the agricultural measures is debated intensively (Selnes, 2023).

2021

March 17
The Dutch general election shows the influence of the nitrogen crisis on voting behavior, as the BBB gains more than 100.000 votes and hereby acquires one seat in the House of Representatives (van Dijke, n.d.).

July 1st
The new Nitrogen Law comes into effect, evoking new protest actions by farmers (van Dijke, n.d.).

10

2022

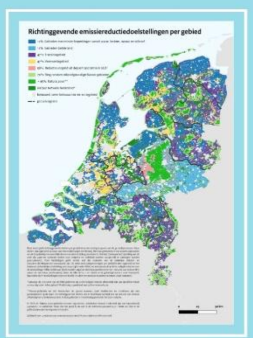
January 10
Installation of a minister for Nature and Nitrogen, Christianne van der Wal (NOS, 2022a).

June 10
A new policy plan is issued to provide farmers with more control over the efforts to reduce nitrogen, as long as targets set out by the government are met. The plan was met with heavy criticism from farmers, who felt the plan failed to address sufficient perspectives for them (Selnes, 2023). Included in the plans is a map showing the required nitrogen reductions nationwide, which are determined by the adjacency of polluting sources to protected nature areas. Although meant as a starting point for discussion according to minister Van der Wal, this invokes confusion and frustration among provinces and farmers alike (van de Hulsbeek, 2022). The same day, angry farmers engage in conversation with Van der Wal by visiting her at her own house (NOS, 2022b).

11

12

End of June
The nation's biggest farmers' protest yet at is organized at Stroe, with 60.000 people present as well as 20.000 tractors (Loef, 2022). In response, nitrogen measures are paused and all political parties fall back into the debate. Agricultural stakeholders initially refuse to cooperate due the involvement of Johan Remkes, among others, but agree to engage in conversation at the end of August (van Dijke, n.d.).



13

October
A new report, developed in collaboration with a moderator installed by the government to bring stakeholders in conflict together, is published (Selnes, 2023). The most important advice it contains is to ensure that the roughly 600 'peak polluters' near protected nature areas are closed within one year. A further advice is to cut emissions in half by 2030. The controversial nitrogen map is discarded (van Dijke, n.d.).

November 25
The Cabinet presents new nitrogen plans, which includes measures to ensure a drastic reduction of emissions caused by peak polluters near critical areas. Farmers affected by these measures are offered to leave on their own accord in change for financial compensation. Other options include moving their businesses or innovation to reduce emissions (van Dijke, n.d.).

2023

The government initiates a seven-month long process of working towards an agricultural agreement, the Landbouwakkoord, to deal with the uncertainty and lack of trust and consensus among stakeholders that the 2022 report was unable to solve. This dialogue between farmers, food chain organizations, and the government was also unsuccessful, however, as the Land- en Tuinbouworganisatie Nederland or LTO (Netherlands Agricultural and Horticultural Association) left because of disagreements (Selnes, 2023).

May
The strategy of using mandatory buyouts of peak polluters near critical nature areas, as proposed by cabinet Rutte IV, is greenlit by the European Commission. It seems unlikely that voluntary buyouts will achieve the necessary reduction in livestock size (NOS, 2023a).

2025

February
New policy to tackle the nitrogen problems is planned to be presented by agricultural minister Femke Wiersma at the start of April at the latest (Slomp, 2025).

14

2025

THEORETICAL FRAMEWORK

As described before, this research elaborates on lived experiences of stakeholders in the nitrogen crisis through a combination of two theoretical lenses. These concern the dimensions of justice as described by Nancy Fraser (2009) and the ladder of citizen participation as described by Sherry Arnstein (1969). In this chapter, I will first describe the two theories, followed by a strategy explaining their operationalization.

NANCY FRASER'S FRAMEWORK OF JUSTICE

Fraser (2009) proposes three dimensions that exist within the concept of justice, which she defines as "social arrangements that permit all (adult) members of society to interact with one another as peers" (Fraser, 2020, p. 164). Each of the dimensions, which are redistribution, recognition, and representation justice, aims to achieve parity of participation and can therefore be used to assess practical cases of participation in decision-making processes. Below, a short description of the three dimensions will be provided as originally proposed by Fraser (2009), described by Blue et al. (2019):

REDISTRIBUTION JUSTICE

This first dimension boils down to the distribution of goods or bads among actors in society. This distribution can include many things, such as access to natural or financial resources, wealth or influence, opportunities or risks. To allow for interaction between actors on an equal level, a just distribution of forementioned things is required.

RECOGNITION JUSTICE

The second dimension concerns the way by which the voices and perspectives of actors are recognized by others and eventually included in (or excluded from) decision-making processes. Recognition, or the lack thereof, can be based on social differentiation between different groups of people as well as within one social group. This differentiation can range from age, gender, religion, ethnicity, income, sexual or political orientation. Furthermore, societal institutions that establish or maintain differences among people influence how the voices of different groups are recognized, validated, and incorporated in decision-making.

REPRESENTATION JUSTICE

Described by Fraser (2009) as a factor that facilitates recognition and redistribution justice, representation concerns the way by which people are actually involved in decision-making. If redistribution concerns the "what" and recognition the "who" of justice, representation concerns the "how". Blue et al. (2019) elaborate on the following three categories of representation:

1. **Ordinary-political representation**

   This category asks the question of how fair, transparent, legitimate and inclusive a decision-making process is. Ordinary-political representation corresponds strongly to the participation ladder proposed by Arnstein (1969).

2. **Framing**

   Framing concerns how participatory initiatives are shaped. More specifically, this encompasses questions about the context of the participatory initiatives as well as questions concerning those who are shaping this context. It addresses the power struggle between the different meanings, value frameworks, and types of knowledge that can influence decision-making.

3. Metapolitical representation

This last category inquires about the local, national, or global terrain on which participation takes shape. It concerns the broader societal context and the way it influences how participation is organized or given shape, such as the medium or scale of participation.

AN INTEGRAL APPROACH TO JUSTICE

This research applies the concept of justice in an integral way by incorporating the dimensions of Fraser (2009) as well as some key elements of other authors' contributions to the academic discourse surrounding the concept. Although these contributions propose justice dimensions with slightly varying names than those described by Fraser, the essence of the concept is mostly understood in the same way. The one key difference that can be identified is the incorporation of a separate dimension of intergenerational justice as proposed by Ryan and Hoes (2024). Such an additional dimension has been criticized by Schlosberg (2004) for being redundant. While I agree to a certain extent, I deem it valuable to provide extra attention to the historical context in the context of this research. Since the nitrogen crisis has a complex and long history, as well as significant predicted effects on future society, the justice framework proposed below will include a separate dimension to account for this. This dimension of historical justice will not just focus on the way justice for future generations is accounted for in current decision-making: it will focus on the (in)justices experienced throughout history as well. This leads to the following justice framework:

Recognition justice: inquires about the (in)justice of recognizing, validating and incorporating stakeholders and their varying perspectives, types of knowledge, interests and concerns. This encompasses the degree to which stakeholders themselves experience recognition, as well as the extent to which formal and informal institutions allow for recognition.

Procedural justice: this dimension concerns the step to be taken after the recognition, validation and incorporation of stakeholder perspectives. Specifically, procedural justice focuses on the way these stakeholders are actually involved in decision-making processes. Both the degree to which stakeholders have opportunities to collaborate as well as the actual influence that stakeholders have in practice fall under this dimension. This research applies the same categories as proposed by Fraser (2009), described by Blue et al. (2019): ordinary-political representation, framing, and metapolitical representation.

Distribution justice: the next step in the justice framework used in this research concerns the distribution of positive and negative outcomes or effects of decision-making among stakeholders. These outcomes are defined in the broadest sense: they can range from environmental, economic or social resources, access to services or opportunities, or being affected by positive or negative effects of decision-making and developments. Distributive justice investigates the extent to which these are distributed fairly among stakeholders.

Historical justice: the fourth and final dimension takes the historical context as well as the predicted future developments of a case into account. This incorporates looking at how decisions have been made in the past, how decisions are currently being made while taking this historical context into account, and how future generations will be affected by current decision-making. Evaluating these historical and future aspects of justice is especially relevant to sub-research question 3 of this research.

SHERRY ARNSTEIN'S LADDER OF CITIZEN PARTICIPATION

The second key theoretical concept that is incorporated in this research is the ladder of citizen participation as originally proposed by Sherry Arnstein (1969). This concept fits within the framework of justice as described in the subchapter above, with procedural justice being the dimension in which participation plays an important role. The ladder of participation functions as an expansion of the justice theory by providing an extra layer of depth to the procedural justice dimension. This approach has been proposed by Blue et al. (2019) and has been applied to the nitrogen crisis in this research. This combination of concepts, as well as the critiques of Arnstein's now nearly 56-year-old ladder, will be elaborated on later in this chapter. In the Methodology chapter the relevance of this combination of theoretical concepts will be further explained. First, I will revisit Arnstein's original work separately.

In her original article, Arnstein (1969) discusses the power relations that exist between a state or government and its citizens. To allow for analysis and evaluation of these relations in practical cases, she developed a figurative ladder of participation, consisting of eight rungs. Each rung corresponds with a certain way that the "*haves*" (i.e. often relatively powerful governments or states) involve the "*have-nots*" (i.e. relatively powerless citizens) in decision-making processes. Ascending these rungs means an increase in citizen power: when citizens find themselves on the bottom rung, they are manipulated by the state, while citizens that reach the highest rung are in control themselves as the state takes a more facilitatory role in decision-making processes.

The ladder is subdivided into three categories: non-participation, tokenism, and citizen power. Non-participation concerns the way by which the state can exert its power in a more subtle way. Instead of allowing citizens to actually participate, they are influenced by the state, which remains in a position of power where it can tell people what is best for them. The second category, tokenism, increases the meaningfulness of participation, as citizens can now actually be a part of decision-making processes by being engaged in conversations. However, while citizens are given the opportunity to express their voices, tokenism does not mean that those in power actually go beyond listening to those voices. While the *have-nots* are now at the discussion table, they lack power to actively influence the *haves* to consequently alter the status quo for the citizens' benefit. The third category, citizen power, allows for *have-nots* to transcend this boundary by either negotiating, co-deciding, or taking over the decision-making from the *haves* entirely. Below, a description of all eight rungs will be provided to give more depth to the three previously explained categories.

1. **Manipulation**

On this bottom rung, the powerholders manipulate the powerless by educating them on what is in their best interest. This allows the powerholders to present themselves as being committed to organizing citizen participation. Regardless, involved citizens lack the power to voice their opinions on these plans that will eventually affect them, let alone the power to influence the development process of such plans. Hereby, decision-making processes remain unaffected by citizens and powerholders remain in power to implement changes which might not benefit citizens, but which will appear to have been made in collaboration with them. In short, this rung on the ladder could be referred to as illusionary participation.

2. **Therapy**

The second rung of the ladder shows similarity to the first in terms of its manipulativeness. On this rung, powerholders manipulate the powerless by claiming to "cure" them from their "illnesses". This illness, which is regarded by the state as the relative powerlessness of the citizens, is then attempted to be cured through therapy (e.g. involving citizens in decision-making or communal education programs). Such efforts are presented as a form of participation or a solution to citizens' problems, while instead they either shift the focus away from the actual sources of those problems, or they push responsibilities to fix problems from the state onto the citizens. Similarly to manipulation, actual citizen influence in decision-making that goes beyond just the appearance of participation, does not occur on this rung.

3. Informing

On the Informing rung, the powerless are inquired about their opinions, concerns, and interests by the powerholders. Although the latter now inform citizens about decision-making and plans, this only occurs through a one-way flow of communication. Different media are used for this, such as news, posters, and informatory meetings. The state furthermore informs the citizens of their rights, but it does not give them the ability to provide feedback. Moreover, this way of informing usually occurs at a late stage in the decision-making process where it is too late for outcomes to be influenced.

4. Consultation

One step ahead of informing is consultation, which occurs through community meetings and hearings, or public surveys. Although citizens are asked about their opinion by the state, this practice of superficial consultation alone does not live up to meaningful participation according to Arnstein, who describes consultation as “a window dressing ritual” (Arnstein, 1969, p. 219).

5. Placation

Placation is the first rung of the ladder on which citizens have actual influence on decision-making, for example by being part of public councils or boards. This influence is limited however, as those involved citizens either lack the power to overrule the still more powerful state actors, or they lack the numbers to outvote them. In the end, this results in the state maintaining the status quo.

6. Partnership

Partnership increases the influence citizens have in collaboration processes with authorities. Concretely, this involves a redistribution of power and responsibilities, which occurs through negotiations between both parties. Instead of the *haves* deciding for the *have-nots*, as is still occurring on the placation rung, the *haves* now share power in a partnership in decision-making.

7. Delegated power

This rung involves a more dominant position of power being ascribed to citizens, something that is often lacking in a partnership-level of participation where the powerholders remain in their dominant position in decision-making. When citizens achieve delegated power, they attain a higher responsibility, as well as a higher position for negotiation due to being on a similar level of power as government officials. However, examples provided by Arnstein (1969) are mostly limited to citizen involvement in city boards and the accompanying programs or plans they are responsible for. Besides citizens being involved in such boards together with powerholders, Arnstein mentions that citizens can also be involved in delegated power while working separately from (but parallel to) powerholders.

8. Citizen control

Citizen control is the highest rung on the participation ladder and therefore the highest form of power citizens can acquire according to Arnstein (1969). The term *have-nots* is not applicable on this rung anymore, as citizens now have full control over planning, policy and policy-development, programs and their management, and institutions. Furthermore, they have a prominent position of power in negotiations. Neighborhood corporations as a form of citizen control are described as an example by Arnstein.

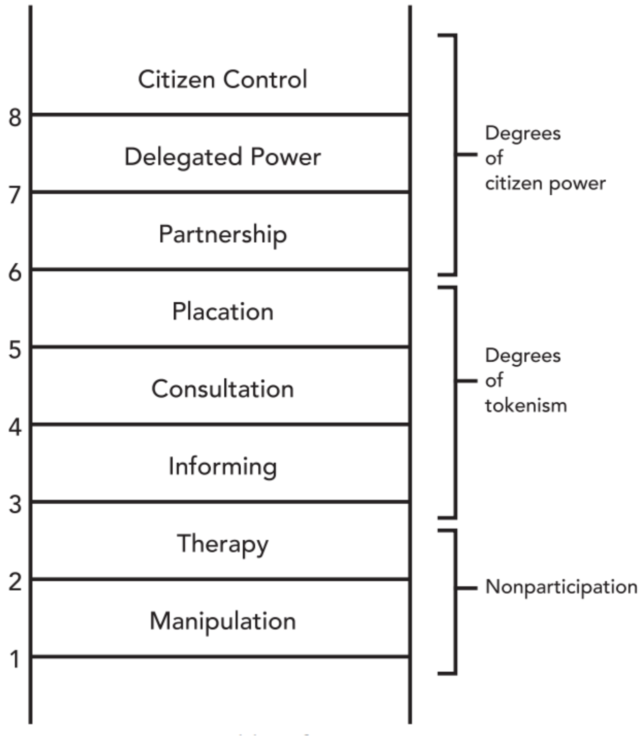


Figure 1: Sherry Arnstein's ladder of citizen participation (Arnstein, 1969).

SHORTCOMINGS OF THE LADDER: CRITIQUES ON ARNSTEIN'S THEORY

Nearly 56 years after its publication, the ladder of participation has been praised as well as criticized by many authors. In this section, several key critical reflections on the shortcomings or flaws present in Arnstein's original concept will be discussed. This will be followed by a statement on how this research intends to adapt the concept with the critiques in mind and apply it to the case of the nitrogen crisis.

LESS IS MORE? CRITIQUES ON THE SIMPLICITY OF THE LADDER

One of the main flaws of Arnstein's work concerns the relative simplicity of the ladder and, more specifically, the lack of depth and nuance that the individual rungs allow for. Since personal perspectives and experiences differ from person to person, it is impossible to attribute one rung of the participation ladder to an entire group of stakeholders. Arnstein (1969) acknowledges this shortcoming herself, while nonetheless advocating for her relatively simplified explanation of reality in the shape of a ladder:

> In actuality, neither the have-nots nor the powerholders are homogeneous blocs. Each group encompasses a host of divergent points of view, significant cleavages, competing vested interests, and splintered subgroups. The justification for using such simplistic abstractions is that in most cases the have-nots really do perceive the powerful as a monolithic "system," and powerholders actually do view the have-nots as a sea of "those people," with little comprehension of the class and caste differences among them. (p. 217)

Following these words, it becomes clear that accounting for diversity within a stakeholder group is essential. Besides the simplicity of the specific rungs, Arnstein's (1969) understanding of participation in general is also critiqued for its simplicity by some. Specifically, the implication that participation is a linear developing phenomenon is critiqued by Laskey and Nicholls (2019), as such a simplistic view fails to account for the diversity and complexity of problems that are confronted with or require participation. In other words, a problem always consists of different aspects or levels, each better suited for a different type of participation. The implied staticity of problems in Arnstein's (1969) work is arguably not present in practice. Laskey and Nicholls (2019) go on to criticize the implication that the relationship between citizens and states are only defined by power. They argue that such relationships are more complexly defined by stakes rather than by a simple fluctuating process where one either gives up or acquires power.

The critiques of the ladder's simplicity is further underlined by Tritter and McCallum (2006), who state that Arnstein does not sufficiently describe the ways in which participation within a rung could be shaped: "Arnstein ignores several aspects of user involvement by failing to differentiate between method, category of user and outcome." (p. 161). In their perspective, this lack of depth is caused by only focusing on achieving a certain level of participation without examining the specific methods of participation that could or should occur throughout this process.

CRITIQUES ON THE CONNOTATIONS OF (ASCENDING) THE LADDER: THE HIGHER, THE BETTER?

A non-disputed strive towards the top of the ladder, as criticized by Tritter and McCallum (2006) above, is a second critique mentioned in academic literature. Besides the alleged simplicity of the ladder, authors have reflected on its hierarchical nature and the negative consequences this has for evaluating practical cases. Tritter and McCallum (2006), for example, argue that "the hierarchical approach embraced by Arnstein's ladder leaves little opportunity to engage in evaluating the nature of involvement." (p. 161). Since Arnstein's (1969) lower rungs of non-participation bear negative connotations, actors climbing the ladder is seen as fundamentally good, and the rungs are hierarchical in terms of how 'good' they are. This leaves no room for nuances within each rung, however: differentiation in the type or degree of participation that certain actors strive for, is not considered within a hierarchical view. Concretely, this could mean that when certain actors wish to be involved to a lesser extent than delegated power or citizen control, the ladder concept regards this as less than optimal. Adding to this, Tritter and McCallum (2006) note the risks involved in citizens reaching the highest rungs, such as that decisions made by those in control could result in uneven distribution of services (i.e. distribution injustice). Concludingly, a more nuanced model for explaining citizen involvement is thus desired, which should allow for better consideration of the complexity of those that climb the ladder as well as considering the process of participation, not just its outcome.

Laskey and Nicholls (2019) provide additional criticism to the hierarchical nature of the ladder, where being situated on the lower rungs is indicative of failure and ascension to the top rungs is the ultimate goal, regardless of the needs of those who are participating. As those needs might not correspond with citizen power, blindly regarding such forms of participation as desirable (and lower rungs on the ladder as undesirable), is therefore to be avoided. Romariz Peixoto et al. (2022) expand on this critique by arguing that higher rungs of the ladder do not guarantee optimal participation: manipulation of citizens by those in power can still occur in a situation of delegated power. Just as high rungs are not incontestably good, lower rungs should not be regarded as essentially bad according to Romariz Peixoto et al. (2022). They regard the information rung, for example, as one of the key requirements for any participative process to function properly, as opposed to Arnstein (1969) who describes it as a less than desirable form of nonparticipation.

ADOPTING THE LADDER TO THE NITROGEN CASE: LEARNING FROM DECADES OF ACADEMIC DISCUSSION

Despite the shortcomings of Arnstein's (1969) 55-year-old conceptualization of participation, the ladder is still regarded by authors as a valuable concept to assess the ways in which citizens are involved in decision-making. White and Langenheim (2021), for example, state that the concept is “as relevant now as ever” (p. 156). Nevertheless, the numerous criticisms warn us of risks involved in uncritically (re)applying the concept. Future adaptations should therefore compensate for previously identified shortcomings such as simplicity and lack of nuance. This research therefore considers the following critical notes while adopting the ladder concept in combination with the justice framework (Laskey & Nicholls, 2019; Romariz Peixoto et al., 2022; Tritter & McCallum, 2006). Firstly, the hierarchical nature of the ladder is discarded to the extent that high rungs are not regarded as indisputably good and low rungs are not regarded to indisputably lack merit. When conducting a narrative analysis for this research, each personal case is considered carefully, including the corresponding rung of the ladder. Concretely, this means it is crucial to keep in mind the risks as well as opportunities that every rung potentially carries, instead of blindly following the often negative connotations evident in Arnstein's (1969) work. Furthermore, the human factor of this research is regarded as most important: stakeholder experiences determine what they deem appropriate ways of participating, instead of a conceptual model prescribing it for them. The conceptual model of the ladder has a more descriptive than conclusive aim in this research. The theory on justice serves as a basis for evaluating stakeholder experiences instead. Lastly, the critiqued simplicity of the individual ladder rungs is also considered in this research. Conducting a narrative analysis with stakeholders allows for a more nuanced and in-depth exploration of stakeholders’ experiences. Instead of ascribing a rung of participation to an entire stakeholder group, room is provided for elaborating on inter-group diversity.

INTEGRATION AND OPERATIONALIZATION OF JUSTICE AND CITIZEN PARTICIPATION THEORY

The final sub-chapter of the theoretical framework of this research covers the integration and operationalization of the combined work of Fraser (2009) and Arnstein (1969). This integration has been proposed by Blue et al. (2019), a visualization of which can be seen in Figure 3 below. Combining both theories makes sense from a theoretical perspective, as the arguably essential question underlying citizen participation (i.e. who is involved in decision-making and how are they involved?) corresponds strongly with Fraser's (2009) recognition and representation dimensions of justice. Moreover, all three justice dimensions are key to achieving Fraser's (2009) goal of parity of participation and therefore, they are inherently linked to each other (Blue et al., 2019). This argument is also supported by (Schlosberg, 2004), who argues that “there is a direct link between justice as equity, cultural recognition, and democratic participation; focusing on one notion at the expense of others, or while ignoring others, simply cannot satisfy the threefold nature of justice” (Schlosberg, 2004, p. 528). According to this reasoning, participation is a requirement for achieving justice, which further underlines the logic of combining the participation ladder concept with the theoretical framework of justice. Finally, the participation ladder provides an extra layer of depth to the justice framework, and hereby to the empirical analysis and evaluation of stakeholder perspectives.

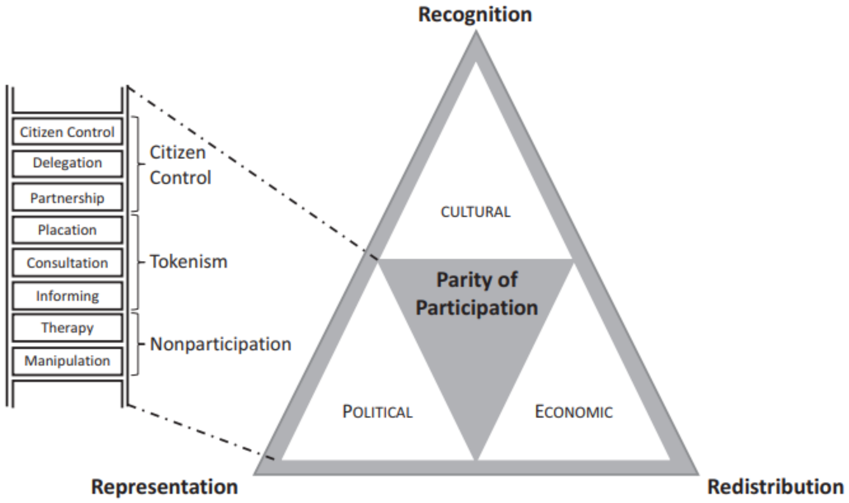


Figure 2: The ladder of citizen participation integrated into the justice framework (Blue et al., 2019)

When combined, the theories on participation and justice allow for analyzing complex lived experiences and hereby assessing the reasons behind the currently experienced cognitive dissonances. These underlying reasons can be based in all four previously proposed justice dimensions: recognition justice, procedural justice, distribution justice, and historical justice. Within the procedural justice dimension, the participation ladder allows for more in-depth analysis of the type of involvement of stakeholders. The justice dimensions as well as the rungs of the ladder therefore function as the concepts to measure when conducting empirical research (Blue et al., 2019). The multi-perspective body of knowledge functions as a starting point for discussions between actors, hereby contributing to overcoming cognitive dissonances. How this has been done specifically will be explained further in the next chapter.

METHODOLOGY

This chapter will elaborate on the methods by which I set out to conduct this research and answer my research questions. To capture the lived experiences and perspectives of stakeholders in the nitrogen crisis, I have taken a qualitative approach to my research since this allows for in-depth coverage of the subjective perspectives of stakeholders which quantitative methods cannot sufficiently capture. As explained previously in the introduction, the current lack of sociological research on the nitrogen crisis underlines the academic relevance of qualitative research approaches that inquire about stakeholder experiences. The societal relevance is further derived from the current existence of diverse cognitive dissonances among stakeholders (Boersma et al., 2024). This underlines the need for a solution and therefore the need for more research on this topic. This chapter will explain in detail how data has been collected and analyzed, how the case and research participants have been chosen, and how research validity has been strived for. Finally, several sections elaborate on ethics and data management.

DATA COLLECTION AND ANALYSIS

This research has made use of two data types: primary data in the form of stakeholder perspectives collected through semi-structured interviews, and secondary data in the form of information retrieved from official nitrogen-related documents (e.g. policies, visions, or advisory reports) which have been developed and published by the province of Gelderland or by NGOs. Interviews have been conducted with people from different sectors who are directly or indirectly affected by or involved in the nitrogen crisis. The argument can be made however that the nitrogen crisis is of such a scale that it affects all inhabitants of the province. Due to practical limitations (i.e. limited time and manpower), it is infeasible to collect data from such a large sample. This research has therefore limited itself to three main stakeholder groups: authorities, agricultural stakeholders, and stakeholders concerned with nature conservation. This research recognizes that besides the agricultural sector, other sectors are also strongly involved in the crisis. Sectors such as the industry, the construction sector and many types of mobility are not just affected by the crisis but play a part in the total nitrogen deposition as well. Due to the forementioned practical limitations and the fear of losing nuance and depth that could become a risk if stakeholders from all sectors were interviewed (i.e. less participants per sector to keep the maximum amount of total participants, hereby creating less-nuanced perspectives for each sector), it was decided that this research would focus on the sector that is responsible for the largest part of the national nitrogen deposition: the agricultural sector (CLO, 2025). The other two groups of stakeholders, authorities and nature conservation organizations, were chosen due to their hands-on involvement regarding the development and implementation of nitrogen policies, as well as their experience with the consequences of the crisis on both human and non-human environments.

Since the number of people in each of these three groups is still substantial, a sample has been drawn via purposive sampling as well as snowball sampling. For authorities, this was done by examining the list of members of the Provincial Council as well as the list of members of the Provincial Executive. Any member that had agriculture and/or nitrogen as subjects in their portfolio, were selected as possible participants. For the agriculture and nature conservation stakeholder groups, the researcher's existing knowledge of the presence of representative organizations was used to develop queries to investigate further relevant stakeholders. Any organization that represented the interests of the agricultural sector or the natural environment in Gelderland were marked as eligible participants. As the conducting of interviews started, snowball sampling would occasionally provide the researcher with additional stakeholders to contact on advice of the stakeholder that was already participating. For all three stakeholder groups, the researcher has made an effort to contact all eligible participants that had publicly available contact information to ensure that all perspectives in the crisis had an equal chance to make their voices heard.

Group 1: Authorities			Group 2: Agriculture	Group 3: Nature
Provincial Council	**Provincial Executive**	**Others**	Land- en Tuinbouw Organisatie Nederland Noord (LTO)	Natuur en Milieu Gelderland (NMG)
BBB	Ans Mol	Regio Foodvalley	Platform Natuurinclusieve Landbouw Gelderland (PNLG)	Staatsbosbeheer (SBB)
VVD	Harold Zoet	Geert Butz	Gelders Agrarisch Jongeren Kontakt (GAJK)	Natuurmonumenten
PvdA			Farmers Defence Force (FDF)	NME Gelderland
GL			Agractie	IVN Natuureducatie
CDA			Zorg om Boer en Tuinder (ZOB)	Geldersch Landschap en Kasteelen (GLK)
CU			Nederlandse Melkveehouders Vakbond (NMV)	Stichting Landschapsbeheer Gelderland (SLG)
D66			Producentenorganisatie Varkenshouderij (POV)	Stichting Behoud Veluwsch Landschap (SBVL)
SGP			Nederlandse Vakbond Pluimveehouders (NVP)	Stichting Mobilisation for the Environment (MOB)
PvdD			Netwerk Grondig	
PVV			Biohuis	
VOLT			Federatie van Agro-ecologische Boeren	
JA21			Boer en Natuur	
SP			Biodynamische Vereniging	
FVD				
50PLUS				

Table 1: An overview of all three stakeholder groups and the individual stakeholders that were contacted for this research.

Table 1 above lists all individuals as well as organizations that were contacted. All eligible participants were sent invitational emails, and if necessary, a follow-up email was sent as well. When participants did not reply to either of these, efforts were made to contact them by phone if their numbers were publicly available. These contacting efforts were made during a period of four weeks, after simultaneous to the conducting of the interviews. While sadly not all stakeholders provided me with a reply, I have been able to interview 16 people across all three stakeholder groups. These interviews were semi-structured and had a duration of roughly one hour, depending on the time available and necessary to gather sufficient amounts of data. Consent forms were provided in advance, giving participants the opportunity to declare their informed consent as well as their preferred degree of privacy while participating. A single semi-structured interview guide was developed for all participants, ensuring that a same set of topics is discussed with all stakeholder groups. Interview questions have inquired about the stakeholders' experiences with and perspectives on the four justice dimensions and the eight rungs of participation. Both the interview guide and consent form can be found in Appendices B and C respectively. Initially, a test interview was planned, but due to unavailability of the test candidate this has not been realized. In hindsight, this would not have been essential as each participant has responded differently to the interview questions. A test interview would therefore not have been sufficient in determining the quality of the interview guide.

All interviews were recorded and automatically transcribed afterwards using a free AI transcribing tool offered by Restream (Restream, 2025), allowing for the coding of transcripts in the analysis phase. Since the AI transcripts were not flawless, each transcript was reread and corrected manually by the researcher. Afterwards, all interviews have been coded in ATLAS.ti 25 in preparation for a storyline analysis as described by MacCallum et al. (2019). This research has applied inductive coding: the diversity of information that is inherent to the process of conducting semi-structured interviews is better suited for developing a list of codes while analyzing. After all interviews were coded, several codes with meanings and applications that were too similar to each other were merged. The final code list can be found in Appendix D. It has not been the intention of this research to only directly ascribe stakeholder experiences to a certain dimension of (in)justice or rung of participation. Instead, these categories have served as a tool to provide structure in the storylines that were developed after the coding process. The storylines have remained rich in detail regardless, allowing this research to describe in depth how different narratives present in the nitrogen crisis can cause cognitive dissonances based on cases of experienced injustice or (a lack of meaningful) participation.

The second type of data concerns documents that focus on (the approach to) the nitrogen crisis. These documents were retrieved from provincial databases as well as other external websites. Additional literature recommended by interview participants was also included when possible. Lastly, the province has been contacted with the request for access to relevant documents if these are not publicly available. The following table lists all documents used for analysis:

Document name
Adviesrapport gebiedsgerichte aanpak stikstof Noord-Veluwe
De Koers Ruimte en Leefomgeving
Gelders Gebiedsplan stikstofreductie en natuurverbetering
Hoofdlijnen regioarrangementen provincie Gelderland
Toekomst voor de Gelderse boer 2021-2030: Kadernota Agrifood
Meedoen met provincie Gelderland: Gelderse participatieaanpak
Ruimtelijk voorstel Gelderland: Stad en land in balans
Uitvoeringsagenda Gelderse Maatregelen Stikstof 2021-2025
We zijn onderweg: Voortgangsrapportage Gelderse Maatregelen Stikstof 2024
Natuurbeheerplan Provincie Gelderland (2009, 2011, 2020, 2021, 2022, 2023, 2025, 2026)
Streekplan Gelderland 2005
Omgevingsvisie Gelderland 2014
Gaaf Gelderland: Omgevingsvisie 2018
Vitaal landelijk gebied Gelderland: Ontwerpprogramma 2024-2035
Advies over de Natuurdoelanalyse Veluwe, provincie Gelderland

Table 2: A list of all relevant publicly available documents that were used in this research.

These policy documents have played a supporting role for the data retrieved from interviews: they were analyzed after the interviews had been conducted as an effort to draw connections and differences between lived experiences of stakeholders and official documents. Furthermore, it has provided recommendations for future approaches to decision-making processes in context of the nitrogen crisis. The reports have been selected based on relevance and timeframe, meaning that all publicly available reports with a clear link to the nitrogen crisis that have been published in the past twenty years have been incorporated. As provincial policy follows national guidelines, and hereby EU guidelines, the scope of my research has remained on a provincial scale. This has allowed for a more practical evaluation of how EU policy, which is translated to the provincial level, is experienced by stakeholders in a local context. Investigating stakeholder experiences with nitrogen problems on (inter)national or global scale is therefore beyond the scope of this research.

SOCIETAL AND SCIENTIFIC RELEVANCE

This research intends to create an improved sense of understanding for the different lived experiences of stakeholders in the nitrogen crisis. Hereby, communicative dissonances between stakeholders can hopefully be easier to solve and situations where stakeholders are insufficiently involved in decision-making processes or experience injustices can be resolved. This research furthermore contributes to the still relatively scarce body of knowledge concerning the sociological side of the nitrogen crisis. It expands on the sources included in Appendix A, specifically by providing a different angle of approaching the crisis. Instead of taking a positivist research approach, focusing mostly on measurable consequences of nitrogen excesses and technological solutions (such as Boezeman et al., 2023; Erisman, 2021; Erisman et al., 2005; Lamkowsky et al., 2024; Lekkerkerk, 1998), this research expands on the body of knowledge which considers more constructivist approaches to the crisis (such as Hoes et al., 2022; Mehrabi et al., 2020; Ryan & Hoes, 2024; Selnes, 2023; van Dijk et al., 2018; Van Lint & Tanja, 1998).

CONNECTING THEORY TO METHODOLOGY

By combining the theories of Arnstein (1969) and Fraser (2009), it is possible to analyze stakeholder perspectives and experiences through a lens of justice and participation. By conducting a storyline analysis on stakeholder interview transcripts, issues concerning participation and justice as they appear in practice can be uncovered. The second type of data, provincial policy documents, can then be analyzed through the same lens, with the data gathered from interviews in mind. Hereby, it was possible to develop an evaluation of policy from the past decades, which then allows for an assessment of how the dissonances experienced by interviewees can be recognized or traced back to decisions published in official documents.

CASE STUDY MOTIVATION: WHY GELDERLAND?

The choice of Gelderland as a case study has societal relevance since this province is home to the Gelderse Vallei, a valley where many agricultural businesses are located. Furthermore, it contains the Food Valley Region, a cooperation of eight municipalities which focuses on sustainable food production in collaboration with knowledge institutes and entrepreneurs (Regio Foodvalley, n.d.). Due to this concentrated focus on food production and agriculture, it is therefore not surprising that ammonia emissions in Gelderland are among the highest of the Dutch provinces (Mouissie, 2022). The map provided below supports this further by showing the exceedance of critical nitrogen deposition values in Gelderland (Figure 3). Furthermore, the livestock density in the valley is also enormous, which includes (but is not limited to) the 900.000 cows, an amount unmatched by any other province in the Netherlands (Beeks, 2022; Provincie Gelderland, 2023a).

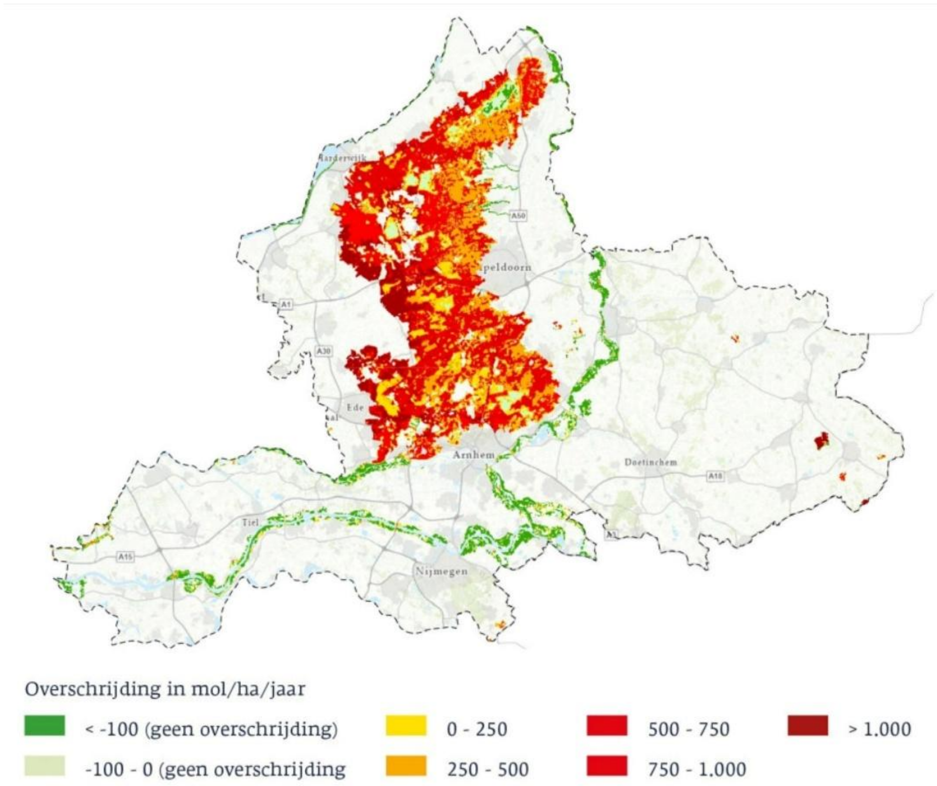


Figure 3: Exceedance of critical deposition values in the province of Gelderland (Provincie Gelderland, 2022b)

On top of this, Gelderland is home to a significant amount of (nitrogen-sensitive) nature (Provincie Gelderland, 2023a), an example of which is the Veluwe, a nature area which consists of national parks De Hoge Veluwe and Veluwezoom, all of which is protected Natura 2000 area (Ministerie van Landbouw, Visserij, Voedselzekerheid en Natuur, n.d.). See the map below for all specific areas designated as protected under the Birds and/or Habitats Directives (Figure 4mr). These areas are under severe pressure from nitrogen emissions relative to other affected areas in the Netherlands (Heller, 2025; Mouissie, 2022), which indicates the relevance of choosing this province for a case study. Furthermore, one of the bigger farmers' protests was organized in this province (NOS, 2023). The protest in Stroe on June 22, 2022, involved 60.000 people and 20.000 tractors, and although these were unlikely all residents of Gelderland, it shows that the province is not unfamiliar with the sentiments of those critical of nitrogen policy.

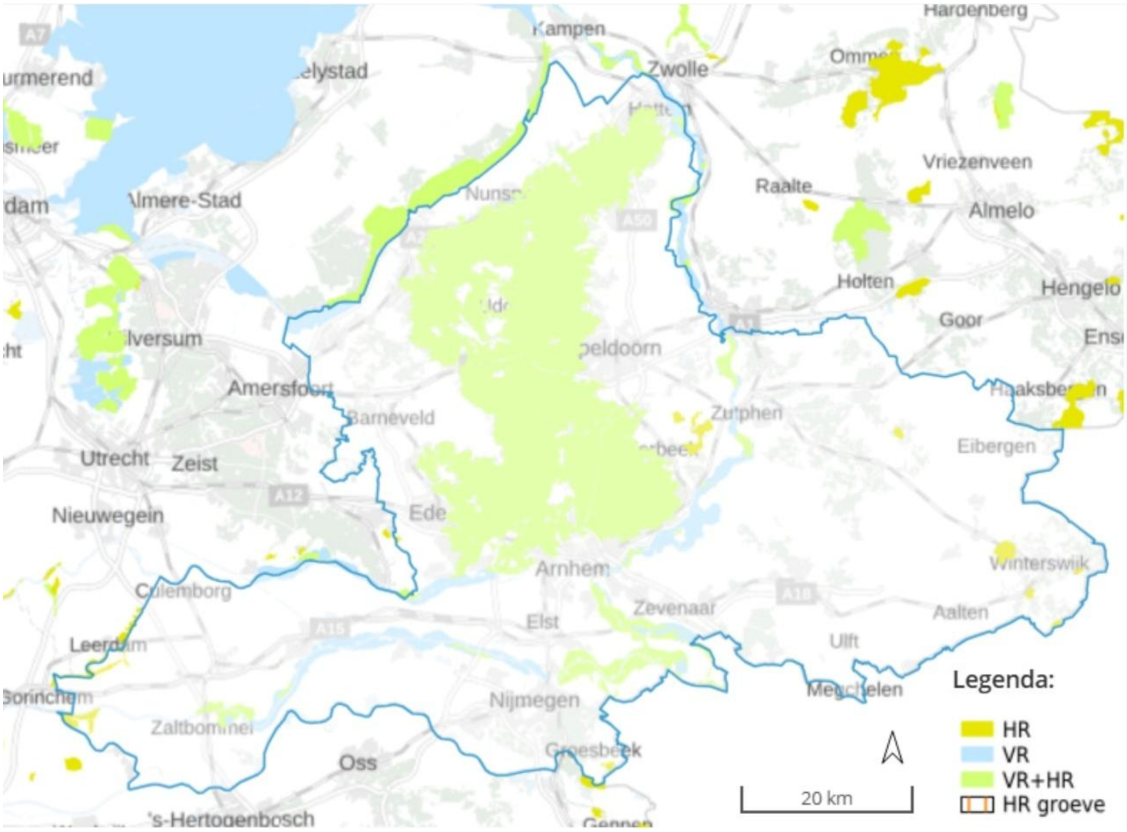


Figure 4: Natura-2000 areas in the province of Gelderland (Ministerie van Economische Zaken, 2019).

Finally, the choice of Gelderland makes practical sense as well: stakeholders can be visited in person more easily than those in provinces located further away from the researcher's working address. While the researcher does not have personal contacts related to the nitrogen crisis in Gelderland yet, the researcher's BSc thesis was also produced in Wageningen which encompassed interviews with members of its municipality. Since Wageningen is part of Gelderland as well as the Food Valley cooperation, previous contact with the municipality might make it easier to get in touch with stakeholders in other municipalities or even the provincial government. In any case, visiting and interviewing stakeholders in person is preferred when inquiring about personal (and possibly sensitive) experiences and perspectives. Online interviewing is optional as well, but not preferable since this form of contact is figuratively and literally more distant.

POSITIONALITY OF THE RESEARCHER

The objective of this research is to develop a complete overview of different perspectives and allow all stakeholders to voice their experiences, interests and worries. It has therefore been the aim of the researcher to remain critical and self-reflective during data collection and analysis. However, the researcher acknowledges that personal positionality cannot be abolished before or during the research project. Each individual carries with them a set of norms, values and views on life and their environment. This inherently means that pure objectivity cannot be achieved, especially not in research of qualitative nature. Interpretation of data is inherently subjective and therefore more susceptible to differences in interpretation because of implicit biases. Regardless, the researcher has aimed to keep this in mind during the entire research process: his personal views on the nitrogen crisis and how different stakeholders have approached this over the last years were consciously reflected upon. Hereby, the influence of this personal stance on the research results is hopefully minimized.

RESEARCH VALIDITY

INTERNAL VALIDITY

Due to the subjective, qualitative nature of this research, internal validity is limited. Storyline analysis allows for personal interpretation of interview data and hereby not one conclusion drawn from this data would factually be correct. Nevertheless, it is my intention to remain careful and critical towards my way of analyzing the data. Hereby, I aim to prevent personal bias to influence the development of the different storylines and the conclusions that follow from these storylines.

EXTERNAL VALIDITY

Since this is qualitative research focused specifically on the Netherlands, external validity is limited in the sense that the research results cannot be directly applied to other nations. Contextual knowledge must always be taken into account when addressing wicked problems like the nitrogen crisis. However, outcomes of this research can still be valuable in the sense that a tactic to overcome gaps between stakeholders and resolving conflicts in wicked problems such as the one used in this research could, if proven successful, be applied elsewhere as well.

On a national scale, this research intends to acquire strong external validity as well. By selecting stakeholders to interview from all over the Netherlands, a varied body of subjective knowledge is built. Conclusions about perceptions can therefore be based on the whole country instead of just one province or municipality. However, it must be noted that this research approach essentially will always result in a certain level of abstraction. Since it is impossible to consult every single stakeholder (and hereby the corresponding level of detail), the outcomes of this research are not applicable to everyone. However, the research intends to identify storylines of perceptions that most stakeholders can identify themselves with.

ETHICS AND DATA MANAGEMENT

Primary data that has been collected includes audio recordings and textual information collected from semi-structured interviews. To this end, this research has used software programs Microsoft Teams for conducting online interviews, Restream for automatic transcribing, and finally ATLAS.ti 25 for coding. All collected data has been securely stored on a private OneDrive account for the entirety of the research project and will be deleted afterwards upon request. All data has been processed and incorporated into the final research report according to the desired degree of anonymity of each research participant. Before participating, a consent form has been distributed, which has ensured that all participants have full clarity on the details of participating in this research project as well as the levels of privacy that they can choose from. After participating, all participants were given the opportunity to review a draft version of the research report, providing them with an opportunity to suggest changes to its contents. For more details, see Appendices C and E which contain a consent form and a data management plan respectively.

RESULTS

This chapter will explore the results of the two types of data that were collected: information from semi-structured interviews with stakeholders and insights from a selection of documents containing policy, visions and advice related to the nitrogen crisis. The interviews were conducted before the document analysis, hereby allowing this research to draw connections between what stakeholders experience and what is stated in official nitrogen-related reports. Based on this combination of data, a storyline analysis has been conducted, the result of which is elaborated on in the second subchapter. In the first subchapter, I will showcase how the data has been analyzed and how codes were categorized. Furthermore, I will recall the theoretical framework on which this research is based and how this connects to the gathered data.

CONNECTING THEORY AND PRACTICE: DATA SHOWCASE AND THEORETICAL CONNECTIONS

Originally, the coding process was supposed to be a mix of deductive and inductive coding. Since the theoretical framework was specifically chosen for its good practical applicability, the initial code groups consisted of the dimensions of justice and the levels of participation described in the Methodology chapter. Together with this deductive approach, room for inductive coding was also left within these predetermined code categories. For example, the code category of Procedural justice would provide room for more specific codes that could be applied whenever an interviewee commented on their involvement in participatory processes. In practice, however, the complexity and rich level of detail of stakeholders' perspectives proved this mix of deductive and inductive coding unsuitable, regardless of the initially suspected good practical applicability of the theoretical framework. On top of the forementioned complexity, the in-depth semi-structured interviews showed substantial variation in structure and contents. Each interviewee has their own way of understanding and answering questions, as well as a personally unique way of communicating (e.g. being quick to ramble on or being rather hesitant to expand on their initial answers). This data variety made it difficult to directly connect the theoretical framework to the raw data. An intermediate "translation" step was thus needed to go from raw data to theory: I decided to switch to inductive coding completely, as this allowed for better encapsulation of the complexity of the data. This resulted in 136 codes in total, which was redefined to 86 codes after the coding had been completed (see Appendix D). This final code list was categorized according to the recurring elements in the data instead of aspects of the theoretical framework (i.e. *interests*, *directions of solutions*, *problem statements*, *stakeholder perspectives* and *other*). This approach made it more feasible to reflect on the connection between the collected data and the theoretical framework, as it provided a good 'middle ground' of complexity. Where the theoretical framework proved to be too concise for direct application to practice and the raw data too complex to connect to concise theory, the final list of code categories and codes was complex enough to provide a nuanced analysis rich in detail, while also allowing me to keep a desired degree of oversight, clarity, and structure. I will now elaborate on the connections made between practice and theory.

Starting with the justice aspect of the theoretical framework, it has become evident that many stakeholders experience injustice to a certain extent. This ranges from a lack of recognition justice across all three stakeholder groups, as in every context people evidently feel that their voices and concerns are not sufficiently considered. Regarding procedural justice, it is not possible to ascribe a general conclusion to all interviewees, as many of them noted different experiences with being involved in decision-making. Some are critical of the inaccessible, bureaucratic procedures organized by levels of government, while others express satisfaction with their involvement in debates. The overwhelming complexity of ways of participating in practice warrants its separate storyline, which is included in the next sub-chapter. Issues of distribution justice were also mentioned regularly, but depending on the interviewees' perspective, this concerned either the distribution of goods and bads to the agricultural sector, the construction sector, or the natural environment. Finally, historical justice was also deemed important by most interviewees, although some emphasized the consequences of the crisis for future generations of farmers while others noted the effects on (both human and non-human) nature in general. Similar to distribution justice, the stakeholder group to which an interviewee belonged strongly determined their perspective of injustice (i.e. agricultural stakeholders were more likely to address justice concerns for their own sector, nature organizations addressed the interests of nature areas, and political stakeholders' justice concerns differed depending on their core positions).

Concerning the participation aspect of the theoretical framework, a similar conclusion can be drawn as for the procedural justice dimension. The overwhelming number of types of participation make it exceedingly difficult to ascribe the case of Gelderland to one or several rungs of the participation ladder. The practical situation is far from organized and clear, as each interviewee and each official document mention different ways in which stakeholders have interacted, currently interact, or desire to interact in future decision-making processes. Regardless, some general results have become evident by analyzing the data. No instances have been identified where citizens reach the upper two levels of the ladder: delegated power or citizen control. Most involvement of interviewees from the Agricultural or Nature stakeholder group ranges between the rungs of informing and partnership, depending on the specific context and time setting in which the participation took place. And while some interviewees did mention their suspicion that "sham participation" (i.e. the promise of participation by authorities, which does not actually give freedom for citizen input and exists just as a requirement on a checklist to tick off) sometimes occurs, no obvious cases of manipulation or therapy were reportedly experienced. While this sounds positive, the often-heard frustration among interviewees that their voices were not heard and their input was insufficiently incorporated into nitrogen approaches, it seems that a lack of participation altogether is at play, which is arguably even worse than being situated on the bottom of the participation ladder. In the next chapter, several storylines are described which are based on the most important recurring themes derived from the interviews. Here, enough room is present for further nuance to the results described above.

STORYLINE 1: A CRITIQUE OF THE GOVERNMENT

With 94 applications in total across all 16 stakeholder interviews, the code *persp-kritiek op de politiek/overheid*, a code created to indicate when an interviewee was critical of the national or provincial government, has the most significant presence in the entire qualitative analysis. Therefore, the first storyline is centered around this perceived issue. A strong variety of problems are experienced by stakeholders, most of which are focused on the role of the national government in the crisis, although the provincial government has also caused frustration to some extent among less powerful stakeholders. The use of "geitenpaadjes" in Dutch politics (English: goat paths) is criticized for example, as this concerns trying to use "back doors to be able to continue emitting nitrogen" (Sanders, 2022). This term has even been popularized during the development of the nitrogen crisis, specifically the failure of approaches previously proposed by the government. Another problematic aspect of these flawed attempts at solving the crisis concerns the lack of clarity and consistency given by the national government. René Westra, Provincial Council member of the VVD, notes that all civil servants find themselves in a field of tension that results in fluctuations in their assessment framework. In other words, the political playing field can affect the decisions of individual members of the Council, resulting in inconsistent and unpredictable decision-making of both political factions in general and civil servants individually. Besides unpredictability, the lack of governmental guidance, clarity, perspective offered to stakeholders, and a long-term oriented approach were mentioned as problems by, among others, spatial development advisor Geert Butz (G. Butz, personal communication, June 4, 2025). Furthermore, a Council member of the PvdA noted the tensions between national and provincial governments resulting from insufficient performance of the responsible minister, which transferred problems to the provincial deputy. Transparency and a lack of feedback from the national government are also mentioned by Agricultural stakeholders such as chairman of the GAJK Mart Wagenvoort (M. Wagenvoort, personal communication, June 3, 2025). While seemingly most problems were ascribed to the national government, some interviewees were also critical of the provincial government of Gelderland. Specifically, the case of cancellation of an area-oriented process as well as missed opportunities for nature development were noted by another interviewee of the Agricultural stakeholder group.

The document analysis seems to support the criticism noted by interviewees, for example by mentioning a lack of clarity about the implementation of national nitrogen reduction measures (Provincie Gelderland, 2023a). Besides a delayed implementation of nitrogen measures, the progress report on the nitrogen measures for Gelderland also expresses the hindrance currently experienced due to problems with governmental support (Provincie Gelderland, 2024c). The same report furthermore summarizes the failures of the national government, which include the fall of the Cabinet, unclarity concerning generic measures and norms, a lack of legal guarantee for innovation, and a lack of national funding for the provincial nitrogen approach" (p. 43). The dependency of the province on national financial support is noted by several other documents as well (Provincie Gelderland, 2021c, 2024b). While these are not directly criticizing the government, they do underline its critical role in solving the crisis, which it has failed to do until now. Some interviewees criticize specific political parties such as BBB for cutting funding for a nitrogen approach (E. Theune, personal communication, May 29, 2025) as well as abolishing the NPLG program (which was praised by several interviewees as a good starting point for a national crisis approach). However, the interviewees generally aim their critique at the national government in its entirety.

Finally, the perceived lack of clarity and perspective provided by the government (and the resulting longevity of the crisis) according to interviewees can also be connected to contents of official documents. For example, when looking at provincial environmental visions and nature management plans, it becomes clear that editions predating the abolishment of the PAS and the 'start' of the crisis in 2019 lack a focus on the severity of the nitrogen issue and the importance of mitigating its negative effects on society (Provincie Gelderland, n.d.-c, 2005, 2009, 2010, 2014, 2018). Concluding this first storyline, it has become evident that the government has a significant responsibility, not just to solve the issue of nitrogen but to evoke broad change in general according to many interviewees. Therefore, it should reconsider their current strategy of tackling the crisis (or lack thereof).

STORYLINE 2: HOW POLARIZATION AND FRAMING CAN STALL PROGRESS

A second storyline that has become apparent during the data analysis is the role of polarization and framing in the nitrogen debate. An example of the issue of polarization preventing progress to be made was explained by interviewees from all three stakeholder groups. It highlighted that both "sides" of the argument (i.e. both NGOs intent on evoking systematic change by reducing the negative effects of the agricultural sector, as well as farmers intent on mitigating those effects by improving the sustainability of their business practices) perceived that the extremes in the nitrogen debate prevented progress towards solutions. One stakeholder from the Agriculture group explained how NGOs block every well-meant initiative to conduct agricultural practices in a less polluting way (e.g. upgrading stables by placing so-called "air washers" or low-emission stable floors). Despite farmers' efforts to innovate, organizations such as MOB allegedly destroy any chance of long-term effect of such technological measures by challenging their legibility in court cases. The judge consequently rules them illegible in context of current nitrogen laws, essentially rendering them infeasible (as a part of the strategy) to solve the nitrogen crisis. This of course leads to frustration among farmers who are willing to make changes and invest in cleaner technologies for their businesses. This perspective was also shared by Mr. Wagenvoort (M. Wagenvoort, personal communication, June 3, 2025).

On the other end, Stan Hellegers, party leader of D66 in the Provincial Council, mentioned how more conservative actors in the agricultural sector as well as their extensions into the political sphere through the BBB party prevent the implementation of policy aimed at nitrogen reduction through framing. Specifically, this concerned the presentation of a new policy that proposed cutting nitrogen emissions in half by voluntarily buying out farmers that had a substantial negative effect on their surrounding environment. Mr. Hellegers noted that the BBB and its broad support group misrepresented this attempt at reducing the number of livestock by framing it as an effort to reduce the number of farmers. While this antagonistic frame towards farmers was based on false pretenses according to Mr. Hellegers, it has had the detrimental effect of not just polarizing and radicalizing the nitrogen debate but also immobilizing policy implementation. Many new policies that propose substantial changes are met with hostility, based on the perception that it is an effort to get rid of farmers. While the most progressive interviewees argue in favor of a substantial reform of the way in which agriculture is integrated into our landscapes (e.g. through transitioning to a nature-inclusive, extensive agricultural sector which is more in touch with its effects on the environment), none of them showed any antagonistic stance on the sector in general. The problematic consequences of perceived hostility against the agricultural sector are also mentioned in the literature. Both on provincial and national scale, the nitrogen debate is perceived by farmers as intent on reducing the number of livestock and hereby downsizing the agricultural sector, which has negatively impacted farmers' willingness to cooperate (van Santen & Bernoster, 2021). Another report (Provincie Gelderland, 2023a) goes more into detail concerning the possible ways by which farmers can be incentivized to relocate or (partially) terminate their businesses (e.g. financial incentives such as subsidies). When considering the distribution of funding for different types of nitrogen measures (130 million euros for buying out farmers, 257 million euros for nature restoration and a relatively little 20 million euros for management measures on dairy farms), it becomes easier to understand those farmers' perspectives centered on the idea that the main goal for the agricultural sector is to reduce the number of livestock and the number of farmers. According to Mr. Hellegers only the former holds any truth, where the latter is an example of framing (i.e. playing into the emotions of people by stating that the government wants to get rid of farmers).

While frames based on hostility towards a group of stakeholders are not experienced by everyone, the power of a frame to cripple the debate must not be underestimated, as noted by interviewees' anecdotes. For example, Karlijn Looman, program director at Regio Foodvalley, and another interviewee from the Nature stakeholder group mentioned the hesitance of stakeholders representing conventional agriculture to address nitrogen approaches as "transitions" and their consequent withdrawal from collaborative processes when strategies proposed in these processes insinuated drastic measures for the agricultural sector (K. Looman, personal communication, May 30, 2025). Mr. Butz furthermore noted the domination of extreme viewpoints in debates on both sides of the argument, resulting in the more nuanced and accepting majority remaining silent or being insufficiently involved in participatory processes (G. Butz, personal communication, June 4, 2025). Lastly, a PvdA Council member noted that the frame which you apply on your input in a debate determines whether your perspective is taken seriously. These examples suggest that the more polarized a debate becomes, the more difficult it is to make any progress. Additionally, frames that are based on inaccurate information or misrepresent reality can grow to dominate public debate and the media, further amplifying polarization. This leads to another key recommendation for policymakers, researchers and stakeholders with hands-on practical involvement and experience in the nitrogen crisis: closing the gap between extreme perspectives by finding common ground. In the next storyline, I will elaborate on the potential to achieve this, as the interviews pointed out that in essence, stakeholders are not as divided as one might think at first glance.

STORYLINE 3: FINDING COMMON GROUND

Despite the glaring differences in perspectives explained thus far, many interviewees are on the same page concerning their proposed strategy for solving the crisis. Firstly, 13 out of 16 interviewees noted the importance of certainty, perspective and long-term orientation in such an approach, and the code which indicated this preference was applied 57 times in total. This is an especially interesting find, as the currently perceived lack of these elements in practice has become abundantly clear in the interviews as well. A lack of certainty, perspective and long-term vision was mentioned 66 times in total, across 15 of 16 interviews. The analyzed documents show a similar focus on creating clarity and a long-term perspective as well, despite this seemingly lacking in practice according to interviewees. Specifically, reports argue that clarity and a perspective for the future for agricultural entrepreneurs is required as soon as possible (Provincie Gelderland, 2023a, 2023b, 2024b, 2024c, 2024a). Besides the importance of creating a stable and clear perspective for future that expands beyond the four-year political coalition period, reestablishing the possibility for farmers to trust other stakeholders again and invest in sustainable business practices is also mentioned (Provincie Gelderland, 2021a). Furthermore, stability should not only be created for farmers: citizens and other stakeholders should be given sufficient long-term perspective as well (Provincie Gelderland, 2021c, 2023c).

Secondly, the approach to nitrogen should be strongly participative as noted by 15 of 16 interviewees, the relevant code being applied 30 times in total. While the concrete shape of such a participatory approach differed across interviews, it seems that most interviewees, regardless of their stakeholder group, consider small-scale, meaningful collaboration with stakeholders (e.g. “keukentafelgesprekken” or kitchen table conversations) to be a viable approach. Furthermore, Charlotte de Roo, party leader of GroenLinks in the Provincial Council, argued in favor of inclusive participation in which all partners are involved (e.g. municipalities nature conservation organizations, farmers, banks and even dairy producers), which she based on past experiences (C. de Roo, personal communication, May 21, 2025). Other interviewees proposed civil councils as a viable collaborative approach in which civilians, authorities and experts can work together. As long as these initiatives are small-scale, they can be effective, since a Council member of the PvdA notes that large-scale participation efforts are more likely to invoke resistance than individual conversations with stakeholders (such as those in well-organized civil councils). The importance of collaboration with stakeholders in tackling the nitrogen crisis is also supported by multiple analyzed documents (Provincie Gelderland, n.d.-a, 2021c; van Santen & Bernoster, 2021). Some mention the importance of involving farmers specifically due to their local, area-specific knowledge and initiatives for nitrogen reduction (Provincie Gelderland, 2023b), while others mention a broader collaboration with the national government, water boards, municipalities, agricultural organizations and nature organizations (Provincie Gelderland, 2021a, 2024b). Furthermore, the intention of the province to improve transparency, accessibility, clarity and provincial involvement in participation (i.e. field visits) is also emphasized (Provincie Gelderland, 2021b). Despite the agreement on the importance of collaborative approaches described above, in practice policies insufficiently facilitate this according to the literature (Provincie Gelderland, n.d.-a). A key recommendation is therefore to develop measures that do facilitate small-scale participation which contributes to achieving national nitrogen goals.

Thirdly, approaches that are integral and/or area-oriented were considered to be important by 12 of 16 interviewees, and its relevant code was applied 69 times. This argument finds strong support in the analyzed literature, similar to the two previously described key elements (Ecologische Autoriteit, 2024; Provincie Gelderland, n.d.-a, 2021a, 2021c, 2023a, 2024b; van Santen & Bernoster, 2021). Despite the overwhelming support for area-oriented approaches, some literature partially contradicts with this suggestion. For example, while a report proposes area-oriented approaches, it also underlines the responsibility of the national government for developing nitrogen measures for all sectors. Arguing in favor of national intervention provides an interesting contrast to small-scale, area-oriented approaches.

However, the main argument of this report is that measures should be implementable by different bodies of government and acquire a broad support base (Provincie Gelderland, 2023a).

Fourthly, a proposed approach that finds a broad support base in both interviews and literature but is simultaneously controversial concerns a more radical change in the agricultural sector, redeveloping it into a more sustainable, circular or nature-inclusive one (Provincie Gelderland, 2021a, 2023a, 2023b, 2023c). While more progressive interviewees have argued in favor of such a systematic change, members of the Agricultural stakeholder group are not always similarly enthusiastic. Even though most farmers are willing to contribute to tackling the nitrogen crisis, assuming these contributions are financially viable (C. de Roo, personal communication, May 21, 2025; Provincie Gelderland, 2021a), hesitance towards drastic change exists as has been previously described. For example, the shift towards combining agriculture with other spatial functions as predicted in the literature (Provincie Gelderland, 2023c), is met with criticism from farmers. A representative of LTO Noord critically commented the following when asked about the viability of combining farming with functions such as recreation, tourism, or the sale of regional produce: "the best secondary function is a main function.". Concludingly, while the topic of implementing drastic, systematic changes to the agricultural sector remains divisive, both sides of the argument seem to benefit from a large support base. Potential already exists to bridge this gap and collaborate in finding approaches that improve the sustainability of the agricultural sector, provided that these changes are feasible for and accepted by farmers (Provincie Gelderland, 2021a).

Finally, common ground can be found in the valuation of good environmental quality among interviewees. Worries were expressed concerning the risk of injustices done to both human (e.g. socioeconomic or economic consequences of the crisis) and non-human stakeholders (e.g. decline of natural quality, environmental conditions, and the wellbeing of animals). All interviewees were in favor of maintaining or restoring a high quality of life. When looking at what this means for individual stakeholders, significant differences can be found, however. The very nature of concepts like 'good', 'high quality', or 'just' are understood and applied in different ways depending on the stakeholder that expresses their perspective. These dissonances are sadly significant enough to warrant a separate storyline, which will be explained below. Despite this problematic dissonance, we must acknowledge that common ground does exist in the nitrogen debate as well. The main takeaway for policymakers is therefore to both address agreements as well as finding ways to bridge critical gaps in tackling the crisis.

STORYLINE 4: THE STRUGGLE OF DEFINING JUSTICE

Answering whether any approach to the nitrogen crisis should be 'just' is easy. Giving shape to what concrete policies should be developed and implemented to achieve justice is a lot more difficult, however, as the answer to this varied between most interviewees. As mentioned before, a good quality of life was valued by all, but how this concept is perceived and for whom quality of life is prioritized differed strongly. At one end of the spectrum of stakeholder perspectives, people can be found that value nature but prioritize the stability and viability of agricultural businesses. Interviewees with such a perspective argued that instead of sticking to a rigid definition of "high quality nature" (for example as described in nitrogen laws or EU Birds- and Habitats directives), we should perceive nature as a dynamic system that has always changed and will continue to change over time. Instead of therefore frantically clinging to certain types and states of nature that were present in the past – on which current guidelines, laws and policies are based – we should learn to accept that other types of nature are not inherently devoid of value. The type of nature that suits the climatological conditions of the Netherlands would thus differ from the type of nature that society is actively trying to restore or maintain, according to an interviewed member of LTO Noord. On the opposite end of this argument are stakeholders involved in nature conservation. They are very critical of the argument of letting go of current nature conservation policies and nitrogen reduction strategies. In their perspective, the quality of nature has noticeably and rapidly been declining due to, among other things, a loss of biodiversity resulting from increased nitrogen contents in water and soil. Therefore, instead of looking at currently present greenery with immediate satisfaction due to it being green, we should look more in-depth at conditions of soil, water and habitats in general to determine the state of environmental quality.

Besides the varying interpretations of good environmental quality and good quality of life, the concepts of justice and fairness are also subject to a broad scale of interpretations. On one side of the spectrum, a stakeholder from the Nature group argued that we should not go too far in financially compensating the agricultural sector for the farms that are bought out. Since other sectors that have had to adapt to societal changes in the past did not receive royal compensation either, it would be unfair to overly 'pamper' farmers without end. In strong contrast, interviewees from the Agricultural stakeholder group pointed out the perceived unfairness of the space acquired by buying out farms (both physical space as well as figurative space in allowed nitrogen depositions) being redistributed in some way to the benefit of other sectors or goals such as nature conservation or the construction of houses. This concern makes sense, as the practice of reinvesting in other sectors than the agricultural sector is mentioned in literature specifically (Provincie Gelderland, 2021a, 2023a), as well as other reports remaining unclear as to which sector should reap the benefits from (nitrogen) room acquired from the agricultural sector (Provincie Gelderland, 2021c, 2024c). According to interviewees from the Agricultural group, benefits from buyouts should be reinvested in the sector instead of benefiting other sectors that did not have to give up anything.

Besides this example which indicates that different perspectives exist on what a just distribution of environmental goods and bads means, interviewees were furthermore asked about which elements they think should be part of a just approach to the crisis in general. These suggestions have been incorporated into a mind map, which is visible in Figure 5. Since this figure underlines once more that stakeholders have different ideas of what "justice" entails, the main recommendation for policymakers is to organize debates on the philosophical level of the meaning of justice. Only here can we address the differences in core values, and from there on collaborate in finding common goals.

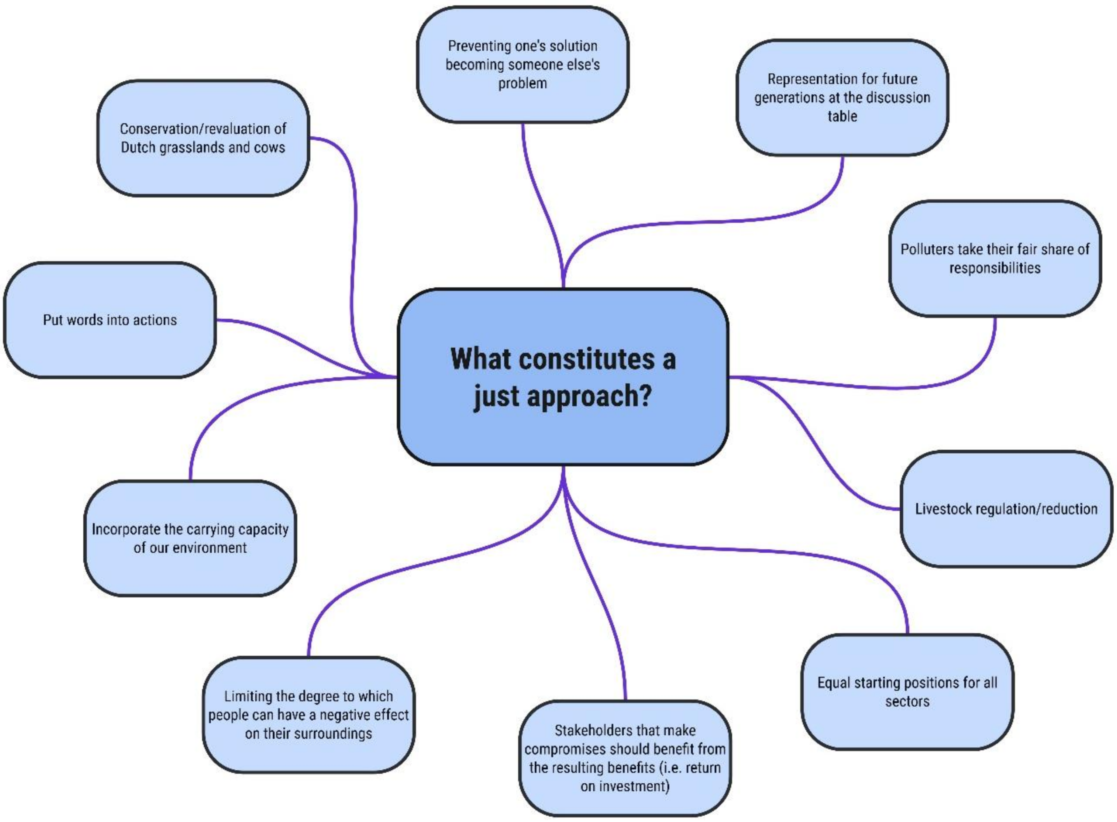


Figure 5: A mind map visualizing different aspects of a just approach to the nitrogen crisis according to interview participants.

STORYLINE 5: GETTING LOST IN A JUNGLE OF COMMUNICATIVE DISSONANCES

The final storyline has a rather negative focus but is essential to address: the variety of communicative dissonances that were present in both interviews and official documents. These come in all shapes and sizes, a selection of which will be described here. The first set of problems identified by several interviewees is experienced when trying to get all relevant stakeholders involved in decision-making processes. The silent majority of citizens, for example, are more likely to remain silent due to not having strong opinions in debates and therefore generally being more accepting of policy changes. Likewise, the most radical ends of the spectrum are difficult to involve, like for example some groups of farmers who allegedly do not want to participate under any circumstances (K. Looman, personal communication, May 30, 2025). While multiple interviewees note the importance of listening to each other in debates and trying to understand each other's perspectives (W. Rijpkema, personal communication, May 28, 2025), the current state of debates is lacking severely in this aspect. Stakeholders sometimes talk at cross purposes while meaning the same thing (K. Looman, personal communication, May 30, 2025) or in other cases immediately rise to resistance due to their fear of entering bureaucratic processes which they resent, according to an interview with a farmer of LTO Noord. That farmer also acknowledged sometimes perceiving participation as meaningless and the lack of feedback of information frustrating. Furthermore, Mr. Butz noted that people often do not listen to each other in debates and only broadcast their own points of view, throwing their arguments at one another without attempting to find common ground. According to him, many debates have a low chance of a change in perspective occurring, as these debates are organized with like-minded actors in closed circles, which thus lack opposing external perspectives (G. Butz, personal communication, June 4, 2025). When debates are held in external spheres, interviewees often note that they feel that their voices are insufficiently heard. One interviewee described this experience as entering a different world each time he interacted with the political sphere. Mr. Westra mentioned that no definitive procedure for participation exists outside of the House of Province (R. Westra, personal communication, May 21, 2025), which hints at further unclarity on how participation currently occurs (or should occur) in practice.

The selection of documents illustrates this last problem the best: the sheer abundance of different forms of participation, communication or general stakeholder interaction makes it exceptionally difficult to connect practice to theory (in this case, connecting participation initiatives as they occur in practice to Arnstein's (1969) participation ladder). Some clarity can be found in the general report on the provincial approach to participation, however (Provincie Gelderland, 2021b). This document describes five different roles which the province can fulfil in a participation process: *regulating*, *directing*, *stimulating*, *facilitating* and *letting go*. These correspond to levels of influence that citizens have: *informing*, *consulting and advising*, *co-deciding*, *cooperating*, and *self-organizing*. This framework *can* be compared to the participation ladder by Arnstein (1969), as can be seen in the visualization below (see Figure 6). It is worth mentioning that no equivalent for the levels of non-participation in Arnstein's ladder are present in the provincial document.

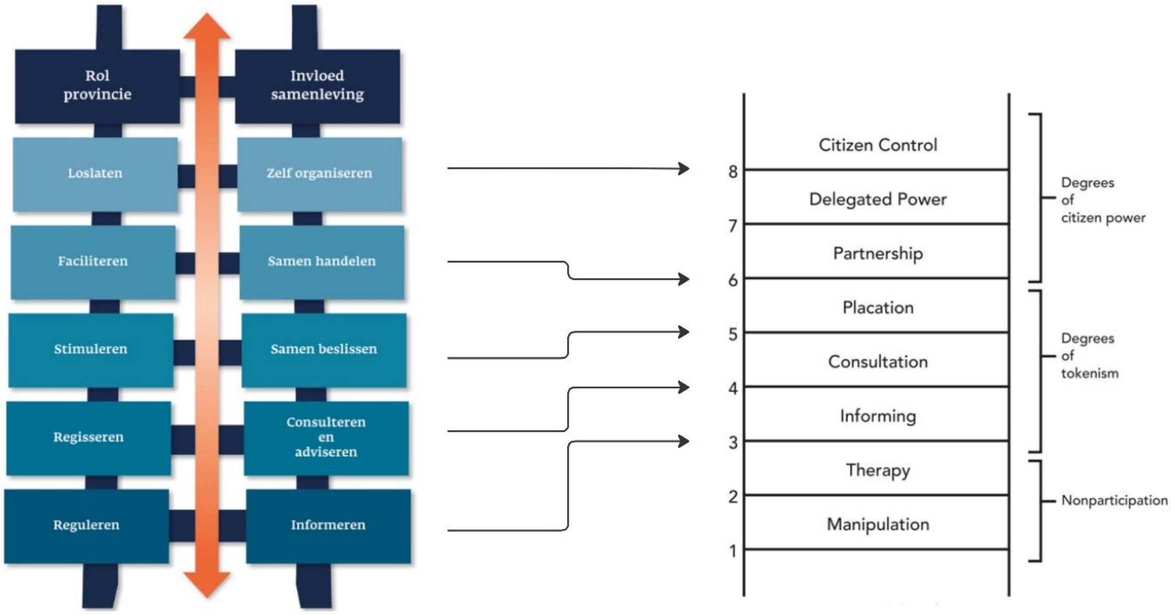


Figure 6: A comparison between two ladders of participation (Arnstein, 1969; Provincie Gelderland, 2021b).

Besides this general participation approach report, the nitrogen-related documents that were analyzed create a more convoluted image of reality. Figures 7-9 visualize this convolution through organizational charts. The charts visible in Figures 7 and 8 have been officially developed for and included in the *Executive agenda for Nitrogen Measures in Gelderland* report, while Figure 9 shows a chart constructed by the researcher based on the literal text included in that same report. Despite the best efforts, the differences between them are glaring, and this is likely the result of the province presenting a confusing and convoluted approach to interacting with stakeholders. Finally, Figure 10 visualizes all the different terms found in the 22 analyzed documents that describe some form of participation or stakeholder involvement. A picture speaks a thousand words, and the main recommendation for this final storyline is therefore to bring order into this chaos by reconsidering how we describe and present participatory initiatives to the world.

Figure 7: Program management scheme of the province of Gelderland (Provincie Gelderland, 2021c).

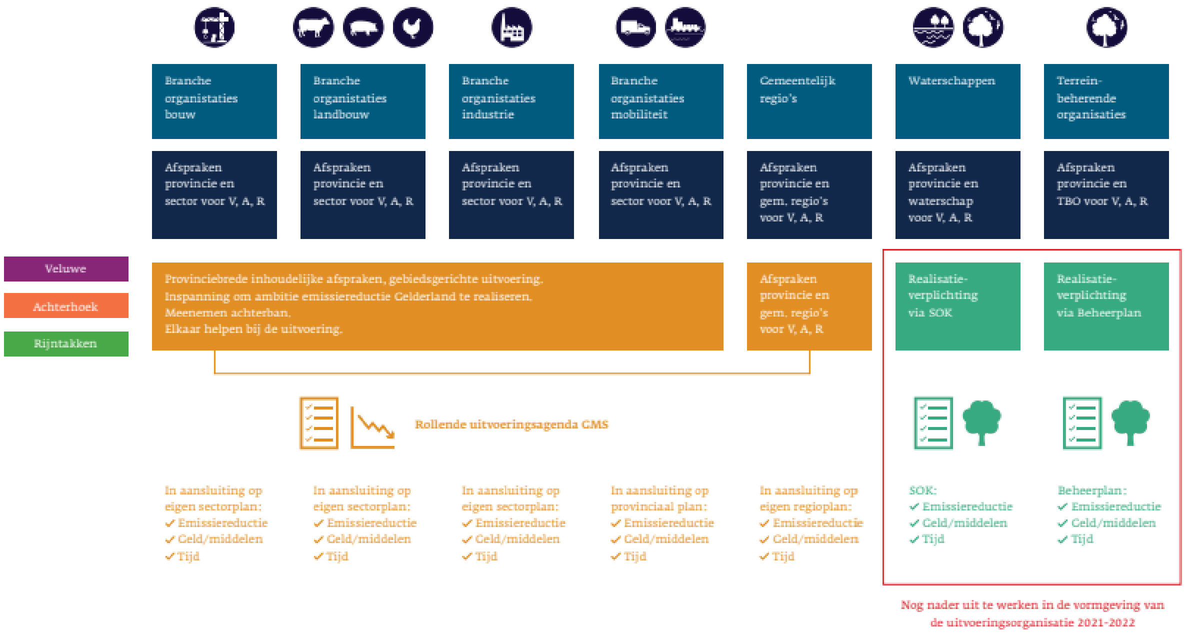


Figure 8: Organizational chart of the decision-making process of the province of Gelderland (Provincie Gelderland, 2021c).

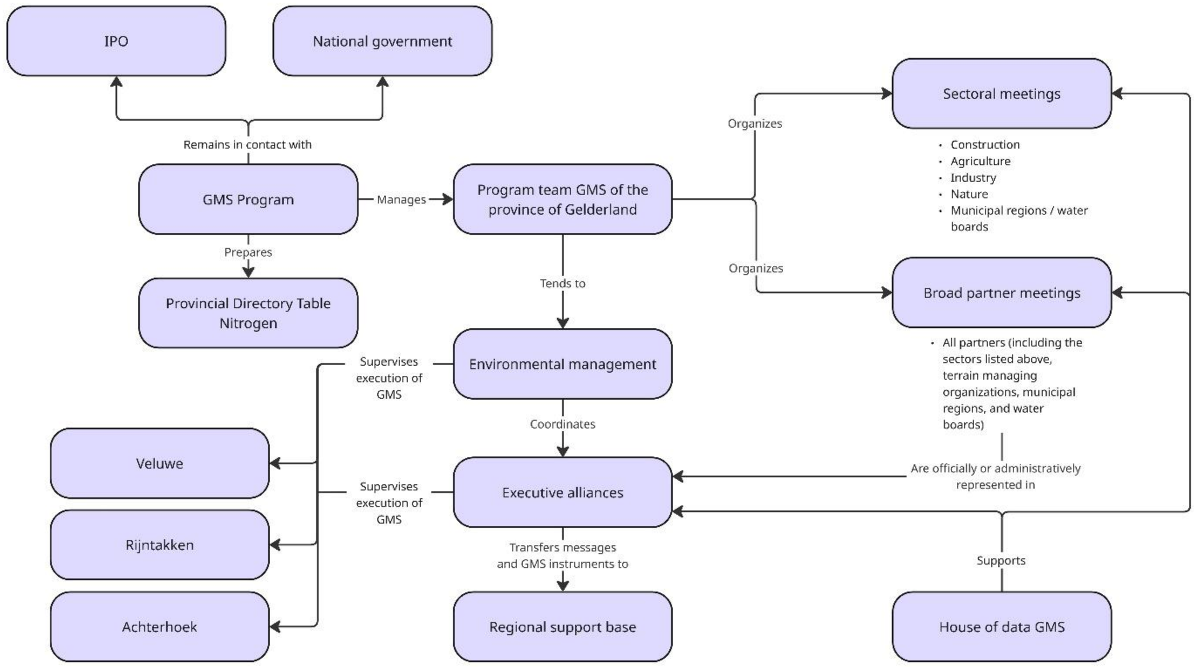


Figure 9: The researcher's interpretation of the same process as shown in Figures 3 and 4, based on the textual descriptions in the same report (Provincie Gelderland, 2021c).

Figure 10: A visualization of the overwhelming number of ways by which participation is described in the analyzed literature.

DISCUSSION

FITTING THE DATA INTO THE THEORETICAL FRAMEWORK

In this chapter, I will first link my theoretical framework that combines the concepts of justice and participation to the five storylines that have been developed after the data analysis. When examining how these storylines 'fit' within the framework, several things are worth mentioning. The theoretical framework is essentially broad enough in scope and rich enough in detail to use for a substantial qualitative analysis of stakeholder perspectives like the one conducted in this research. However, some of the storylines that were the result of such a qualitative approach (which allows for a certain degree of freedom in the data collection, processing and analysis) fit better in the theoretical framework than others. Concerning storylines 1, 2 and 3, the applicatory capabilities of the theoretical framework are strong. All three elaborate on stakeholder experiences with practical cases of recognition, procedural, distribution or historical (in)justice. Whether injustices are expressed as a result of insufficient governmental approaches or broader societal polarization, or whether stakeholders find common ground when discussing which aspects of an approach to the nitrogen crisis could be considered just, the theoretical framework is broad enough to incorporate wildly varying stakeholder perspectives such as those highlighted in the first three storylines.

Storylines 4 and 5 are more difficult to fit within the theoretical framework, however. Concerning storyline 4, this difficulty originates from the fact that it describes the extensive variation in stakeholder experiences and descriptions of concepts like justice or fairness. While the justice dimensions of the theoretical framework are sufficient for analyzing how individuals experience cases of (in)justice, it does not include theoretical handles for handling situations where those personal experiences are based on fundamentally different understandings of the definitions of (in)justice of stakeholders. Therefore, the most important underlying questions concerning who has the right to determine what is (un)just and consequently determining whether practical situations can be regarded as (un)just based on that judgement, can therefore not be answered with this specific framework. For example, a policy for nitrogen reduction that prioritizes buying out farmers to achieve a certain level of quality in nature areas can be regarded as just according to a nature conservationist and unjust to a farmer. Conversely, a policy that reformulates nature development goals and nitrogen targets would likely flip that judgement of justice for those same stakeholders around. It remains to be seen if a universally acclaimed definition of justice can even be developed, but in the context of this research it only seems feasible to address issues of justice from a personal perspective. As the framework chosen for this research is suitable for this, the first and third sub-research questions can be answered. While every stakeholder experiences the crisis from a different perspective, experiences of cases of both justice and injustice can be found in all personal stories. Furthermore, these cases are often strongly connected to the history of the crisis, whether this concerns frustration with past decision-making or concerns for future generations based on the development of the crisis until now.

Storyline 5 is furthermore tricky to fit in the rather rigid participation aspect of the theoretical framework. Since the abundance of participation types included in literature is overwhelming and confusing, and detailed descriptions of procedures and experiences with these types is often lacking in literature, it is difficult to provide conclusions about which levels on the participation ladder are reached in practice in the entirety of the province of Gelderland. To solve this, more information is needed from official reports or stakeholders that have experience with participatory processes that have been organized in the past decades. Only when a more complete image is developed of how participation actually progresses in practice can it be strongly connected to the theoretical framework. This provides an answer to my second sub-research question: while many reports are filled with descriptions of types of citizen involvement in decision-making as well as notes on how nitrogen approaches should be implemented in a just way, the presented information is insufficient to make conclusions about whether the participation promised on paper has been properly translated into practice.

LIMITATIONS

The main limitation experienced during the analysis phase of this research is a consequence of the abundance of ways in which participation occurs according to interviews and reports, but at the same time the lack of knowledge and understanding of how these forms of participation have been executed in practice. So many people with so many ways of interacting with each other makes it seemingly impossible, or at least within the time frame of this research, to gain a solid understanding of the state of participation in context of the nitrogen crisis in Gelderland. To achieve such a grasp, at least a bigger time frame (and likely a bigger work force) is required. More in-depth interviews with more stakeholders could shine a brighter light on how participation is organized, executed and experienced in practice. Future research could also explore the link between the participatory methods and structures promised in official reports and the practical cases where these were supposed to be applied. In the case of this research project however, it has become evident that a time frame of six months is insufficient to properly link the messy, complex reality of stakeholder interactions to the rather simplistic ladder of citizen participation of Arnstein (1969).

REFLECTING ON THE RESEARCH METHODS

The applicability of the chosen methodology for this research is also worth reflecting on. While research on the messy and complex social reality of the nitrogen crisis, as experienced by a wide variety of stakeholders, seems to fit best with a qualitative approach, it is by no means perfect. While all interviews started from the same setup and all interviewees were inquired about the same topics, each interviewee had a different response to the main questions as well as a different way of communicating in general. In some instances, a single question could lead to a ten-minute answer full of tangents (sometimes even resulting in a lack of concrete answers to the question that was asked by the interviewer), while other participants had to be continuously probed to gain a sufficient body of knowledge for comparison with other participants in the analysis phase. This required adaptivity and flexibility while conducting the interviews, making sure that at the end, all participants had at least reflected on the main themes of the interview guide. This has been successfully achieved, although I reckon that for future research, it would be wise to either condense the interview guide even more (making it easier to ensure all topics are discussed) or increase the duration of each interview. This of course has further implications, as an extended duration might reduce the number of people willing to participate. Concludingly, this seems to be a dilemma of scope: either reduce the number of interviewees allowing for more detail and depth or incorporating more interviewees (and thus perspectives of a research topic) but with less depth per individual perspective.

Furthermore, even though my confidence in the interview guide was high initially, it became clear that each participant processes and responds to a question in a unique way. Despite probing efforts, this sometimes led to the participant holding onto a different understanding of the question than the researcher. While this made it difficult to create storylines to some extent (i.e. the difficulty of directly comparing different stakeholders' responses to the same question), this is where the choice to conduct a storyline analysis proved to be logical. Instead of directly comparing stakeholders' answers to each other, developing storylines made it easier to process all recurring stakeholder perspectives related to justice or participation.

Since this was precisely the objective of this research, I remain positive about the chosen method's suitability. Still, it has its forementioned shortcomings, and while I do think it is nearly impossible to grasp the full complexity of reality in a single research project, I recommend future research to continue with a similar qualitative approach, provided that sufficient attention is given to dealing with practical and theoretical limitations such as those described above.

CONCLUSION

ANSWERING THE RESEARCH QUESTION

This report has investigated stakeholder experiences of the nitrogen crisis in Gelderland from a perspective of participation and justice. By collecting data from semi-structured interviews as well as official reports, a storyline analysis has been developed to provide clarity of recurring themes in how the crisis is perceived by stakeholders. Connecting the five storylines developed in the analysis with the theoretical framework has provided an answer to the main research question posed at the start of this report:

> ***GRQ**: how is the nitrogen crisis experienced in the province of Gelderland from a perspective of participation and justice?*

From both data types it can be concluded that stakeholder experiences are unanimously critical of the governmental approach (either national, provincial or both) concerning the approach to the nitrogen crisis. Secondly, frustration with the polarization and framing of the nitrogen debate is experienced by many stakeholders as a hindrance to progress. While polarization is a big issue, stakeholders nonetheless experience similar aspects to be of value in an approach to the crisis such as being integral, area-focused, small-scale and highly participative in nature. In contrast, strong differences are found among stakeholders when interpreting the concept of justice, making it difficult to come to a common understanding of what justice is in context of the nitrogen crisis. The research finally revealed that a variety of communicative dissonances are experienced in practice, whether this concerns the lack of involvement of some stakeholders, the problematic aspects of the execution of participation processes, or the unclarity of how participation is organized in practice according to official reports. In conclusion, stakeholder perspectives highlight that injustice is experienced on many occasions and the way in which participation is organized and executed leaves a lot to be desired. Four key concepts were omnipresent in both the interviews as well as the documents: clarity, stability, integrality, and long-term orientation. These highlight the desired approach to the nitrogen crisis as expressed by all stakeholders and are simultaneously the aspects lacking from the current approach. This conclusion should be considered by stakeholders when re-entering nitrogen debates, so that the knowledge gathered in this research project can hopefully contribute to an increased understanding of other stakeholders' perspectives and experiences. Building on this knowledge will hopefully help solve currently experienced communicative dissonances to an extent.

SCIENTIFIC RECOMMENDATIONS

Future research could expand on this report by further narrowing the scope, which allows a deeper dive into individual cases of participation which have occurred in practice in the past. Hereby, communicative dissonances could be studied even closer. By investigating different stakeholder experiences within the context of the same participation process, knowledge of the involved risks and opportunities for achieving justice in participation could be developed. Future research could also be longitudinal in nature, for example by organizing different styles of participation and comparing stakeholders' respective experiences concerning justice issues afterwards. This could also be a good starting point for more philosophical debates on the meaning of justice among participating stakeholders, further addressing the differences in perspective between them and how to solve the dissonances that result from them.

SOCIETAL RECOMMENDATIONS

Planning practitioners as well as other stakeholders may find the contents of this research useful to reconsider current approaches to the nitrogen crisis and the way in which citizens are involved in decision-making more specifically. Both the highlighted dissonances as well as the identified common ground could make it more feasible for different stakeholders to understand each other's perspectives. Hereby, the debate could hopefully transcend from just throwing arguments at each other to actually listening how and why someone might have a different understanding of justice in approaches to the nitrogen crisis. Pushing the justice debate more into the philosophical real might be inevitable if planning practitioners seek to find an approach that all stakeholders are at the very least comfortable with. After all, a sturdy house requires a solid foundation, and after decades of muddling through, I recommend we finally start pouring down the concrete.

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APPENDIX A: PROPOSED IDEAS FOR APPROACHING THE NITROGEN PROBLEM

In this appendix, a summary of proposed ideas for tackling nitrogen-related issues is provided based on a variety of relevant scientific literature published in the last thirty years. Within these proposed ideas, three categories can be identified to which most ideas can be ascribed: a collaborative, communicative, and integral approach; an approach oriented on solutions provided by technological innovation; or an approach that describes any form of institutional change.

Proposal category	Proposed ideas	Author(s)
Collaborative / communicative / integral approach & Institutional change	A multi-tiered approach involving a variety of actors instead of implementing purely top-down policy (for example, by using the Field Lab arrangement policy instrument of the area-Oriented approach of the Ministry of Agriculture, Fisheries, Food Security and Nature).	*Ryan & Hoes, 2024*
Collaborative / communicative / integral approach	Collaboration and dialogue between farmers and government is important, cooperation and co-development should be strived for.	*Ryan & Hoes, 2024*
Collaborative / communicative / integral approach	A long-term and clear communication strategy is necessary for the implementation of new manure policies.	*Hoes et al., 2022*
Collaborative / communicative / integral approach	Cooperation between agriculture and nature conservation organizations, as well as more self-regulation in the agricultural sector.	*Van Lint & Tanja, 1998*
Technological innovation & Institutional change	Technological innovations, improved farm management, financial incentives and government support, and a long-term vision which is necessary for policy to be feasible for farmers.	*Lamkowsky et al., 2024*
Technological innovation	Technological fixes related to manure storage and injection, reduction of livestock size in critical areas, reduction of farm density.	*Lekkerkerk, 1998*
Technological innovation	Improving nutrient efficiency.	*Ondersteijn et al., 2001*
Technological innovation & Institutional change	Improving efficiency within the supply chain of animal products, decreasing the demand for animal products.	*Boezeman et al., 2023*

Collaborative / communicative / integral approach	Good accessibility for all stakeholders to engage in conversation with each other while making decisions.	*Mehrabi et al., 2020*
Institutional change	Facilitating nitrogen-related decision-making with a specially designed game 'NitroGenius'.	*Erisman et al., 2002*
Institutional change	Establishing EU policy, circular agriculture and a level playing field. Goals are formulated by governments, but farmers have certain freedom in achieving them. Use Key Performance Indicators (KPIs). Clarity of goals is essential.	*Erisman, 2021*
Technological innovation & Institutional change	Improving efficiency, closing nutrient cycles, technological innovations, and education (i.e. influencing consumer behavior), dispersion of nitrogen production on an international scale, and limiting nitrogen production, are promising solutions. A distinction is made between legal rules, guidelines and incentives, and education. Freedom for stakeholders to find ways to achieve the proposed targets is necessary, instead of pure top-down policy.	*Erisman et al., 2005*
Institutional change	Stricter emission limits for farms in proximity to critical nature areas is a cost-effective solution.	*Sliggers, 2004*
Collaborative / communicative / integral approach	Collaboration to achieve 'small wins', as well as establishing an open, (in)formal dialogue between a variety of stakeholders.	*Selnes, 2023*
Institutional change	Innovation of institutions within the agricultural value chain is necessary, hereby initiating a system change, creating an environment that leaves room for regional approaches to tackle the crisis. The whole value chain must be involved in this process of change, spreading capability and power to influence change more evenly among stakeholders.	*Aarts & Leeuwis, 2023*
Institutional change	Institutional change, visions, and discourses are necessary solutions to alter unsustainable regimes.	*Vermunt et al., 2022*
Collaborative / communicative / integral approach & Institutional change	Development of a specific, long-term goal with sufficient societal support, created by all stakeholders. Institutional change where necessary to tackle resistance from the current system might also be necessary.	*van Dijk et al., 2018*

APPENDIX B: INTERVIEW GUIDE

INTRODUCTORY QUESTIONS

Could you introduce yourself and your relation to the nitrogen crisis?

- Line of work
- History with the crisis
- Current involvement in the crisis
- Personal stance on the crisis
    - How would you define or describe the crisis?
    - What is your opinion on the definitions used by the government/media/organizations?
- Personal stance on the approach to the crisis

RECOGNITION JUSTICE

Do you feel that your **personal perspective** in the nitrogen crisis is recognized and taken seriously by other stakeholders?

- Interests
- Concerns
- Local/specific knowledge
- Voice

How should the **perspectives** on the nitrogen crisis **of others** be dealt with/considered/recognized?

PROCEDURAL JUSTICE

Ordinary-political representation

Framing

Metapolitical representation

Participation

How would you describe **your involvement** in or **experience** with participation processes in context of the nitrogen crisis?

➔ How would you describe the following aspects of participation processes:
- Fairness
- Transparency
- Inclusiveness
- Accessibility
- Meaningfulness (influence)
- Effectiveness

What is your opinion on the way **participatory processes** are **shaped**?

➔ To what extent do the following aspects play a role in the shaping of participation processes according to you:
- Communication
- (Pre)judgements
- Norms and values

- Medium of participation
- Scale of participation
- Political influence on participation

Would you be in favor of **changing** the way of **participation** in decision-making, and if so, **how**?

DISTRIBUTION JUSTICE

How does the nitrogen crisis **affect** you?

- Environmental effects
- Economic effects
- Social effects (access to goods/services, opportunities)

How would you describe your **ability to deal with the negative effects** of the nitrogen crisis?

- Financial means
- Social means (opportunities, influence)

To what extent do you think:

- **Positive and negative effects** of the nitrogen crisis are **fairly distributed**?
- **Opportunities** to deal with the **negative effects** of the crisis are **fairly distributed**?

How do you think this could be **made fairer**?

HISTORICAL JUSTICE

How do you look back on the **past decades of decision-making** in context of the nitrogen crisis?

To what extent do you feel that **current decision-making** takes the **history** of the crisis into account?

➔ Do you find this important?

How do you think the **interests of future generations** should be accounted for in **current decision-making** related to the crisis?

CLOSING QUESTIONS

In your opinion, what would make for a **just approach** to the nitrogen crisis?

In your opinion, how should **people be a part** of such an approach?

Is there **anything else** you would like to add?

APPENDIX C: CONSENT FORMS

In this appendix, both English and Dutch versions of the general consent form are included, which will be handed out to all participants before interviews are conducted. The signed versions in Dutch will be included in future Appendices.

CONSENT FORM

MSC THESIS SPATIAL PLANNING

This consent form provides information about participation in the research project of Dagaz de Rozario concerning the nitrogen crisis. If any questions arise, please contact the researcher via dagaz.derozario@wur.nl or via phone (+31 6 25145725).

The **objective of this research** is to help solve communicative misunderstandings between stakeholders in the nitrogen crisis. This will be attempted by inquiring about the different perspectives and experiences of stakeholders through interviews.

The **nature of participation** in this research concerns taking part in an interview of roughly 60 minutes, during which the participant is asked questions about their personal perspective on several topics related to the nitrogen crisis. Participating in this research is completely voluntary. Withdrawal from participating is possible at any time, for any reason, without any consequences. Data collected before withdrawal of a participant can still be used by the researcher, unless requested otherwise. There are no known risks associated with participating in this research project.

During the interview, the interviewee is free to answer questions in whatever way they desire. All information provided is appreciated by the researcher: no right or wrong answers exist. If consent is given, the researcher will take notes and record the interview.

After the interview, the interview transcript will be analyzed. The participant will be given an opportunity to review data incorporated in the research report before its publication.

Privacy during and after participation is important: the participant may declare their desired level of anonymity in participating at the end of this consent form. All collected data will be stored securely on one personal computer and can be deleted upon request after the completion of the research project. Further details can be discussed at the start of the interview if desired.

By signing below, you declare that:

- You understand the practical and ethical aspects of this research.
- You agree to participate in this research.
- You give consent to the interview being recorded, and notes being taken during the interview to correctly process information.
- You give consent to the publication of research results.

Participant's name: ______________________

Signature: ________________________________

Date: ___________________________________

During participation in this research project, I declare that my personal information:

(Choose your preferred option)

O Must be completely omitted (full anonymity).

O Must be partially omitted (only my organization may be mentioned).

O May be used freely (my name and organization may be mentioned).

Researcher's statement

By signing below, the researcher confirms to have explained the practical and ethical aspects of this research, addressed any questions, and provided a copy of this consent form to the participant.

Researcher's name: ____

Researcher's signature: ____

Date: ____

TOESTEMMINGSFORMULIER

MSC SCRIPTIE RUIMTELIJKE PLANNING

Dit toestemmingsformulier verstrekt informatie over de deelname aan het onderzoeksproject van Dagaz de Rozario met betrekking tot de stikstofcrisis. Mocht u aan de hand van dit formulier vragen hebben, neem dan alstublieft contact op met de onderzoeker via dagaz.derozario@wur.nl of via het volgende nummer: +31 6 25145725.

Het **doel van dit onderzoek** is om communicatieve misverstanden tussen betrokken partijen in de stikstofcrisis te helpen oplossen. Hiertoe zal onderzoek worden gedaan naar verschillende perspectieven en ervaringen van betrokkenen door middel van interviews.

De **aard van deelname** aan dit onderzoek betreft het deelnemen aan een interview van ongeveer 60 minuten, waarin de deelnemer vragen wordt gesteld over zijn persoonlijke perspectief op verschillende onderwerpen met betrekking tot de stikstofcrisis. Deelname aan dit onderzoek is geheel vrijwillig. Terugtrekking uit de deelname is op elk moment mogelijk, om welke reden dan ook, zonder enige gevolgen. Gegevens die zijn verzameld vóór de terugtrekking van een deelnemer kunnen nog steeds door de onderzoeker worden gebruikt, tenzij anders verzocht. Er zijn geen risico's bekend die verbonden zijn aan de deelname aan dit onderzoeksproject.

Tijdens het interview staat het de geïnterviewde vrij om vragen te beantwoorden op welke manier dan ook. Alle verstrekte informatie wordt door de onderzoeker op prijs gesteld: er zijn geen goede of foute antwoorden. Als hiervoor toestemming wordt gegeven, maakt de onderzoeker aantekeningen en neemt hij het interview op.

Na het interview wordt het transcript van het interview geanalyseerd. De deelnemer krijgt de gelegenheid om de gegevens die in het onderzoeksrapport zijn opgenomen in te zien en eventueel te laten wijzigen voordat deze worden gepubliceerd.

Privacy tijdens en na deelname is belangrijk: de deelnemer kan aan het einde van dit toestemmingsformulier de gewenste mate van anonimiteit in de deelname verklaren. Alle verzamelde gegevens worden veilig opgeslagen op één pc en kunnen op verzoek na voltooiing van het onderzoek worden verwijderd. Verdere details kunnen desgewenst aan het begin van het interview worden besproken.

Door hieronder te ondertekenen, verklaart u dat:

- U de praktische en ethische aspecten van dit onderzoek begrijpt.
- U ermee instemt om deel te nemen aan dit onderzoek.
- U toestemming geeft voor het opnemen van het interview en dat er tijdens het interview aantekeningen worden gemaakt.
- U toestemming geeft voor het publiceren van onderzoeksresultaten.

Naam: ________________________________

Handtekening: __________________________

Datum: _______________________________

Tijdens de deelname aan dit onderzoeksproject, verklaar ik dat mijn persoonlijke gegevens:

(Kies uw optie van voorkeur)

O Geheel moeten worden weggelaten (volledige anonimiteit).

O Gedeeltelijk moeten worden weggelaten (alleen mijn organisatie mag worden vermeld).

O Vrij gebruikt mogen worden (mijn naam en organisatie mogen vermeld worden).

Verklaring van de onderzoeker

Door hieronder te ondertekenen, bevestigt de onderzoeker de praktische en ethische aspecten van dit onderzoek te hebben toegelicht, eventuele vragen te hebben beantwoord en een kopie van dit toestemmingsformulier aan de deelnemer te hebben verstrekt.

Naam van de onderzoeker: ____

Handtekening van de onderzoeker: ____

Datum: ____

APPENDIX D: CODE LIST

This appendix includes the finalized list of codes which have been applied to the 16 semi-structured interviews. All codes were ascribed to one of the following code groups: *interests (belangen)*, *solution directions (oplossingsrichtingen)*, *problem statements (probleemstellingen)*, *stakeholder perspectives (stakeholderperspectieven)*, or *other (overig)*.

Project: (V2.0-merged) MSc Thesis 2025 - Interview & Document Analysis

Report created by Dagaz de Rozario on 4-7-2025

Code Report – Grouped by: Code Groups

All (86) codes

<u>Belangen</u>

13 Codes:

○ bel-feitelijke informatie en educatie

○ bel-voedselzekerheid

○ bel-algemeen

○ bel-toekomstige generaties

○ bel-rendabele bedrijfsvoering en bestaanszekerheid

○ bel-gangbare landbouw(sector)

○ bel-zekerheid, perspectief en langetermijnvisie

○ bel-achterban

○ bel-natuur en landschap

○ bel-vertrouwen en draagvlak

○ bel-eerlijkheid (lusten, lasten en het eerlijke verhaal)

○ bel-samenhang tussen landgebruiksvormen

○ bel-transparantie

<u>Oplossingsrichtingen</u>

24 Codes:

○ opl-integrale of gebiedsgerichte aanpak

○ opl-boeren verplaatsen

○ opl-enkelvoudig landgebruik/scheiden van functies

○ opl-zelfregulatie/monitoring/doelsturing

○ opl-beter natuurbeheer

○ opl-welwillendheid om naar oplossingen toe te werken

○ opl-vervuilers straffen

○ opl-overheid speelt een (andere of belangrijkere rol)

○ opl-systeemverandering

○ opl-bottom-up beleid

○ opl-top-down beleid

○ opl-subsidiëring

○ opl-gecentraliseerde aanpak

○ opl-positief over mogelijkheden/kansen

○ opl-boeren onteigenen/veestapel verkleinen

○ opl-natuurinclusieve/extensieve/grondgebonden landbouw of agrarisch natuurbeheer

○ opl-burgerberaden

○ opl-participatieve aanpak

○ opl-naleven wet- en regelgeving

○ opl-geen zelfregulatie/monitoring/doelsturing

○ opl-meervoudig landgebruik/combineren van functies

○ opl-aanpassen wet- en regelgeving

○ opl-technologische maatregelen/innovatie

○ opl-geen technologische maatregelen/innovatie

<u>Overig</u>

2 Codes:

○ ov-positieve aspecten van de crisis

○ ov-(invloed van) politieke/maatschappelijke ontwikkelingen/fenomenen

<u>Probleemstellingen</u>

28 Codes:

○ prob-framing

○ prob-oneerlijk verdeelde lusten en lasten

○ probl-gebrek aan integrale of gebiedsgerichte aanpak

○ prob-gebrek aan welwillendheid om te veranderen

○ prob-gebrek aan erkenning van de crisis

○ prob-aandeel van landbouw/agrarische sector in de crisis

○ prob-gebrek aan kennis en expertise

○ probl-afgeschafte plannen/beleid

○ prob-economische gevolgen

○ prob-algemene gevolgen

○ prob-geitenpaadjes, zachte heelmeesters, pappen en nathouden

○ prob-gebrek aan zekerheid, perspectief en langetermijnvisie

○ prob-gebrek aan transparantie

○ prob-stilstand en/of vooruitschuiven van problemen

○ prob-gebrek aan nuance/aanwezigheid van de stille meerderheid

○ prob-bureaucratie

○ prob-gebrek aan geld

○ prob-gebrek aan gezag

○ prob-sociaaleconomische gevolgen

○ prob-gebrek aan rekening houden met toekomstige generaties

○ prob-gebrek aan vertrouwen en draagvlak

○ prob-aandeel van andere sectoren (dan landbouw) in de crisis

○ prob-gebrek aan kansen

○ prob-polarisatie, verdeeldheid en conflict

○ prob-gevolgen voor andere sectoren (dan landbouw en natuur)

○ prob-gevolgen voor natuur, milieu en klimaat

○ prob-gevolgen voor landbouw/agrarische sector

○ prob-langdurigheid van de crisis

Stakeholderperspectieven

19 Codes:

○ persp-positief over huidige participatie

○ persp-kritiek op huidige participatie

○ persp-ontbreken of ontkennen van (eigen of andermans) perspectief

○ persp-erkenning van de crisis

○ persp-positief over NGO's

○ persp-kritiek op de politiek/overheid

○ persp-kritiek op (eigen of andermans) perspectief

○ persp-kritiek op NGO's

○ persp-begrip voor/erkenning van (eigen of andermans) perspectief

○ persp-kritiek op huidig beleid, wet- en regelgeving

○ persp-positief over landbouw/agro-industrie/agrarische sector

○ persp-vertrouwen in een ander

○ persp-positief over de politiek/overheid

○ persp-crisisdefiniëring

○ persp-reflectie op huidige stakeholderinteracties (participatie, communicatie, organisatie, etc.)

○ persp-kritiek op andere sectoren (dan landbouw)

○ persp-kritiek op intensivering van landbouw

○ persp-begrip voor huidig beleid, wet- en regelgeving

○ persp-kritiek op landbouw/agro-industrie/agrarische sector

WAGENINGEN UNIVERSITY & RESEARCH
DATA MANAGEMENT PROOF

Landscape Architecture and Spatial Planning (LSP)

Data management MSc thesis (V 1.0)

Complete the categories 1 to 6 as part of your research proposal and add it as an Annex to the final research proposal. After submitting your draft proposal, update the information of categories 1 to 6 if necessary, and complete the details of category 7. Add the completed data management document to the data you submit to your supervisor.

1. Details of the MSc thesis

Name student	Dagaz de Rozario
MSc thesis code	LUP80436
Supervisor(s)	Claudia Rot
Start date thesis	January 6

2. Short description of your research

Preliminary title	Justice and participation in tackling the nitrogen crisis: Analyzing stakeholder perspectives through storyline analysis
Abstract (max 100 words)	This thesis investigates the lived experiences of stakeholders in the Dutch nitrogen crisis in the province of Gelderland. By conducting a qualitative study combining empirical data derived from semi-structured interviews and secondary data from

	provincial policy documents, a narrative analysis can be conducted. A theoretical framework that combines citizen participation and justice concepts will be applied to the collected data, allowing for narratives to be developed which can serve as starting points for overcoming currently experienced cognitive dissonances among stakeholders in the nitrogen crisis.

3. Data management roles

Roles	
Who is **collecting** the data?	Dagaz de Rozario
Who is **analysing** the data?	Dagaz de Rozario

4. Expected types of research data

Data stage	**Types of research data & software choice to process it (if applicable)**
Raw data	Microsoft Teams (optional) Zoom (optional)
Processed data	ATLAS.ti 23 Microsoft Word Microfsoft Excel (optional) Miro
Other?	

5. Short-term storage solutions

Describe where the data will be stored physically during your research (e.g. on paper, laptop, USB drive, your university M-drive, other) and how a backup is organized.

Data stage	Storage location and backup
Raw data	Microsoft Onedrive 365 (WUR-account) Personal phone Paper (handwritten notes) (optional) USB drive (optional)
Processed data	Microsoft Onedrive 365 (WUR-account)
Other?	Microsoft Onedrive 365 (WUR-account)

6. Sharing, ownership and privacy

Sharing, ownership and privacy	(With) who(m), what and how?
Data **sharing** - Do you have plans to share your data with other parties (besides your supervisor)?	Processed data, derived from and approved by research participants, will be included in the final research report. This report will be shared with colleagues, family or friends if deemed relevant.
Data **ownership** - Are there agreements about the data ownership with other involved parties? (besides your supervisor)	No.

Privacy - Are there privacy or security issues, and if there are, how are you dealing with them?	Before participating, stakeholders are required to fill in a detailed consent form which will address the degree of privacy they prefer regarding how their personal information is used and eventually incorporated in the final research report. This ensures clarity of the nature of participation and prevents privacy issues. Security issues will be prevented by confidentially and safely storing all data on personal accounts and hardware, which cannot be accessed by unauthorized individuals.

7. Long-term storage

Your supervisor will take care of the long-term storage of your data. Which part of your research data has value for long-term storage and how is the data organized?

Data stage	Which data will be stored for the long term or should be destroyed?
Raw data	Interview recordings (may be stored or deleted depending on interview participants' preferences)
Processed data	Files containing personal or possibly sensitive information, such as transcripts, notes, draft versions of the results, etc. (may be stored or deleted depending on interview participants' preferences)
Other?	
Describe how the stored data is organized (e.g. file structure and file names)	C:\Users\dagaz\OneDrive - Wageningen University & Research\MLP 2024-2025\LUP80436\Interviews\Interview data

Submit the completed data management form with the stored data to your supervisor. If possible, add the form and all files to one compressed zip file.

APPENDIX F: BINARIZED CODE-DOCUMENT TABLE

This appendix shows the binarized code-document table of the semi-structured interviews, which gave insights into the frequency of code occurrences across the 16 interview participants. The table proved useful during the development of the storylines for the analysis phase, as it highlighted which codes were especially important for most or all participants.

Code	Totals
persp-kritiek op de politiek/overheid Gr=94	16
persp-kritiek op huidige participatie Gr=89	16
opl-participatieve aanpak Gr=30	15
prob-gebrek aan zekerheid, perspectief en langetermijnvisie Gr=66	15
prob-gevolgen voor natuur, milieu en klimaat Gr=49	15
prob-sociaaleconomische gevolgen Gr=38	15
persp-positief over huidige participatie Gr=50	14
prob-framing Gr=33	14
bel-zekerheid, perspectief en langetermijnvisie Gr=57	13
persp-begrip voor/erkenning van (eigen of andermans) perspectief Gr=33	13
prob-economische gevolgen Gr=35	13
opl-integrale of gebiedsgerichte aanpak Gr=69	12
bel-natuur en landschap Gr=46	11
bel-toekomstige generaties Gr=18	11
persp-crisisdefiniëring Gr=31	11
persp-reflectie op huidige stakeholderinteracties (participatie, communicatie, organisatie, etc.) Gr=40	11
prob-algemene gevolgen Gr=18	11
prob-langdurigheid van de crisis Gr=28	11
prob-oneerlijk verdeelde lusten en lasten Gr=22	11
bel-eerlijkheid (lusten, lasten en het eerlijke verhaal) Gr=17	10
bel-gangbare landbouw(sector) Gr=24	10
prob-gevolgen voor andere sectoren (dan landbouw en natuur) Gr=27	10
prob-polarisatie, verdeeldheid en conflict Gr=27	10
opl-boeren onteigenen/veestapel verkleinen Gr=20	9
opl-geen technologische maatregelen/innovatie Gr=17	9
persp-kritiek op huidig beleid, wet- en regelgeving Gr=50	9
persp-ontbreken of ontkennen van (eigen of andermans) perspectief Gr=14	9
persp-positief over landbouw/agro-industrie/agrarische sector Gr=13	9
prob-gevolgen voor landbouw/agrarische sector Gr=30	9
opl-aanpassen wet- en regelgeving Gr=20	8
opl-natuurinclusieve/extensieve/grondgebonden landbouw of agrarisch natuurbeheer Gr=24	8
opl-technologische maatregelen/innovatie Gr=17	8
persp-kritiek op landbouw/agro-industrie/agrarische sector Gr=18	8
prob-aandeel van andere sectoren (dan landbouw) in de crisis Gr=9	8
bel-rendabele bedrijfsvoering en bestaanszekerheid Gr=14	7
bel-vertrouwen en draagvlak Gr=16	7
opl-naleven wet- en regelgeving Gr=13	7
persp-kritiek op (eigen of andermans) perspectief Gr=11	7
prob-aandeel van landbouw/agrarische sector in de crisis Gr=18	7
prob-gebrek aan erkenning van de crisis Gr=9	7
prob-gebrek aan vertrouwen en draagvlak Gr=12	7
opl-beter natuurbeheer Gr=6	6
opl-geen zelfregulatie/monitoring/doelsturing Gr=8	6
opl-overheid speelt een (andere of belangrijkere rol) Gr=7	6
opl-positief over mogelijkheden/kansen Gr=11	6
opl-systeemverandering Gr=10	6
persp-kritiek op NGO's Gr=15	6
persp-positief over de politiek/overheid Gr=11	6
prob-gebrek aan welwillendheid om te veranderen Gr=8	6
prob-geitenpaadjes, zachte heelmeesters, pappen en nathouden Gr=10	6
bel-achterban Gr=5	5
bel-feitelijke informatie en educatie Gr=5	5
opl-zelfregulatie/monitoring/doelsturing Gr=15	5
prob-gebrek aan rekening houden met toekomstige generaties Gr=6	5
prob-stilstand en/of vooruitschuiven van problemen Gr=12	5
probl-gebrek aan integrale of gebiedsgerichte aanpak Gr=9	5
opl-welwillendheid om naar oplossingen toe te werken Gr=11	4
persp-kritiek op intensivering van landbouw Gr=6	4
prob-gebrek aan kennis en expertise Gr=6	4
bel-samenhang tussen landgebruiksvormen Gr=5	3
bel-transparantie Gr=5	3
bel-voedselzekerheid Gr=7	3
opl-burgerberaden Gr=4	3
opl-meervoudig landgebruik/combineren van functies Gr=4	3
ov-(invloed van) politieke/maatschappelijke ontwikkelingen/fenomenen Gr=6	3
persp-kritiek op andere sectoren (dan landbouw) Gr=3	3
prob-gebrek aan geld Gr=3	3
bel-algemeen Gr=3	2
opl-boeren verplaatsen Gr=3	2
opl-enkelvoudig landgebruik/scheiden van functies Gr=4	2
opl-subsidiëring Gr=2	2
ov-positieve aspecten van de crisis Gr=2	2
persp-begrip voor huidig beleid, wet- en regelgeving Gr=3	2
persp-erkenning van de crisis Gr=2	2
prob-bureaucratie Gr=2	2
prob-gebrek aan gezag Gr=3	2
probl-afgeschafte plannen/beleid Gr=4	2
opl-bottom-up beleid Gr=1	1
opl-gecentraliseerde aanpak Gr=1	1
opl-vervuilers straffen Gr=1	1
persp-vertrouwen in een ander Gr=1	1
prob-gebrek aan kansen Gr=2	1
prob-gebrek aan nuance/aanwezigheid van de stille meerderheid Gr=1	1
prob-gebrek aan transparantie Gr=1	1
opl-top-down beleid Gr=0	0
persp-positief over NGO's Gr=0	0