

Master's Thesis

Newspaper coverage of the Dutch nitrogen debate

Uncovering differences in framing and actor portrayal

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Abstract: In May 2019 the Dutch permit system for nitrogen deposition was taken down for not abiding by EU legislation, which resulted in a large debate surrounding nature conservation. I researched the manner in which various newspapers portray this debate to their respective readers, in order to create a better understanding of the communicational field between sustainability sciences and the public. To do this, 160 articles from four national daily newspapers were analyzed for their usage of frames and portrayal of actors. The articles reflected no differences in usage of frames, however, actor portrayal varied significantly between newspapers: environmental experts appeared more often in *De Volkskrant*, there seemed to be a negative relationship between the number of portrayed farmers and construction workers, and, popular newspaper *De Telegraaf* showed more signs of partisanship than other newspapers. Conclusively, I made some suggestions to environmental researchers for future environmental debates.

Written for my final examination for the Industrial Ecology Master of Science.

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"Dit is een crisis van een ongekende omvang; ik heb hem in mijn negen jaar in deze baan in deze heftigheid niet eerder meegemaakt."

Prime Minister Mark Rutte,
Commenting on the nitrogen crisis,
14th of November 2019

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THESIS

In the following chapter I start by introducing my research field. Then, I explain the issue my thesis is focussed on, which is the nitrogen debate. In the subsequent theoretical framework it is shown what relevant scientific research has already been done into this topic, after which I go over the purpose of this study and what its research questions are.

1.1 Sustainability and Communication

The concept of sustainability is difficult to fully understand for experts and lay people alike [1]. Nonetheless, societal sustainability has gathered more and more traction over the years [2]. Especially now, when the consequences of our unsustainable actions start to become tangible [3]. However, most people still seem to be torn on what must be done, and how global sustainability can be achieved [4]. This situation is worrisome, because many changes to reduce environmental impact are reliant on the general public [5].

Part of this indecisiveness can be owed to environmental skepticism, which is still present in many forms [6]. Because the modelling done to predict future scenarios is inherently full of uncertainties [7], an opportunity is created for skeptics to misinform the public. Something that distracts from the problem that is still present within the boundaries of that uncertainty [8]. This leaves environmental scientist with a challenge: creating a clear and urgent message for the public, while, at the same time not losing the depth of environmental modelling research. This is a difficult task as the intricacies of such models are often quite abstract and hard to explain [9].

In the Netherlands this became particularly clear during the 2019 nitrogen debate. A large farmer's protest was held at the headquarters of the Dutch national environmental agency (RIVM) on the 16th of October [10]. Protesters demanded clarification of emission modeling done by the institute to predict nitrogen deposition. They felt that the data by the RIVM was unreliable, and should not be used to base the environmental legislature on. The protest and debate surrounding the nitrogen issue shows why a stronger understanding of the current communicational system between the public and environmental scientists must be developed.

Which is why, both the fields of Industrial Ecology and Science Communication are integrated in this thesis to perform a study on how the nitrogen issue is given shape in a communicational context.

Industrial Ecology

Industrial ecology is an extensive multidisciplinary field, that, at its core, revolves around the principle of sustainability and implementing that principle within the human ecosystem [11]. Within Industrial Ecology

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[1]: Brown et al. (1987), 'Global sustainability'

[2]: Google Trends (2021), *Duurzaamheid - Verkennen - Google Trends*

[3]: Barkemeyer et al. (2017), 'Media coverage of climate change: An international comparison'

[4]: Austgulen (2014), 'Environmentally Sustainable Meat Consumption'

[5]: Evans et al. (2017), 'Constructing and mobilizing 'the consumer''

[6]: Zhou (2015), 'Public environmental skepticism'

[7]: Refsgaard et al. (2007), 'Uncertainty in the environmental modelling process - A framework and guidance'

[8]: Pidgeon et al. (2011), 'The role of social and decision sciences in communicating uncertain climate risks'

[9]: Budescu et al. (2012), 'Effective communication of uncertainty in the IPCC reports'

[10]: RIVM (2019), *Reactie RIVM op het protest van de boeren op 16 oktober 2019*

[11]: Lifset et al. (2002), 'Industrial ecology: goals and definitions'

the perspectives of three scientific disciplines are combined: engineering science, natural science, and social science. The general consensus being that all three need to work together to create integrated, and therefore effective solutions to any environmental problem.

Science Communication

Science communication is, just like Industrial Ecology, an emerging field. Within science communication the focus is laid on how scientific insights diffuse to the general population and what the perception of lay people on science is [12]. The field is thoroughly grounded within the social sciences, but because of its broadness in coverage, experts from all kinds of sciences work together multidisciplinary. The interface between science and society remains to be fully understood, something that is repeatedly apparent in sustainability sciences as well. How can we maximize the impact of the research we do for the good of our planet? In this sense the fields of Industrial Ecology and Science communication can benefit each other immensely.

[12]: Guenther et al. (2017), 'Science communication as a field of research: identifying trends, challenges and gaps by analysing research papers'

1.2 Context

To understand how the Dutch nitrogen debate manifests itself on this interface between science and society, the debate itself must first be contextualized. In the following section the fundamental problems of the nitrogen issue are laid bare and the way in which these led to the debate is discussed.

Nitrogen is one of the major building blocks of life. In its most abundant form, as N_2 in the air around us, it is of little use. However, when it is transformed to solid molecules, like ammonium and nitrates, it becomes a kick-starter for biological growth. Nitrogen works its way up through the food chain, mostly consumed as proteins, until it is secreted again, often as ammonium. This is more commonly known as the nitrogen cycle, of which a simplified version can be seen in Figure 1.1.

The Netherlands have an intensive farming culture for which a lot of potent nitrogen is either produced in the form of fertilizer, or imported as animal fodder. However, not all of this nitrogen is eventually captured again in the produce that is generated: a large surplus in unaccounted for. Nitrogen is either lost via soil or air, after which it disperses. For 2018

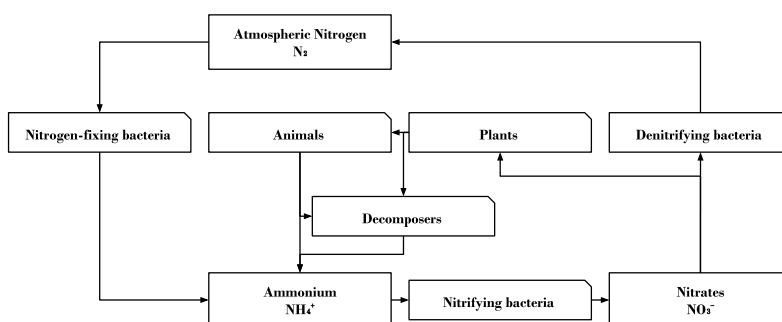


Figure 1.1: Simplified version of the nitrogen cycle.

this surplus was calculated to be 330 million kilograms [13]. Together with reactive nitrogen from combustion sources (e.g. car emissions) these compounds deposit all over the country, as well as in nature reserves.

Where one could expect this growth stimulate to have a positive effect on nature, this is often not the case. In the Netherlands' most ecologically fragile areas this influx of nitrogen disrupts the delicate balance of nutrients [14]. This causes threatened flora and dependent fauna to dwindle in numbers, as they cannot compete with faster growing species that are more effective in utilizing the excess nitrogen. To counteract the downward trend in biodiversity the Dutch government implemented the "Mineralenaangiftesysteem" (MINAS) or mineral declaration system in 1988. Using this system, polluters had to inform the government what their nitrogen emissions were exactly, so certain legislative levels could be maintained. After its implementation emissions fell until 2005, when this decrease stagnated (See also Figure 1.2) [15].

Within the political debate concerning emissions, it seems that there is often a tradeoff between economic growth and conservation of nature [17]. This holds true for the nitrogen issue as well. Decreasing nitrogen emissions would mean decreasing the amount of livestock, increasing the use of nitrogen cleaning technology, and limiting real estate development to a certain degree [18]. These interventions ask for large investments from both the government and producers. In 2015 the *Programma Aanpak Stikstof* (PAS) was introduced to support permit registration in regard to nitrogen emission. The program would consider how the economic benefits of a project weighed up against the ecological loss. With its ultimate goal being to further decrease nitrogen deposition, specifically in Natura 2000 areas, which are specially appointed natural reserves protected by European law [19].

One of the cornerstones of the PAS was the idea that negative effects now could be traded against the effect of future positive technologies, that would be cheaper and more effective. The PAS would reduce the costs of an expensive transition by 100 to 200 million euros per year [20]. However, less than four years after the PAS had been initiated, the highest governmental judiciary organ, the *Raad van State*, ruled that, since the effect of these future technologies cannot be proven, the PAS did not meet the demands of EU conservation laws, and was therefore invalid [21]. Because of their ruling the PAS permits for about 180 projects were revoked [22].

This verdict and its following governmental interventions, such as lowering the speed limit on certain highways, had an impact on a large number of people. On top of this, many business owners, mainly within the farming and construction sectors, were thrown into uncertainty regarding permits and the continuation of their companies. This led to multiple protests by farmers and construction workers being organized in such a way that led to public disarray. All these aspects combined resulted in a substantial amount of national media coverage and sparked public debate on how to tackle the nitrogen issue. This research looks into how this debate was given shape in the media and what the differences were between various media sources.

[13]: Compendium voor de Leefomgeving (2020), *Stroomschema voor stikstof en fosfor in de landbouw*, 2018

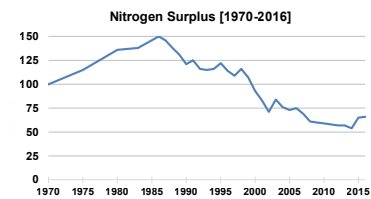


Figure 1.2: Decrease of the nitrogen surplus from 1970 to 2016. Values indexed to 1970 = 100 [16].

[15]: Compendium voor de Leefomgeving (2019), *Stikstofdepositie, 1990-2018*

[17]: Hirsch et al. (2011), 'Acknowledging conservation trade-offs and embracing complexity'

[18]: Remkes et al. (2020), *Niet alles kan overal: Eindadvies over structurele aanpak op lange termijn*

[19]: Heer et al. (2017), 'The integrated approach to nitrogen in the Netherlands: a preliminary review from a societal, scientific, juridical and practical perspective'

[20]: Leneman et al. (2012), *Economisch perspectief van de PAS. Baten en kosten van de Programmatische Aanpak Stikstof in Natura 2000-gebieden*

[21]: Raad van State (2019), 201600614/3/R2

[22]: Raad van State (2019), *PAS mag niet als toestemmingsbasis voor activiteiten worden gebruikt*

1.3 Theoretical Framework

To get an understanding of the scientific field surrounding media research and public controversy, literature concerning sustainability debates and content analyses was analyzed. In the following section I will go over the prominence of mass media, their use of framing, and their portrayal of actors.

The global sustainability debate has been going on for a long time, stemming from the middle of last century from early reports of non-sustainability and classic studies on the environment. Over the course of this debate two colliding worldviews have established themselves. One “idealistic strand” focused on change and preservation of nature and one “conformist strand” focused on maintaining the current status quo and economic continuity [23].

This theory of two opposing sides is something that is seen in multiple other reviews on the politics of sustainable development as well [24, 25]. While the actual situation is probably more nuanced than a true divide, it does create some useful footholds for debate analysis. The theory is based upon the global sustainability discussion, which is a very broad topic. The themes of this debate (i.e. environmental sustainability and economic prosperity) can however be applied almost universally. This could mean that these opposing sides can also be identified within Dutch media when they are covering the nitrogen debate.

[23]: Verstegen et al. (2005), ‘The sustainability debate’

[24]: Jansson (1994), *Investing in natural capital: the ecological economics approach to sustainability*

[25]: Hamsvoort et al. (1998), ‘Sustainability’

Content analysis

Content analysis is a well-established methodology for identifying how media communicate to their public. A content analysis can be defined as a “a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the contexts of their use.” [26]. Through such an analysis large amounts of content can be reduced to applicable and quantifiable data, that can then be used to make conclusions about the nature of the content. Many different sources can be used in a content analysis. Examples are images, interviews and newspaper articles.

Krippendorff [26] created a framework on the theoretical basis of content analyses (See Figure 1.3). He pictured content as a collectable pointer to how others perceive reality. This content can thus be aggregated and

[26]: Krippendorff (2018), *Content analysis: An introduction to its methodology*

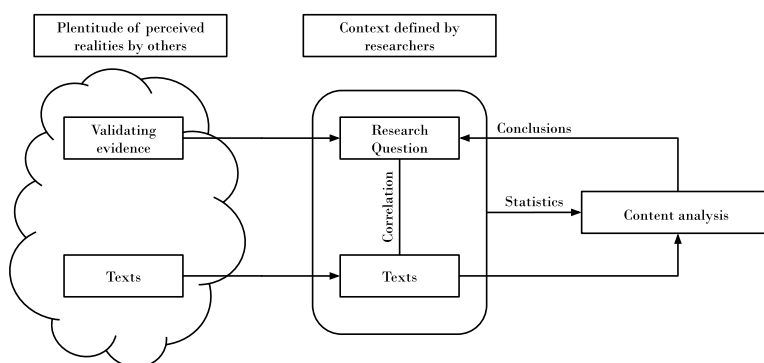


Figure 1.3: Content analysis framework, adjusted from work by Klaus Krippendorff[26]

investigated within the context of the researcher. Importantly, content is highly dependent on context (e.g. news can be interpreted differently based on what the reader already knows about the situation). It is therefore crucial that the researcher precisely specifies in what context the content and research questions are placed. This context also helps define the specific statistics a researcher want to apply to their content analysis. This, in turn allows them to make valid conclusions based on the analysis. Finally, these conclusions may be validated by linking them again to the reality of others.

Together with this framework, Krippendorff [26] also supplied a straightforward structure to perform a content analysis. He proposes six steps to be followed for a proper study: choosing what data is most useful for this study (1), sampling a portion of this data to be researched (2), coding, or, interpreting the data so that statistical analyses may be performed (3), reducing the raw data to manageable information through means of statistical analyses (4), making solid conclusions based on that information (5), and, describing what the consequences of those conclusions are in the real world (6). As per step one it is important to determine what content data is most useful for this research. To do this, a better understanding of mass media is needed.

Mass media

The general public gets a lot of their information from mass media sources like the internet, television, and newspapers [27]. Input by these media may shape the perception of their audience on the debate, as mass media are known to have an agenda setting influence [28, 29]. Meaning that they influence their readers perception of what is important and what is not. This relationship has been reestablished during more recent research in which public opinion was measured through social media activity [30]. How environmental problems and their debate are presented online and on paper could have a significant impact on public opinion and judgement.

Media coverage analysis in that sense is not a new field of research, with examples of newspaper research going as far back as 1934 [31]. Since then, newspaper analyses have been refined and automated. Although, newspapers may not be the most prominent source of information anymore in the online era we have entered [32]. Their ease of access through databases like Nexis Uni [33], and their generally consistent form and style make them a go-to subject for content analyses.

There are a lot of ways in which a newspaper analysis related to sustainability can be performed. Examples are: measuring media attention of sustainability [34], how the definition of sustainability changes in newspapers over time [35], or, what argumentation is used in favor or against sustainable change [36]. However, when researching the way in which newspapers portray a debate to their audience, it may be the most interesting to look at what framing devices are used in newspaper articles, and what actors are shown. As those are two ways in which newspapers may portray the same actualities differently, to fit the wishes of their specific audiences. In the following sections both framing and actor analyses are elaborated upon.

[26]: Krippendorff (2018), *Content analysis: An introduction to its methodology*

[27]: Commissariaat voor de media (2020),

[28]: Anderson et al. (2005), 'The Framing of Nanotechnologies in the British Newspaper Press'

[29]: Benton et al. (1976), 'The Agenda Setting Function of the Mass Media At Three Levels of "Information Holding"'

[30]: Mollema et al. (2015), 'Disease Detection or Public Opinion Reflection?'

[31]: Woodward (1934), 'Quantitative Newspaper Analysis as a Technique of Opinion Research'

[32]: Commissariaat voor de Media (2020), *Digital News Report Nederland 2020*

[33]: LexisNexis (2021), *Nexis Uni: Academic Research Tool for Universities & Libraries*

[34]: Schmidt et al. (2013), 'Media attention for climate change around the world: A comparative analysis of newspaper coverage in 27 countries'

[35]: Schwegler (2015), 'Understanding urban sustainability through newspaper discourse: a look at Germany'

[36]: Kleinen-von Königslöw et al. (2019), 'How news media (de-) legitimize national and international climate politics—A content analysis of newspaper coverage in five countries'

Framing

Framing is quite a broad term applied to a broad set of communication means. There are multiple ways to define frames, within this research however, the focus will be laid on message framing specifically. In message framing the story behind a statement is pruned in such a way that it aims to elicit a certain way of thinking in its audience [37]. According to Wicks [38], framing theory implies that the manner in which certain information is displayed will have different outcomes on different audiences. Wicks [38] also states that these frames may be manipulated to influence public opinion. Framing is not untruthful since the information presented is not necessarily false. It does however trick the reader in over or under interpreting statements [37].

Framing analyses within newspapers are not uncommon. For example, such analyses have already been done for nanotechnology in British newspapers [28], the war against terrorism in United States' newspapers [39], and immigration in Dutch newspapers [40]. Which means there was a large of corpus of literature already available to base this research off.

There are two main ways to classify frames: inductive and deductive [41]. Within inductive classification the frames are distilled from the selected newspaper articles. While this would create a tailored frameset, it is a time intensive process with little broader application. With deductive classification a set of frames is created beforehand from other related literature. This frameset may still be changed to fit the specific issue, but it is not founded within the specific content that will be analyzed. A good argument for using the deductive approach, is that when a more overarching set of frames is chosen, it is also easier to compare the results of that research to other studies as well.

A frameset suitable for such a deductive approach was developed by Semetko and Valkenburg [42]. In their study, that focused on the portrayal of European politics in Dutch news, a set of five frames is presented that can be applied to a broad range of media, regardless of the specific topic. They are: attribution of responsibility (1), human interest (2), conflict (3), morality (4), and economic consequences (5). Per frame they also generated at least three questions that would resonate with the frame if answered yes. From their analysis, that covered 4123 news stories in total from both newspapers and television news, could be concluded that there are significant differences in the usage of these frames depending on the outlet. More specifically, 'quality' newspapers would rely more often on the attribution of responsibility, conflict and economic consequences frames, while 'popular' news sources used the human interest frame more often.

In scientific work on Dutch newspapers, this distinction between 'quality' and 'popular' newspapers is regularly made [43, 44]. Quality papers often try to focus on the nuance of a story, while popular papers focus more on its entertainment value. This is similar to, but not the same as, defining newspapers as either a 'broadsheet' or a 'tabloid' [45]. For many newspapers it is commonly known what type of paper they are. For example, *De Volkskrant* and the *NRC* are mostly described as a quality newspapers, while *De Telegraaf* and *Het Algemeen Dagblad* are better known as popular ones [45].

[37]: Bruijn (2017), *The art of framing: How politicians convince us that they are right*

[38]: Wicks (2005), 'Message Framing and Constructing Meaning'

[28]: Anderson et al. (2005), 'The Framing of Nanotechnologies in the British Newspaper Press'

[39]: Ryan (2004), 'Framing the war against terrorism: US newspaper editorials and military action in Afghanistan'

[40]: Vliegthart et al. (2007), 'Framing immigration and integration: Relationships between press and parliament in the Netherlands'

[41]: De Vreese (2005), 'News framing: Theory and typology.'

[42]: Semetko et al. (2000), 'Framing European politics: A content analysis of press and television news'

[43]: Dirikx et al. (2010), 'To frame is to explain'

[44]: Lubbers et al. (1998), 'Ethnic minorities in Dutch newspapers 1990-5: Patterns of criminalization and problematization'

[45]: Hijmans et al. (2003), 'Covering scientific research in Dutch newspapers'

People in news

Analyzing which actors are mentioned in the newspapers is another way of performing a content analysis. Actors are mentioned in almost any newspaper article, usually as a way for the journalist to increase credibility in their piece, reference an event, or, to make a situation recognizable for the reader [46]. Conversely, actors also play a role in giving shape to the news themselves. Not only in the way they formulate ideas to journalists, but also by actively contacting journalists when they want to share something newsworthy [47].

When talking about sources, the distinction can be made between experts (i.e. knowledgeable sources with no stakes) and advocates (i.e. knowledgeable sources that do have certain stakes in the discussion) [48]. In such a case, reputable reporters would rather choose expert sources over advocates, as their information is less biased. That distinction, however, has become more vague over the years [48]. This is something that could be expected. As, for time sensitive sustainability issues (e.g. climate change), academical experts seem to shift to an advocate role more often than before [49].

Many analyses of what experts are mentioned in the news have already been done, also with regards to environmental issues [50, 51]. A more general study into the way actors are featured in the media was done by Beckers and Aelst [52]. They studied all Belgian television news items between 2003 and 2016 (N=203,619) to check what actors were featured. To do this, they created a classification scheme that divided actors in four categories: government and politics (1), professionals and experts (2), civil society organisations (3), and, citizens (4). In their research they found that the use of actors differed significantly between sources. For example, politicians were mentioned more often on public broadcasting services, while commercial broadcasters featured more citizens. It could be that this same difference exists in quality versus popular newspapers, similar to what Semetko and Valkenburg also had discovered [42].

For a study into the nitrogen debate, it would however be more suitable to look into more specific actor categories. For example, an easily defined category like "Farmers", who are important stakeholders within the nitrogen debate, would fall into the larger "citizen" category if the above mentioned framework by Beckers and Aelst [52] was used. Something that would result in a loss of valuable data. Instead, a more extensive list of categories could be used based on research by Chetty, Devadas and Fleming [53]. They looked into the framing of climate change news in New Zealand, while also looking for the different sources used by newspapers. In their study they provide a list of nine different actor categories that could be used as a basis for creating a classification for this research.

1.4 Purpose of this study

Research suggests that there are variations in how different newspapers portray certain issues in terms of framing and featured actors. This would mean that different audiences could form vastly different opinions

[46]: Dimitrova et al. (2009), 'Look who's talking: Use of sources in newspaper coverage in Sweden and the United States'

[47]: Soley (2008), 'News sources'

[48]: Laursen et al. (2019), 'Experts or Advocates: Shifting Roles of Central Sources Used by Journalists in News Stories?'

[49]: Hoffman (2016), 'Reflections: academia's emerging crisis of relevance and the consequent role of the engaged scholar'

[50]: Albaek et al. (2003), 'Experts in the mass media: Researchers as sources in Danish daily newspapers, 1961–2001'

[51]: Takahashi et al. (2017), 'Climate change reporting in Great Lakes region newspapers: A comparative study of the use of expert sources'

[52]: Beckers et al. (2019), 'Look Who's Talking: An analysis of actors in television news (2003–2016)'

[53]: Chetty et al. (2015), 'The framing of climate change in New Zealand newspapers from June 2009 to June 2010'

on environmental issues, based on their source of news. However, no analysis had yet been performed on how the Dutch nitrogen debate was portrayed in newspapers, which is what this study aims to do. This leads to the following research question:

How do various newspapers portray the Dutch nitrogen debate?

This question was answered by first identifying what articles were written about the debate, after which the frames and actors within these articles was researched. After all this data had been collected, statistical analyses were applied that showed the difference in framing and actor portrayal between newspapers. The sub-questions of this research were therefore as follows:

1. What newspaper articles were written about the debate?
2. How was the debate framed in these newspaper articles?
3. What actors do these newspaper articles feature?
4. What differences in framing exist between newspapers?
5. What differences in actor portrayal exist between newspapers?

This research tries to create a better understanding of how different newspapers affect the transmission of information regarding environmentally sensitive topics. By doing so, scientific knowledge may be spread more effectively during the continuation of the nitrogen crisis, or other environmental crises in the future in which mass media play an important role.

In the following sections the methods used for data gathering and analysis are laid out. First, the criteria for newspaper article selection and collection are elaborated upon. Afterwards, the methods for both the framing and actor analysis are shown. Finally, I will go into the statistical analysis of this research.

2.1 Raw data collection

Sub-question 1

What newspaper articles were written about the debate?

Since this research was based on a large number of newspaper articles it is important that data is carefully collected, selected and stored. In this part of the research the criteria for newspaper selection are laid out and the method for obtaining the raw data set is shown. To make this content analysis as transparent as possible, the methods of article selection were described using parts of the PRISMA review protocol [54]. PRISMA is mostly used for reporting on systematic reviews and meta-analyses. While that did not fully fit the description of this research, it still supplied some clear footholds to structure the review around. Particularly useful for this research was a scheme used in paper identification [55]. Three sections of this scheme (i.e. identification, screening and including) were applied to this research.

Identification

In the identification phase all the possibly eligible articles were gathered. Other studies described in this research covered a large number of newspaper articles, ranging from 257 [43] to 2,601 [42]. However, only a limited number of articles could be analyzed within the time frame of this research. At the beginning of the research the goal was set to analyze 100-200 articles depending on the extensiveness of the codebook. Although these articles could have been randomly selected over all the articles, the decision was made to rather make a meaningful selection using the different parameters available. This way more specific conclusions could be made at the end of this research.

For this research the news article database Nexis Uni [33] was used to search and download all necessary articles. Within the database a set of criteria could be used to specify the search and was useful to limit the number of articles that was going to be analyzed. The criteria that were available are: specific keywords for different parts of the article, a time span for the date of publication, the number of words, the language of the article, and, what sources should be used (i.e. what newspapers). In the following sections the way in which these parameters were used is described.

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[54]: Moher et al. (2015), 'Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement'

[55]: Moher et al. (2009), *PRISMA Flow Diagram*

[43]: Dirix et al. (2010), 'To frame is to explain'

[42]: Semetko et al. (2000), 'Framing European politics: A content analysis of press and television news'

[33]: LexisNexis (2021), *Nexis Uni: Academic Research Tool for Universities & Libraries*

Keywords

Different keywords could be used to filter out articles that were useful to the analysis of the nitrogen debate. Search terms such as *stikstofdebat* (nitrogen debate) and *stikstofprobleem* (nitrogen issue) were tested. Although *PAS* seemed like an obvious candidate, it is also synonymous to considerably many other Dutch words (e.g. the Dutch words for 'card' and 'step') and resulted therefore in too many hits. Ultimately, the decision was made to simply use the keyword *stikstof* (nitrogen) as that would capture all relevant articles, and any irrelevant articles could later be filtered out in the screening phase. When using only this keyword ¹, Nexis Uni showed 3,160 hits. Meaning data had to be reduced further to be manageable.

Newspapers

The next step was to select the newspapers for this analysis in a way that enough articles per newspaper were available to make any valid conclusions. In other content analyses into Dutch newspapers there seemed to be two ways to go about selecting newspapers. Certain studies made the choice to include the newspapers with the largest audience [42, 56]. Which is why The Netherlands' largest newspapers in terms of circulation (i.e. *De Volkskrant*, *Trouw*, *NRC*, *Het Algemeen Dagblad*, and, *De Telegraaf*) are researched relatively often. Instead of selecting the papers with the most readers, other researchers have opted to create a selection with the most diverse audience, to create a more complete image overall [57, 58]. Within this research this second approach was chosen.

To create a more diverse image overall, two niche newspapers were included into the analysis. Which is why, for this particular research the articles of *De Volkskrant*, *De Telegraaf*, *Het Reformatorisch Dagblad*, and, *Het Financieele Dagblad* were deemed most interesting. These newspapers were thought to represent the most diverse public overall. However, because little to no research had been done into *Het Reformatorisch Dagblad* or *Het Financieele Dagblad* yet, I needed to resort to each paper's profile page, in which they describe their readers to advertisers, to create an understanding for the public of each newspaper.

De Volkskrant is according to their profile page geared towards people that want to know how the world functions and want to be objectively informed about it. The newspaper describes itself as the the biggest quality news brand in the Netherlands [59].

De Telegraaf state in their profile that they give shape to conversations and dare to have a strong opinion. Their public is therefore people that want to stand for something and have strong opinions themselves [60].

Het Reformatorisch Dagblad defines itself as a quality newspaper for the christian minded. They give attention to how christians exist in today's society and how societal developments influence them [61].

Het Financieele Dagblad highly appreciates trustworthy facts and deep insights, according to their profile. They define themselves as a quality newspaper that gives financial meaning to the current news [62].

1: For the ten daily Dutch national newspapers [27], ranging from the verdict by the Raad van State (May 29th 2019) til September 2020.

[42]: Semetko et al. (2000), 'Framing European politics: A content analysis of press and television news'

[56]: Sözeri et al. (2019), 'Mapping discourses on mosque education in the Netherlands: A content analysis of the Dutch press, 2010–2016'

[57]: Rietjens et al. (2013), 'News media coverage of euthanasia: a content analysis of Dutch national newspapers'

[58]: Claassen et al. (2012), 'Media coverage on electromagnetic fields and health: Content analysis of Dutch newspaper articles and websites: Health risks in the media'

[59]: DPG Media (2021), *de Volkskrant - DPG Media*

[60]: Mediahuis (2021), *De Telegraaf - Mediahuis*

[61]: erdee media groep (2021), *Reformatorisch Dagblad :: Erdee Media Groep*

[62]: FD Mediagroep (2021), *Het Financieele Dagblad | Bereik de leiders van nu*

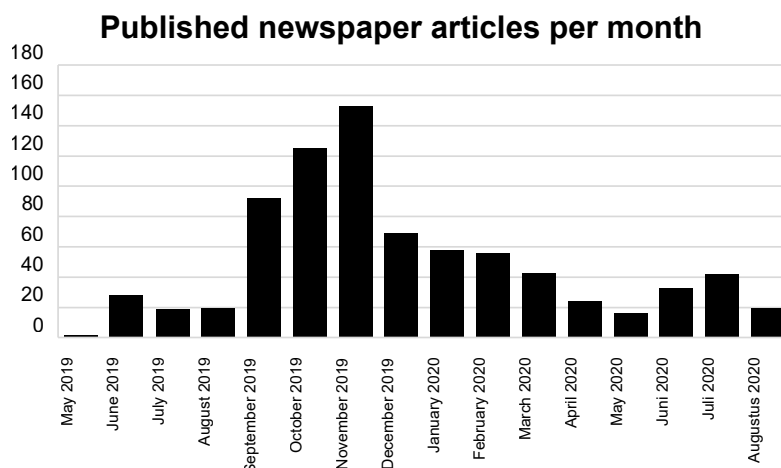
Because *Het Reformatorisch Dagblad* is more christian oriented, I imagined they would have a larger farmer base, as this is often the case as well for political parties (e.g. the christian party CDA is also known as the farmer's party). *Het Financieele Dagblad* is, as stated in their profile, more geared towards financial news, and may therefore frame the news in a different way than the other newspapers.

Timespan

In other research, the choice is often made to research all the articles concerning a certain topic, ranging from when the topic became popular until it vanished from the media [42, 43, 63]. This raises two concerns in this research. Other than this method resulting in too many articles, the nitrogen debate has no clear end date yet, as events were still unfolding when this research was performed. Another way in which articles could be selected, is by taking one-day samples distributed equally over a predefined time period [45]. Though this would not solve problem of having no end date, the sample size would at least be manageable.

Yet, when such a sample was taken on this dataset, the newspapers that would report less on the issue in later months would be underrepresented, sometimes showing no relevant articles at all in certain weeks. Since the dependent variables in this research should be the frames used and actors represented, and not the topics that were written about, the decision was made to limit the time frame significantly instead. By doing this the events on which the articles in the selection are based are mostly similar, creating a better comparison between newspapers.

To get a good understanding of what time period would have been most suitable for this research, a preliminary analysis of the topical articles posted over time was performed. To do this all articles published since the beginning of the nitrogen issue were collected. In figure 2.1 the number of relevant articles are shown per month. A large peak of published articles can be seen in the months of September 2019 through December 2019. The heightened national attention during that time period resulted in all four newspapers used in this research writing extensively about the events that were transpiring. This is the reason I decided to focus on these months for my analysis.



[42]: Semetko et al. (2000), 'Framing European politics: A content analysis of press and television news'

[43]: Dirikx et al. (2010), 'To frame is to explain'

[63]: Ruan et al. (2019), 'One issue, different stories: The construction of GMO issues on Chinese, American and British mainstream media portals'

[45]: Hijmans et al. (2003), 'Covering scientific research in Dutch newspapers'

Figure 2.1: Number of published articles containing the word "Stikstof" (Nitrogen) per month for De Volkskrant, De Telegraaf, Het Reformatorisch Dagblad and het Financieele Dagblad.

Number of words

As a final measure to reduce the number of articles the number of words articles contained could also be selected for. I chose the length of articles to range from 300 words to 1000 words. This way, the more factual shorter news articles were excluded, as well as the much larger in-depth reviews. By doing this the eventual selection will be more comparable and manageable.

Finally, through Nexis Uni, 438 articles were identified using the search terms described in Table 2.1.

Criterion	Specification
Keyword	Stikstof (Nitrogen)
Newspaper sources	De Volkskrant, De Telegraaf, Het Reformatorisch Dagblad & Het Financieele Dagblad
Publication dates	September 1st 2019 to December 31st 2019
Number of words	300 to 1000

Table 2.1: Criteria used in Lexis-Nexis to collect newspaper articles.

Screening

The focus of this research is the nitrogen debate. However, 'nitrogen' is a broad term and since it was the only keyword used in the search, many non-relevant articles had made it into the selection. A simple code to screen the articles in a replicable and reliable manner was created (See the list in the margin). All 438 articles were screened, after which 10% was compared to the results of an independent coder. This resulted in a high intercoder reliability (Cohen's Kappa [64] = 0.913), meaning this selection could be used reliably. Cohen's Kappa is further elaborated upon in the section on the content analysis.

Simple code for screening purposes:

Disqualify if:

- ▶ The nitrogen issue is only mentioned as an example.
- ▶ The article consists of multiple parts (e.g. letters) of which only one or a few mention the nitrogen issue.
- ▶ Nitrogen is mentioned in another context than the nitrogen debate (space exploration, gas mining)
- ▶ The nitrogen issue covers only a small part of the article (<35%), the rest of the article covers other issues.

Including

To create equal and manageable datasets per newspaper, 40 articles were randomly selected per newspaper. To do this each article was assigned a random value in Microsoft Excel, after which the top 40 of each newspaper was selected for further research. The complete list of selected and deselected articles may be found in the appendix. A diagram of the selection process is shown in Figure 2.2.

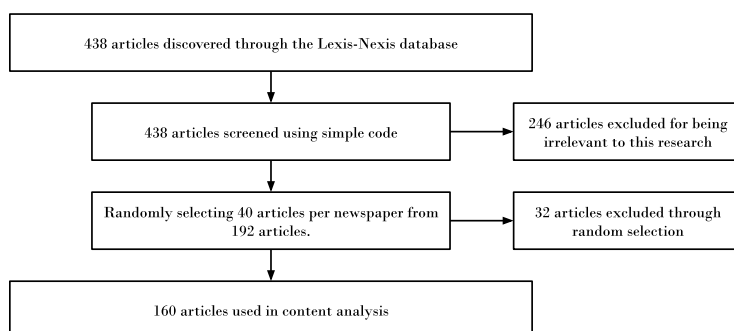


Figure 2.2: Diagram of the newspaper article selection process in which the numbers of included and excluded articles are shown. What articles are excluded for what reason can be found in the appendix.

2.2 Content Analysis

After the newspapers articles were gathered, their contents were analyzed. To do this a clear framework in the form of a codebook was created to appropriately and reliably collect all the needed data. The analysis of this research was split in two parts: The framing analysis, in which the appearance of certain frames in articles is investigated, and, the actor analysis, in which the mentioning of different actors is discussed.

Framing Analysis

Sub-question 2

How was the debate framed in these newspaper articles?

As mentioned in the theoretical framework, this research will use a deductive approach in the framing analysis. The frames that were analyzed within this research are based on the research by Semetko and Valkenburg [42]. In their study they proposed multiple yes/no questions that would adequately indicate five different frames; attribution of responsibility (1), human interest (2), conflict (3), morality (4), and economic consequences (5).

[42]: Semetko et al. (2000), 'Framing European politics: A content analysis of press and television news'

Attribution of Responsibility Within the attribution of responsibility frame an article tries to ascribe problem ownership to a certain actor. In the nitrogen debate this could relate to articles that show how the government, or specific government organs, caused the issue to begin with.

Human Interest In the human interest frame a personal point of view is featured that seeks to elicit an emotional reaction in the reader. For example, in this specific case interviews with farmers, construction workers would fall into this category.

Conflict When the conflict frame is used the focus of an article is laid on how two or more different actors oppose each other. Within the nitrogen debate this frame would for example be used to describe the relationship between farmers and the government.

Morality Within the morality frame the moral consequences of certain actions are put in the spotlight. In this case that would be pieces about what the impact on biodiversity is when the nitrogen issue is not properly addressed.

Economic Consequences In the economic consequences frame certain costs and impact of measures on wealth are featured. In case of the nitrogen debate topics covered by the frame probably consist of how proposed measures to solve the issue would impact farmers and construction workers.

The questions, or frame indicators, supplied with each frame were tested for robustness. To do this, two coders performed a pilot analysis on 15 articles outside of the selection of the main research data. The pilot analysis showed that inter-coder reliability was not sufficient for many of the framing questions. This was mainly caused by confusion about the actual meaning of some questions that could be interpreted in multiple ways. For example, the question described below could be coded for

farming businesses as both true and false depending on how you define the word 'groups'. To remedy this, some additional rules and examples were provided for the full analysis.

Example of an ambiguous question

Does the story emphasize how individuals and groups are affected by the issue/problem?

Furthermore, some questions were answered differently subjectively based on the implicit meaning of the article overall. To improve reliability in that regard, coders were asked to provide a single sentence as proof for answering a question with *True*. This would eliminate answers based on the feeling of the overall article. As an added benefit, this also generated data for a more qualitative investigation of what caused the specific frames to occur in general.

To ensure the reliability of the data that was gathered in the content analysis, 10% of the articles were also coded by an independent coder. These results were afterwards compared using Cohen's Kappa [64], which is a measure of inter-coder reliability. For the framing analysis the inter-coder reliability rating initially ranged from $\kappa = .2$ to $\kappa = 1.0$ for

[64]: Cohen (1960), 'A coefficient of agreement for nominal scales'

1. Attribution of Responsibility

- a. Does the story suggest that some level of government has the ability to alleviate the problem?
 - b. Does the story suggest solution(s) to the problem/issue?
 - c. Does the story suggest that an individual (or group of people in society) is responsible for the issue/problem?
-

2. Human Interest

- a. Does the story provide a human example or "human face" on the issue?
 - b. Does the story emphasize how individuals and groups are affected by the issue/problem?
 - c. Does the story go into the private or personal lives of the actors?
-

3. Conflict

- a. Does the story reflect disagreement between parties, individuals, groups, or countries?
 - b. Does one party-individual-group-country reproach another?
 - c. Does the story refer to two sides or to more than two sides of the problem or issue?
-

4. Morality

- a. Does the story contain any moral message?
 - b. Does the story make reference to morality, God, and other religious tenets?
 - c. Does the story offer specific social prescriptions on how to behave?
-

5. Economic Consequences

- a. Is there a mention of financial losses or gains now or in the future?
 - b. Is there a mention of the costs/degree of expense involved?
 - c. Is there a reference to the economic consequences of pursuing or not pursuing a course of action?
-

Table 2.2: Frames and associated indicators, adjusted from Semetko and Valkenburg [42]. These questions do not include the two that were not used because of a low intercoder reliability score, and the two that were excluded in the original article because they did not statistically fit the frame.

the different questions. This was far from ideal and would require some intervention on behalf of the data. I therefore decided that two questions from the original paper did not meet the reliability standards that were necessary and would be excluded from further analysis². After this, the lowest Kappa would measure $\kappa = .46$, which is regarded as moderate agreement [65, 66]. Measured over the entire codebook the inter-coder reliability scored $\kappa = .71$, which is acceptable for a more subjective issue like this one. The final selection of questions that the analysis will be based on can be seen in Table 2.2.

Actor Analysis

Sub-question 3

What actors do these newspaper articles feature?

Next to the framing analysis, an actor analysis was performed on the content of the selected articles as well. Similar to a study done by Masini and Aelst [67] up to 15 actors per article were noted down, together with their appropriate category. Categories were inspired by a list used by Chetty, Devadas and Fleming [53], though only the categories 'Politicians' and 'Commentators' were eventually taken over. The rest was developed through trial and error during the same pilot as performed in the framing analysis. In total nine categories were defined: environmental experts, other researchers, farmers, construction workers, industry experts, politicians, other governmental actors, commentators, and, other. Each with their own examples to inform the coders what the categories entailed exactly (See also Table 2.3).

Also during the pilot phase, coders were first asked to note down every actor that was mentioned in the newspaper, be it an organization or a person, and their particular source or field. However, the pilot analysis showed that this would sometimes result in disagreement over what constituted as an actor and what did not. As an example we can take a look at the following sentence about nitrogen emissions of a new airport.

Example of actor ambiguity

"Even more sickening: the number cheaters who manipulate the environmental reports of Lelystad Airport in such a way that 1700 pages later the emissions of airplanes rise, but -guess what- the nitrogen emissions fall." [68]

One could easily argue that 'Lelystad Airport' in this context is an organizational actor, as they actually play a role in the story. However, in the same article Schiphol Airport was mentioned as well, only this time as a location where farmer's protests would take place. As the airport in that context is defined as a location, the case can be made that it is not an actor. In a single article an airport could be described as an actor and both rejected as an actor. The fact that these inconsistencies already manifested themselves in a single feature raised concerns for the reliability of the data over all 160 articles. Together with the fact that

2: These questions were: *Does the story suggest that some level of the government is responsible for the issue/problem?* and *Does the story employ adjectives or personal vignettes that generate feelings of outrage, empathy-caring, sympathy, or compassion?*

[65]: Landis et al. (1977), 'The measurement of observer agreement for categorical data'

[66]: Warrens (2015), 'Five ways to look at Cohen's kappa'

[67]: Masini et al. (2017), 'Actor diversity and viewpoint diversity: Two of a kind?'

[53]: Chetty et al. (2015), 'The framing of climate change in New Zealand newspapers from June 2009 to June 2010'

[68]: Geelen (2019), 'Leven'

Category	Examples
Environmental experts	Environmental scientists, RIVM experts, forest rangers, CLM
Other researchers	Scientists, Academics, Economists
Farmers	Farmers, farmer spokespersons
Construction workers	Construction workers, construction spokespersons
Industry experts	Industry experts, ANWB employees, Other entrepreneurs
Politicians	Politicians, Mayors, Ministers
Other governmental actors	Civil servants, Rijkswaterstaat Employees
Commentators	Citizens, celebrities, public figures
Other	

Table 2.3: Actor categories together with examples as shown in the codebook of this study.

for some pieces this original method resulted in more actors than could be efficiently analyzed per article, I decided to only analyze individual actors that were mentioned by their name.

Same as for the framing analysis, 10% of the actor analysis was coded twice to be able to check the reliability of the data. Cohen's Kappa [64] was used here as well to calculate the inter-coder reliability. For the actor analysis this reliability measured $\kappa = .70$, which is defined as substantial agreement [65, 66]. Good to note as well is that this disagreement mostly stemmed from missing out on actors in an article and only once was the result of disagreement over an actor category.

[64]: Cohen (1960), 'A coefficient of agreement for nominal scales'

[65]: Landis et al. (1977), 'The measurement of observer agreement for categorical data'

[66]: Warrens (2015), 'Five ways to look at Cohen's kappa'

Metadata

To give better insight into the articles if the need arose, some metadata was coded as well. The title of the article was recorded, together with the date. To test for any inconsistencies the authors and word counts were coded as well. The full final version of the codebook used in this analysis can be found in the appendix.

2.3 Statistical Analysis

Sub-questions 4

What differences in framing exist between newspapers?

Sub-question 5

What differences in actor portrayal exist between newspapers?

To get an understanding of what the results of this research mean in the real world, a statistical analysis that suited the approach and data was chosen and done. In the study by Semetko and Valkenburg [42] a principle component analysis was done to check whether the frames and questions were correctly defined. After this they performed a MANOVA and multiple pairwise tests to calculate any significant differences.

[42]: Semetko et al. (2000), 'Framing European politics: A content analysis of press and television news'

For comparability it would have been nice to use the same tests as they used in their study, however the difference in sample size between this study and theirs made this statistically irresponsible. In their similar study, Dirikx and Gelders [43] explained that to do a principle component analysis, the sample size should be at least 300. Furthermore, to do a MANOVA, data should be normally distributed, which should not hold true for the low frequency count or binary data that is present in this study.

A similar result could be achieved by doing multiple tests that do not rely on normally distributed data. A rank-sum test, such as a Wilcoxon test [69] in combination with a post-hoc Bonferroni correction [70] for multiple testing would be suitable in that case. However, because the data is in essence binary, since the questions can only be answered by either *True* or *False*, a lot of values within the sample are exactly the same. This means that the data can not be properly ranked, and an exact p-value can not be calculated using a rank-sum test.

The eventual statistical analysis of this research was done using a Chi-square test of independence [71], in which observed data is tested against expected data to see whether a significant difference exists. In this case, expected data for a single category was derived from the overall mean of the whole sample. This test expects frequency or count data and can therefore be used for both the framing and actor analyses in this research. Something that streamlined the approach and obtaining of results significantly.

[43]: Dirikx et al. (2010), 'To frame is to explain'

[69]: Wilcoxon (1992), 'Individual comparisons by ranking methods'

[70]: Bonferroni (1936), 'Teoria statistica delle classi e calcolo delle probabilita'

[71]: Pearson (1900), 'X. On the criterion that a given system of deviations from the probable in the case of a correlated system of variables is such that it can be reasonably supposed to have arisen from random sampling'

In the following chapter I will lay out what data was collected during this research. Any significant differences that were discovered during the statistical analysis will also be shown. Then, in the discussion, I will go into what those results mean, and what the implications of my research are.

3.1 Results

After 160 newspaper articles regarding the nitrogen issue were analyzed, 725 framing indicators and 455 mentions of actors were identified. Articles from *De Volkskrant* had an average word-count of 642.8. For *De Telegraaf* this average was 566.2. For *Het Reformatorisch Dagblad* it was 529.1. And, for *Het Financieele Dagblad*, it was 604.5. The difference in these counts was quite large in some cases. Direct comparisons between these newspapers should therefore be done with caution whenever the length of the article could have influenced the result. In the following section I will go further into the specific results that have been extracted from this data for both the framing and actor analyses.

Framing analysis

Of the 2400 framing questions that were answered in total, 725 were answered with *True*. The totals of the framing questions per newspaper and frame can be found in Table 3.1. No articles showed no framing indicators at all, though five articles showed only one. The maximum number of framing indicators identified in a single article was nine, of which there also were five cases. On average, 4.5 framing indicators were identified per article.

As discussed in the statistics section of the methodology, Chi-square tests were done to analyze whether any significant differences in the usage of frames between newspapers was present. For the total usage of frames there seems to be some significant difference present $\chi^2(6, N = 725) = 13.8, p = .032$, however no particular frame seems to be causing this difference. In the following paragraphs we will go further into the individual frames and their questions.

Frame	VK	TG	RD	FD	n
Attribution of responsibility	79	63	73	83	298
Human interest	25	33	32	19	109
Conflict	57	45	46	53	201
Morality	15	11	15	9	50
Economic consequences	24	12	13	18	67
Totals	200	164	179	182	725

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Other differences in actor	
portrayal	27
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Table 3.1: Total number of identified framing devices per frame, per newspaper. De Volkskrant = VK; De Telegraaf = TG; Het Reformatorisch Dagblad = RD; Het Financieele Dagblad = FD

The frame in which most questions were answered with *True* was “Attribution of responsibility”, with a total of 298 identifications. Most of these were indicated by framing questions 1.a and 1.b (See the list in margin). They were respectively good for 129 and 126 of the indications for this frame. The last of these questions, in which farmers were often the subject to being held responsible, was in contrast only mentioned 43 times. Which gives some insight into how newspapers focus the debate overall. To test whether any significant differences were present between the newspapers a Chi-square test for independence was performed on the individual questions and how they relate to the newspapers. However, no significant difference was present overall, $\chi^2(6, N = 298) = 4.2, p = .65$, or for any of the questions individually (p value ranging from .09 to .50).

Example of indicator 1.c

"The crisis shows that current agricultural production is not sustainable due to social issues about landscape management, nitrogen, climate and biodiversity threats." [72]

The human interest frame was indicated 109 times. The biggest portion of which was through question 2.b, as it was answered with *True* 70 times. In contrast to indicator 1.c, within this indicator farmers were often portrayed as being the victims of the crisis. Furthermore, question 2.a was answered 33 times, and lastly, question 2.c was only answered six times. The Chi-square test, again, showed no significant difference between the newspapers $\chi^2(6, N = 109) = 2.3, p = .89$, or for any of the questions individually (p value ranging from .15 to .50).

Example of indicator 2.b

"On top of this, farmers won't get any more permits to fertilize their land or put their cattle outside." [73]

The conflict frame was indicated second most, namely 201 times in total, which reflects the tense nature of the nitrogen crisis and following debate. Of these indications, 97 were through indicator 3.a, which was often triggered through either coverage of the protests or political debate. 3.b and 3.c were mentioned 27 and 77 times respectively. The Chi-square test showed no significant difference between the newspapers $\chi^2(6, N = 201) = 4.2, p = .65$, or for any of the questions individually (p value ranging from .10 to .49).

Example of indicator 3.a

"In the coalition of the VVD, CDA, D66 and ChristenUnie large disagreement has arisen over tackling the nitrogen crisis that is the cause of construction work coming to a standstill on many building sites." [74]

1. Attribution of Responsibility:

- a Does the story suggest that some level of government has the ability to alleviate the problem?
- b Does the story suggest solution(s) to the problem/issue?
- c Does the story suggest that an individual (or group of people in society) is responsible for the issue/problem?

[72]: Kievit (2019), 'De januskop van de landbouwpolitiek'

2. Human Interest:

- a Does the story provide a human example or "human face" on the issue?
- b Does the story emphasize how individuals or groups are affected by the issue/problem?
- c Does the story go into the private or personal lives of the actors?

[73]: Parlementaire Redactie (2019), "Visie Schouten te vaag"

3. Conflict:

- a Does the story reflect disagreement between parties-individuals-groups-countries?
- b Does one party-individual-group-country reproach/blame another?
- c Does the story refer to two sides or to more than two sides of the problem or issue?

[74]: Hotse Smit (2019), 'Stikstofplan kabinet gaat niet ver genoeg'

Least prevalent was the morality frame, with only 50 instances. Indicator 4.a. was most present within this frame, occurring a total of 31 times. Even though a religious newspaper was used in this analysis, indicator 4.b. was only counted two times, both of which were in different newspapers than *Het Reformatorisch Dagblad*, and used in a different way than expected (See the example below). Finally, 4.c. was indicated 17 times. For this frame as well did the Chi-square test show no significant difference between the newspapers $\chi^2(6, N = 50) = 5.5, p = .48$, or for any of the questions individually (p value ranging from .10 to .49).

Example of indicator 4.b

"That's part of the deal in a vibrant democracy, which, thank god, is governed not only by technocracy, but also simply by the biggest mouth, the best story, the smartest lobby, the most money, the largest crowd, and by faith, gut, heart, conviction. and emotion." [75]

Finally, the economic consequences frame was mentioned 67 times. Mostly through question 5.b, which was answered with *True* 32 times. Indicators 5.a and 5.c were only identified 17 and 18 times respectively. Within this frame a mix of statements about costs about technological solutions, governmental financial help and losses in the construction sectors was found. Again, the Chi-square test show no significant difference between the newspapers $\chi^2(6, N = 67) = 4.6, p = .59$, or for any of the questions individually (p value ranging from .13 to .47).

Example of indicator 5.b

"Half a billion euros is needed for the rapid implementation of three measures that can reduce annual emissions by 2.5 to 4 kilotonnes." [76]

Though there seemed to be a significant difference over all the frames and newspapers in general. It is unsure what frame, or framing question caused this difference. This could be because the sample size is too small, or the difference is caused by a type I error (i.e. the difference is not actually present).

Actor analysis

From the 457 actor mentions (see Table 3.2), most were politicians (n=285). In contrast, other governmental actors were mentioned only five times in total. *Het Financieele Dagblad* mentioned the most actors (n = 124), while *De Volkskrant* mentioned the least (n = 102). Same as for the framing analysis, a Chi-square test was used to test whether there were significant differences in how often newspaper mentioned certain actors. The results of this test are shown in Table 3.2. It must be noted that, because some of the categories yielded low numbers (e.g. "Other governmental actors") they could not be reliably analyzed using a Chi-square test as their expected values were lower than five [77]. They were therefore excluded from the analysis.

4. Morality:

- a Does the story contain any moral message?
- b Does the story make reference to morality, God, and other religious tenets?
- c Does the story offer specific social prescriptions on how to behave?

[75]: Sitalsing (2019), 'Stikstofweg'

5. Economic Consequences:

- a Is there a mention of financial losses or gains now or in the future?
- b Is there a mention of the costs/degree of expense involved?
- c Is there a reference to the economic consequences of pursuing or not pursuing a course of action?

[76]: Boon et al. (2019), 'Boeren vragen €3 mrd voor stikstofreductie'

[77]: Moore et al. (2007), *The basic practice of statistics*

Category	VK	TG	RD	FD	n
Environmental experts	17*	5	5	5	32
Other researchers ^a	6	0	2	4	12
Farmers	11	9	14	3*	37
Construction workers	3	9	2*	16*	30
Industry experts	2	10	7	4	23
Politicians	52	76	68	89	285
Other governmental actors ^a	2	2	0	1	5
Commentators	2	2	14*	1	19
Other ^a	7	2	4	1	14
Totals	102	115	116	124	457

Table 3.2: Total number of actor mentions per newspaper. Significant difference from expected values based on the overall average are denoted with an asterisk (*). Actor categories that were excluded because of their low numbers are denoted with ^a. De Volkskrant = VK; De Telegraaf = TG; Het Reformatorisch Dagblad = RD; Het Financieele Dagblad = FD

There was a convincing significant difference in the total number of actors mentioned between newspapers $\chi^2(15, N = 426) = 73.7, p < .001$. Something that could be explained by multiple significant differences that showed up between the categories for various newspapers. *De Volkskrant* showed significantly more environmental experts ($p < .001$). *Het Reformatorisch Dagblad* showed significantly less construction workers ($p < .05$), but significantly more commentators ($p < .001$). *Het Financieele Dagblad* showed significantly less farmers ($p < .05$), but significantly more construction workers ($p < .01$). Conversely, *De Telegraaf* did not show any significant differences whatsoever.

Political parties

Because the politicians actor group was considerably larger than the other categories, I decided to split it up into the different parties that the individual actors represented. Since the names of mentioned actors were recorded during coding it was simple to look up the associated political parties online. This resulted in the distributions that can be seen in figure 3.1. The VVD (A right wing liberal party that at the time was

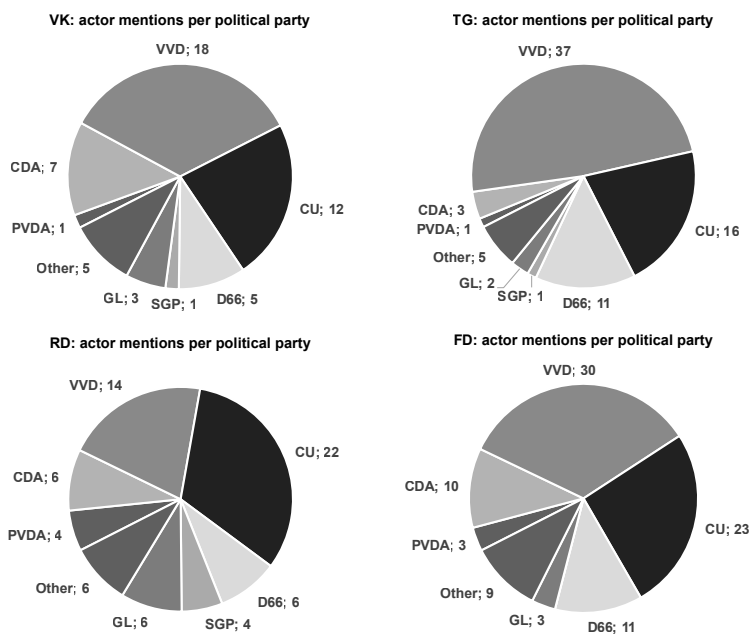


Figure 3.1: Per newspaper circle diagram of politician mentions, divided up per political party. Parties that for none of the newspapers showed more than 3 mentions were grouped under "Other" for the sake of clarity. De Volkskrant = VK; De Telegraaf = TG; Het Reformatorisch Dagblad = RD; Het Financieele Dagblad = FD

part of the ruling coalition) is three out of four times the most mentioned party. Only *Het Reformatorisch Dagblad* mentions the ChristenUnie (CU, a christian centrist party) more often.

To better compare these findings between newspapers, Simpson's diversity index was calculated for each of the newspapers [78]. This statistic supplies us with the probability that two actors from the same political party are found if they are sampled at random from the article pool. For *De Volkskrant* this probability is .19, for *De Telegraaf* it is .30, for *Het Reformatorisch Dagblad* it is .17 and for *Het Financieele Dagblad* it is .20.

[78]: Simpson (1949), 'Measurement of diversity'

Unique actors

Unique actors could be gathered as well from the data. In total 180 unique actors were mentioned. In Figure 3.2 the number of unique actors per category are shown. The actor that was mentioned the most was Minister Carola Schouten (n=60), who was responsible for agricultural legislation at the time. Of the 10 most mentioned actors, nine were politicians. 129 actors were mentioned only once.

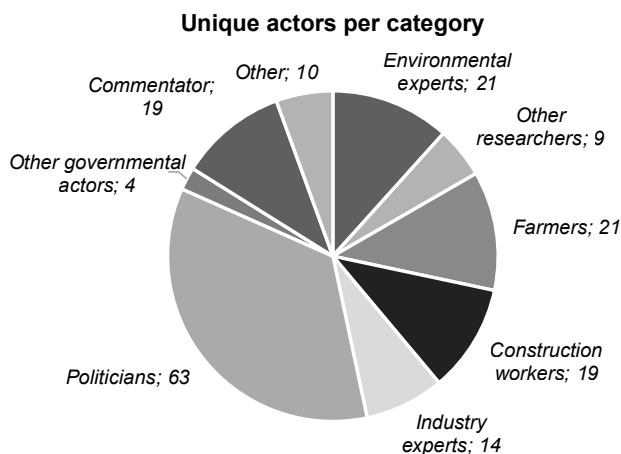


Figure 3.2: Total number of unique actors per category, counted over all newspapers.

Articles featuring actors

In a similar fashion the number of articles featuring a certain actor category can also be pulled from the data. As can be seen in Table 3.3, politicians are again most present, being featured in 112 of the 160 total articles. Some of the differences between newspapers became more pronounced. For example, 30% of articles from *De Volkskrant* featured at least one environmental expert, while for *De Telegraaf* and *Het Financieele Dagblad*, that number is only 10%. Interestingly, though *Het Reformatorisch Dagblad* showed a lot of commentators in comparison earlier on (See Table 3.2), here that difference has become significantly smaller. This table could have been analyzed using the same Chi-square test for independence that was used before. However, I made the decision to not do this, as this would show similar results as earlier tests, while increasing the probability of a Type-I error.

Category	Total	%VK	%TG	%RD	%FD
Environmental experts	25	30%	10%	13%	10%
Other researchers	9	10%	0%	5%	8%
Farmers	24	15%	10%	28%	8%
Construction workers	18	5%	15%	5%	20%
Industry experts	17	5%	15%	13%	10%
Politicians	112	60%	78%	68%	75%
Other governmental actors	5	5%	5%	0%	3%
Commentators	8	5%	5%	8%	3%
Other	8	8%	5%	5%	3%

Table 3.3: Total number of articles mentioning a specific actor category, together with the relative percentage of occurrence for each newspaper individually (e.g. 30% of *De Volkskrant* articles feature Environmental experts). De Volkskrant = VK; De Telegraaf = TG; Het Reformatorisch Dagblad = RD; Het Financieele Dagblad = FD

To show the relationship between how the different actor groups are featured with each other, a Venn-like diagram can be used. To reduce the complexity of the diagram, only the top five most prominent actor groups are displayed in Figure 3.3, though a complete one showing all data can be found in the appendix.

The diagram shows that 70 articles mention only politicians, for only farmers, environmental experts, or, construction workers that count is six. Industry experts only have five articles to themselves. Farmers, environmental experts, or, construction workers, are actually not mentioned most by themselves, but are most often mentioned together with just politicians (n=10, n=10, n=7, respectively). Remarkably, environmental experts are not mentioned once in the same article as construction workers. Farmers as well, are only mentioned twice in connection to construction workers.



Figure 3.3: Venn-like diagram showing the division of actor categories amongst newspaper articles. The diagram shows what number of articles within the sample feature what combinations of actors. The four largest actor categories (in number of mentions) are each represented with different colours. The large number in each circle represents the article count (Also reflected in the size of the circle), while the numbers in brackets represent the combination of actors present in which 1 = Environmental Experts, 2 = Farmers, 3 = Construction Workers, 4 = Industry Experts, and 5 = Politicians. For example, within the sample only two articles featured both Farmers and Environmental Experts. Created using nVenn program by Pérez-Silva, Araujo-Voces, and Quesada [79]

3.2 Discussion

In this section I will go into the meaning of the results that were just described. I explain what could have caused these outcomes, and how they fit in the existing scientific context.

Lack of difference in frames

A striking conclusion that could be made through this research is that no significant difference is present in the usage of frames. You would expect that qualitative newspapers like *De Volkskrant* would use the “Attribution of responsibility” frame more than more sensationalist newspapers like *De Telegraaf*. In turn you would expect *De Telegraaf* to use “Human” interest frames more often. This is something you also see in other research [42]. So why did that difference not show up in this particular research?

It could very well be possible that the nitrogen issue and debate was too specific for many differences to emerge. As was shown in the methodology, during this research a precise selection was made, of which the publication dates ranged only over a few months. This resulted in articles covering many of the same topics and events, be it protests or debates. For that reason it could be that editors abandon (to a certain level) the standards of their newspapers and write up stories that are mostly led by the events themselves. It makes sense inherently that the conflict frame is used when describing a protest. Or, that the attribution of responsibility frame is often used by all newspapers, because it was clear from the start that the responsibility of the issue could easily be put on the government. The research by Semetko and Valkenburg [42], though it focused on the framing of European politics, covered a whole range of issues overall. This leaves more to the interpretation for each newspaper, and could explain the differences they have shown.

Another reason that may have caused this absence of difference between newspapers is the limited range of words on which the articles were selected. As described in the methods section, this research only selected articles between 300 and a 1000 words, as this would make the articles between newspapers more comparable. It could be however, that by leaving out the more in-depth articles, that are often longer than a 1000 words, the articles in which newspapers are able to appeal more to their public were negated. Alternatively, it could also be the case that when editors only have little space they are more likely to only use a single frame in their article. This would mean that differences in framing are more likely to occur in articles with less than 300 words. Though experience tells us that these articles are mostly very factual news items. Since the number of words per article was also recorded during data collection, a quick analysis was done to see whether there was any trend in frame appearance and article length. However, the spread of data together with the small sample size meant no useful conclusions could be made.

Finally, it must also be noted that the sample size of this research was a lot smaller than the one performed by Semetko and Valkenburg [42]. Where I have analyzed a total sample of 160 articles, in their research

[42]: Semetko et al. (2000), ‘Framing European politics: A content analysis of press and television news’

they have analyzed 4,123 stories, of which 2,601 newspaper articles. It could very well be that the differences in framing shown in my sample, though they are too small to be called significant right now, could become more spread out if this research was performed again with a much larger sample size.

That leads us to an important point: to what extent do the benefits of using general frames, as pointed out by de Vreese [41] apply to a small research project such as a master's thesis? As mentioned in the theoretical framework a general frameset is easier to implement as it is built upon existing research and it is also easier to compare to other framing analyses to create a stronger understanding of the field in general. However, using a more general approach will most likely lead to the specific oddities of a certain issue being negated. While those aspects may actually be interesting to highlight in a smaller study. This creates a bit of a dilemma: when there is only limited time, a researcher can choose to use a general frameset at the costs of losing some depth into the specific case they want to research, or they can develop a frameset of their own, which will cost more time, and could lead to a further reduction in sample size.

[41]: De Vreese (2005), 'News framing: Theory and typology.'

Environmental experts

Though no significant difference in framing could be shown through this analysis, multiple differences in actor portrayal between newspapers was present. When looking at Figure 3.2 it became clear once more that the nitrogen debate is mostly a political issue, with most of the present actors being politicians. Other actor categories show a more equal division overall, though you could also argue that environmental experts are heavily outnumbered by the combined numbers of both farmers, construction workers and industry experts. However, this line of reasoning would not reflect the overall complexity of the debate.

What did become clear is that there are significantly more mentions of environmental experts in *De Volkskrant* than in the other newspapers. This could have to do with the fact that *De Volkskrant* wants to abide by their image of a quality newspaper and will therefore use more scientific sources to support their stories. However, both *Het Reformatorisch Dagblad* and *Het Financieele Dagblad* identify themselves as quality newspapers as well [61, 62]. Which means that only the label of a quality newspaper is not enough to explain this difference.

[61]: erdee media groep (2021), *Reformatorisch Dagblad :: Erdee Media Groep*
 [62]: FD Mediagroep (2021), *Het Financieele Dagblad | Bereik de leiders van nu*

Maybe environmental experts favor choosing a more qualitative newspaper to find publicity. In this case it is imaginable that they will choose a newspaper with a larger reach. Which would be *De Volkskrant* for this sample. Still, this seems unlikely to cause this large of a difference, as most of the time journalist will contact scientists, and not the other way around [80].

[80]: Albæk (2011), 'The interaction between experts and journalists in news journalism'

The fact that more scientific experts are mentioned in *De Volkskrant* is in line with other research as well. In their study from 2003, Hijmans, Pleijter and Wester studied the way in which scientific research is published in Dutch newspapers [45]. After analyzing 96 different newspaper editions they found out that quality newspapers (in their case *De Volkskrant*, *NRC* and *Trouw*) report on science more often than popular ones (i.e. *Het Algemeen Dagblad* and *De Telegraaf*). However, they found as well that this

[45]: Hijmans et al. (2003), 'Covering scientific research in Dutch newspapers'

difference could mostly be attributed to the fact that quality newspapers like *De Volkskrant* have a dedicated science section of multiple pages, where popular newspapers only dedicate a page or two, if they have a science section at all.

The question that remained was whether this held true for this research as well. In the data that was gathered from Nexis-Uni [33] it was also specified from what section the article originated. However, only three articles that were found during the identification phase of this research came from a science section, and none of these made it through the subsequent selection phases. Since no science-specific articles were analyzed in this research, the reason there are more environmental experts mentioned in *De Volkskrant* can not be explained the same way as was done in the study by Hijmans, Pleijter and Wester [45].

This is quite remarkable, because it shows that *De Volkskrant* cites more environmental experts overall, regardless of whether the article is a scientific one or not. A possible explanation for this was found in the editorial code of *De Volkskrant* [81]. In these guidelines to authors the so-called *Van Calmthout Protocol* is specified that states that: "With any news article on research, be it scientific or not, we must call at least one independent expert that we can ask for assessment. Not only must we call them, we must also publish at least one paragraph on that third-party commentary"[81]. As such guidelines could not be found for either *Het Reformatorisch Dagblad* or *Het Financieele Dagblad*, it could very well be possible that the difference in expert portrayal exists because of this specific protocol.

[33]: LexisNexis (2021), *Nexis Uni: Academic Research Tool for Universities & Libraries*

[81]: *De Volkskrant* (2018), *De Volkskrant-code*

Other differences in actor portrayal

There were some significant differences in the division of farmers and construction workers as well. *Het Financieele Dagblad* showed significantly less farmers than expected, while at the same time featuring more construction workers or their spokespersons. This could have to do with the fact that *Het Financieele Dagblad* is more geared towards entrepreneurs and businessmen. That target audience may be able to identify better with the business perspective of bigger contractors and the impact the crisis had, also financially, on large cooperative projects with many businesses involved.

Business perspective by construction workers

"Until then, other sectors such as (residential) construction will continue to suffer from the government's procrastination, and all its associated economic and social consequences." [82]

[82]: *Het Financieele Dagblad* (2019), 'Stikstofbeleid voor de bühne'

Where, within this research, the perspective of the farmers was often sentimental and focused on moral aspects, the perspective given by construction workers was based around lay-offs, and construction businesses going bankrupt (See the example above). Interestingly enough, within this line of thought, you would also expect the group "Industry experts" to be more pronounced in *Het Financieele Dagblad*, as specific entrepreneurs were to be coded into that category. However, this was

not the case. Though no significant difference was present; Industry experts were only mentioned four times, while, for example, *De Telegraaf* mentioned them 10 times.

Het Reformatorisch Dagblad mentioned, in contrast to *Het Financieele Dagblad*, significantly less construction workers than expected. Only two times in comparison to the 16 mentions by the latter. When looking at the data, you could argue that there was some kind of tradeoff going on in which mentioning more construction workers resulted in mentioning less farmers and vice versa. A quick regression analysis showed that there is indeed some negative relationship between the number of farmers and number of construction workers ($p = .027$). This result should however be taken with a grain of salt, and mostly as a call to further research.

A possible explanation for this inverted relationship is the fact that newspapers only have so much space to fill and must therefore decide between different stories, or aspects of stories [83]. Farmers and construction workers represent different sides of the debate, farmers being often seen as the cause of the nitrogen issue overall and construction workers as victims of the legislature. This divide can also be seen in Figure 3.3, that shows that construction workers and farmers are only mentioned in the same article twice. Newspaper editors, having only limited space to fill therefore have to choose between either of the two to be able to form a coherent story. This could lead to the correlation described above.

Finally, there were significantly more commentators in *Het Reformatorisch Dagblad*. This mostly has to do with how the articles were selected. In the methodology I showed that the articles were selected on applicability using a simple code. In this code one of the grounds for disqualification read: "The article consists of multiple parts (e.g. letters) of which only one or a few mention the nitrogen issue". While all other newspapers showed a mix of subjects in these kind of articles, *Het Reformatorisch Dagblad* actually had two articles with sent in letters dedicated only to the nitrogen debate. These articles alone mentioned 11 of the commentators, which were the authors of the sent in letters. Without these outliers, the significant difference disappears.

Two-sided debate

In the theoretical framework a division in the sustainability debate between "idealists" and "conformists" was shown [23]. Where idealists would focus on preservation of nature and conformists focused on economic continuity. The question was asked whether this divide could also be applied to the more local nitrogen debate.

Through the content analysis it became clear that this division was clearly present in the political debate. Statements like the one done by D66 politician Tjeerd de Groot urging to half the current Dutch livestock [84] are examples of idealistic thinking. While, for example, the VVD and the CDA focused more on technological remedies that would help preserve the status-quo [85]. The divide can be seen in the following quote from *De Volkskrant*.

[83]: Jang et al. (2015), 'Assessing the carrying capacity of Twitter and online news'

[23]: Verstegen et al. (2005), 'The sustainability debate'

[84]: De Telegraaf (2019), "Bizar proefbal-lonnetje"

[85]: Hotse Smit (2019), 'Duurzame varkensstal is zo duurzaam nog niet'

The divide in *De Volkskrant*

"It is known that the VVD thinks the Dutch livestock can remain intact through technological developments while D66 advocates halving it." [86]

[86]: Hotse Smit (2019), 'Andere koe, beter milieu?'

Did this divide also present itself between the different newspapers? For the conformist view you would expect the economic consequences frame to appear more, while for the idealist view the attribution of responsibility frame is more likely to manifest itself. Within that line of thinking, the newspapers gave a decently balanced view of the debate, since the usage of frames was seemingly equal.

However, this balance between newspapers was less clear in the actor analysis. Although the division in unique actors overall was quite equal (Figure 3.2), and different actors were more often mentioned in the same articles than alone (Figure 3.3), when splitting the result up between newspapers, differences start to occur. As discussed above, significant differences in the mentioning of actors were present (Table 3.2). Be it in the number of mentioned environmental experts, farmers or construction workers. However, more interesting in this regard are the differences in mentioned political parties (Figure 3.1). We have already concluded that the idealist/conformist division can be seen in the political debate, which then could extent to politicians mentioned in the newspapers.

In earlier research newspapers have already shown to have partisan tendencies [87], though such analyses can not be found for Dutch newspapers. Conversely, a Swiss study actually found that the number of politicians mentioned in four of their quality newspapers was not generally affected by the party the politicians stemmed from [88]. Instead, whether the politician spoke up during debate or was a prominent within the party was a better determinant of their prominence. Coincidentally the three quality newspapers within this research (i.e. *De Volkskrant*, *Het Reformatorisch Dagblad*, and, *Het Financieele Dagblad*) all show similar diversity indexes in their use of politicians (i.e. .19, .17 and .20 respectively). It is *De Telegraaf* that shows the biggest divergence with a score of .30. This suggests that politically biased news is something you will more easily find in popular newspapers.

[87]: Larcinese et al. (2011), 'Partisan bias in economic news: Evidence on the agenda-setting behavior of US newspapers'

[88]: Tresch (2009), 'Politicians in the media: Determinants of legislators' presence and prominence in Swiss newspapers'

In the following chapter I will wrap up my thesis. The overall findings are summarized and the research questions posed in the theoretical framework are answered. I will finish with some suggestions to both environmental and science communication experts, as they could benefit significantly from this work.

4.1 Answering the research question

Research question

How do various newspapers portray the Dutch nitrogen debate?

After 160 articles from four different Dutch newspapers had been analyzed for their usage of frames and actors, a series of interesting conclusions could be made. Firstly, though 725 framing indicators were found throughout these articles, no significant difference in usage was present for any of the frames or framing questions between newspapers. Though an overall difference was found to be significant, it was only barely so and the underlying cause could not be identified. The argument was made that this lack of difference could have manifested itself because the selection was too narrow, or because the sample size of this research was too small. However, it is also likely that newspapers are less prone to frame stories in a way that suits their profile when featuring topics that are as specific as the nitrogen issue.

The usage of actors was more diverse in comparison. Overall 457 actor mentions had been identified, of which 180 were unique actors. Significantly more environmental experts could be found in *De Volkskrant*, which is in line with their reputation and editorial code. Furthermore, there seems to be a correlation between the use of either farmers or construction workers in a piece. This seems to be testament to the fact that only limited space is available in any newspaper issue, causing editors to choose who will be featured. Finally, the newspapers do seem to show some level of partisanship, something that seems to be especially true for *De Telegraaf*, which is the only popular newspaper that was analyzed.

4.2 Suggestions

In the following section I will make some suggestions based on the conclusions of this research. The significance of this research to subsequent environmental debates is touched upon. Also the next steps in building further onto this research are discussed.

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Suggestions for future research	31
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Suggestions for future debates

So what does this thesis add to future sustainability issues and their possible subsequent debates? Through this research some aspects of journalistic reporting became clear that should be repeated in the future, and some that deserve more attention next time around. In the following section I will lay out my recommendations in that regard.

The results show that there was no newspaper that used a specific frame significantly more than the other newspapers. Though the framing of articles does not necessarily give an indication of how trustworthy the information is that is presented, it is good to see that on this specific issue, readers of different newspapers were informed in a similar manner.

On a similar note, the difference in distribution of featured actors was also not very profound. When taking all the newspapers into account there is a fairly equal division in environmental experts, farmers, construction workers and industry experts. Politicians may be overly present, but that is probably inevitable in a highly legislative issue such as this one. The fact that politicians are featured more may also be regarded as positive, as they represent a broad range of views by themselves.

That being said, there are still some improvements that can be made. For example, if we look at the division of actors between newspapers, some notable differences appear. Though most of these differences can be attributed to newspapers appealing to their specific audiences, the division in environmental experts requires attention. They were mostly represented within *De Volkskrant*, while other newspapers lagged behind. Environmental experts could in the future choose a more prominent position in the debate in order to be represented more equally by all newspapers. Regardless of the editorial code of these newspapers.

A good example of such practice could already be seen within the nitrogen debate itself. Of the 21 identified environmental experts, there was only one that was present in all four newspapers: Jan Willem Erisman, an environmental researcher and advocate for circular agriculture. Over the course of the debate he became a prominent figure, which led to *De Telegraaf* asking him to write a specific piece on the issue [89].

[89]: Erisman (2021), *Personal Communication*

Researchers should in future debates not be reserved in speaking to the press about environmental issues. On top of this, they should proactively find out and report to newspapers that are partial to featuring less environmental experts, such as *De Telegraaf*, *Het Reformatorische Dagblad* and *Het Financieele Dagblad*. Making sure everyone gets the same (quality of) information is the first step to creating a better informed debate overall.

Suggestions for future research

Next to suggestions for future debates, I would also like to make some suggestions for follow-up research into this topic.

In the theoretical framework the content analysis framework by Krippendorff [26] was shown. An important part of this framework is not only the content analysis itself, but also validating the research in society. Though multiple interesting conclusions can be made on the basis of the article

[26]: Krippendorff (2018), *Content analysis: An introduction to its methodology*

content of newspapers alone, it is crucial to check whether the impact of these differences are also existent in the public that reads them. This is something that would be interesting to research in the context of this analysis as well. For example, though we can assume based on literature that being exposed to more environmental experts in *De Volkskrant* may have an impact on your opinion, it will be interesting to measure what that difference exactly is in this case.

Furthermore, at the beginning of this research the decision was made to focus on printed media in the format of newspapers as they are easily accessible and benefit from a larger scientific framework to base the research around. However, newspapers have over the past decades become an increasingly less important medium through which the public get their information and form their opinion. It would therefore be interesting to extend this research to online media well. Both well organized online news platforms and less moderated social media could give interesting insights into how scientific info is spread throughout the public in a case like this one.

Next to online media, it may also be worth it to look at more local news to see how they fared during the nitrogen debate. I think it may be very interesting to look at how news is framed at a smaller scale, also because you can then compare between different distribution area's. I can imagine that newspapers from rural area's portray the nitrogen debate differently than newspapers distributed in mostly urban area's. This can already be researched with only two local papers. However, you could also analyze a larger sample of newspapers and check for a gradient across the Netherlands.

4.3 Acknowledgements

I would like to thank my two thesis examiners: Prof. Dr. Ir. Ionica Smeets and Dr. Stefano Cucurachi. Despite the fact that they are both very busy people, they still found the time to properly guide me through this process. I do not think I would have felt this satisfied with the outcome if it were not for their feedback and flexibility.

Secondly, I would like to thank my two independent coders. They were both essential to securing the reliability of my data and this research would not have been half this strong without their help.

I would also like to thank Dr. Reinout Heijungs for his assistance with my statistical analysis. If it wasn't for him I would have ended up doing some weird generalised linear model, which, quite frankly, does not make any sense. I am very glad with the straightforward analysis that I have on paper now.

Finally, I would like to thank my significant other. Not only did she help me out during the pilot phase of my codebook. She also had to put up with me over these, sometimes quite stressful, five months, which is an achievement all on its own.

APPENDIX

A

Article Selection

Below the initial 438 articles that were discovered using Nexis Uni are shown per newspaper. For each article it is shown whether it was excluded from the research and for what reason. Articles that were analyzed are included as "Coded".

A.1 De Volkskrant

Headline	Date	Status
Stikstof	06/09/2019	Coded
Stikstof is het punt niet	22/10/2019	Coded
Asbest, pfas, stikstof, de economie gaat altijd voor	11/11/2019	Irrelevant
Zet subsidies voor landbouw in tegen stikstof	27/11/2019	Coded
Zicht op stikstof, matig uw snelheid	26/09/2019	Coded
Stikstof remt groei economie	17/12/2019	Irrelevant
Langzamer op de provinciale weg helpt niks tegen stikstof	06/11/2019	Randomly deselected
RIVM reageert: stikstofmetingen deugen wél	11/10/2019	Coded
Stikstofhandel	05/10/2019	Coded
Stikstofplan kabinet gaat niet ver genoeg	14/10/2019	Coded
Uitstoot bepalen met een model, is dat de beste manier?	17/10/2019	Coded
Zit boer op een gouden stikstofberg?	04/10/2019	Coded
Koe mag van Remkes toch de wei in	20/12/2019	Coded
Geachte redactie	22/10/2019	Irrelevant
Stikstofcrisis is één groot déjà vu	19/10/2019	Randomly deselected
Woold maakt zich klaar voor de vlinder	14/10/2019	Coded
Het kabinet zint op een stikstoflist	07/09/2019	Coded
Valt 'stikstofhouderij' warm te saneren?	10/09/2019	Coded
Gezwalk van CDA eindigt met crisis in Brabant	16/12/2019	Coded
Duurzame varkensstal is zo duurzaam nog niet	08/11/2019	Coded
Geachte redactie	15/11/2019	Irrelevant
Kabinet timmert aan de weg - tegen de stikstofklippen op	23/11/2019	Irrelevant
Met al die onafhankelijke commissies schiet het kabinet zichzelf in de voet	23/11/2019	Irrelevant
Schoner, veiliger en nog sneller thuis ook	13/11/2019	Irrelevant
Andere koe, beter milieu?	01/11/2019	Coded
De melkkoe levert meer op dan de heilige koe	06/11/2019	Coded
Het nieuwe liberalisme belooft niet langer vrijheid, het heet dwang	19/10/2019	Irrelevant
Pieter Hotse Smit deed verslag van de confrontatie tussen boer en bestuur	19/10/2019	Coded
Bouwen, én de natuur behouden: het kan	28/09/2019	Coded
Een mast voor ammoniak	23/09/2019	Coded

Continued on next page

Table A.1 – continued from previous page

Headline	Date	Status
Tractorman	23/09/2019	Irrelevant
Zij willen boer worden, maar geen gewone boer	12/10/2019	Irrelevant
Stikstofbesluit dreunt door tot aan strandhuisjes en festival	12/09/2019	Coded
geachte redactie	04/12/2019	Irrelevant
Geachte redactie	09/12/2019	Irrelevant
Leven	06/12/2019	Irrelevant
De hele maatschappij gaat langzamer draaien'	13/11/2019	Irrelevant
Elke week een milieuvervuilende vlucht tussen Luik en Maastricht	08/11/2019	Irrelevant
Geen land waar snelheid zo vaak veranderde'	14/11/2019	Irrelevant
Imponerend' dan wel 'teleurstellend' tweede gesprek Rutte en gele hesjes	23/11/2019	Irrelevant
Morgen weer bouwen? Niets wijst daarop'	14/11/2019	Coded
Varkenseconomie	09/11/2019	Irrelevant
Boerenfront lang niet zo eensgezind als het lijkt	16/10/2019	Coded
Brussel zet druk op stikstofbeleid kabinet	06/11/2019	Randomly deselected
De luchtvluchteling verlaat de stad	18/10/2019	Irrelevant
geachte redactie	31/10/2019	Irrelevant
Groene dromen kabinet overwoekerd door realiteit	02/11/2019	Irrelevant
Het was mij een waar genoegen	30/10/2019	Irrelevant
Kabinet bereid tot hulp aan bouwsector in nood	30/10/2019	Coded
Met elektrische graafmachines en kranen kan het wél	30/10/2019	Coded
Nog geen zicht op uitweg uit stikstofimpasse	18/10/2019	Randomly deselected
Achterhoedegevecht	26/09/2019	Irrelevant
Boer van de maand	09/10/2019	Irrelevant
Dit is het groenvroemste kabinet ooit	25/09/2019	Irrelevant
Een herculische opdracht	18/09/2019	Irrelevant
geachte redactie	02/10/2019	Irrelevant
Geachte redactie	27/09/2019	Irrelevant
Gezocht: 118 oplossingen voor de stikstofcrisis	28/09/2019	Coded
Racefeest	23/09/2019	Irrelevant
Stikstofweg	10/10/2019	Coded
Voor het eerst water ontdekt op verre planeet	12/09/2019	Irrelevant
6. Insecten leggen massaal het loodje	21/12/2019	Irrelevant
Algemeen belang	23/12/2019	Irrelevant
Bouwmarkt valt in de Prijzen, bouwbedrijf voor de rechter	21/12/2019	Irrelevant
De film- en tv-tips voor maandag 23 december	23/12/2019	Irrelevant
Dode vis	31/12/2019	Irrelevant
Geachte redactie	19/12/2019	Irrelevant
Het jaar van Martin Sommer	21/12/2019	Irrelevant
Het jaar waarin de koe een vies beest werd	21/12/2019	Irrelevant
Kan Rutte op 25 december geen volkstelling laten houden?	24/12/2019	Irrelevant
Ook solidaire Duitse boeren willen inspraak en respect	19/12/2019	Randomly deselected
Waarom gaan boeren alweer de weg op?	19/12/2019	Irrelevant
Boeren 'stoken boel een beetje op'	17/12/2019	Irrelevant
De unknown unknowns van Stientje van Veldhoven	14/12/2019	Irrelevant
geachte redactie	10/12/2019	Irrelevant
Geen vreugdevuren op Haagse stranden	04/12/2019	Irrelevant
Kabinet maant bouwers werk snel te hervatten	30/11/2019	Irrelevant
Later kan het anders, maar de crisis is nu	13/12/2019	Coded

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Table A.1 – continued from previous page

Headline	Date	Status
Natuurdrammer	13/12/2019	Irrelevant
Roetbrakers betalen hogere tax	04/12/2019	Irrelevant
Smeergeld' moet scepsis wegnemen	12/12/2019	Irrelevant
Supers eisen verbod op boerenactie	13/12/2019	Irrelevant
Wegens stikstofoverschot gratis op te halen: kerstbomen van de Veluwe	05/12/2019	Coded
Zwitserse treindenken biedt uitweg uit stikstofcrisis	04/12/2019	Coded
Bladblazers	25/11/2019	Irrelevant
Brabantse CDA-gedeputeerden stappen op om stikstofregels	11/11/2019	Coded
De politiek moet hier niet de dienst uitmaken'	28/11/2019	Irrelevant
geachte redactie	29/11/2019	Irrelevant
Geachte redactie	13/11/2019	Irrelevant
Geert Mak is van zijn geloof gevallen en dat is landelijk nieuws.	09/11/2019	Irrelevant
Groei stabiel, meer werklozen	15/11/2019	Irrelevant
Groen leren leven met de Bosatlas	20/11/2019	Irrelevant
Hesjes	20/11/2019	Irrelevant
Hoe in Ruttonië regeren veranderde in reageren	16/11/2019	Irrelevant
Huizenbouw zakt weg door stikstofcrisis	20/11/2019	Irrelevant
Jolanda van Benthem wint Joost Zwagerman Essayprijs met persoonlijk verhaal	19/11/2019	Irrelevant
Kan economie een verbod op Sinterklaas hebben?	15/11/2019	Irrelevant
Kringloop	18/11/2019	Irrelevant
Moeten we ons bang laten maken door Laura van Geest?	20/11/2019	Irrelevant
OK boomer, het is goed met je, zegt de twintiger	16/11/2019	Irrelevant
Rutte wil van geen fouten weten	15/11/2019	Coded
Schepen varen zwavelvrij met zaagsel en bermgras	26/11/2019	Irrelevant
[Snoepjes Sheila Sitalsing vertelt inderdaad sprook...]*	22/11/2019	Irrelevant
Stalvergunning blijft een ontvlambaar punt'	14/11/2019	Coded
Veldleeuwerik gevloerd	21/11/2019	Irrelevant
Zonder beursnotering beter af in stikstofcrisis dan met	16/11/2019	Irrelevant
Door de knieën? Slappe rug?'	15/10/2019	Randomly deselected
Geachte redactie	28/10/2019	Irrelevant
Industrieterrein Nederland heeft zijn grens bereikt	29/10/2019	Irrelevant
Is stikstofruzie erger voor de economie dan Brexitruzie?	31/10/2019	Irrelevant
Methode-Maxime	31/10/2019	Irrelevant
Moeilijk maar mooi	24/10/2019	Irrelevant
Pfas-paniek	31/10/2019	Irrelevant
Plankgas	04/11/2019	Irrelevant
Stikstofbeleg' legt chaos bloot	15/10/2019	Coded
Stikstofbeleid lag al langer onder vuur	28/10/2019	Coded
Stop met polderen en gedogen	24/10/2019	Irrelevant
^SW	17/10/2019	Irrelevant
Vasten is het nieuwe modedingetje	23/10/2019	Irrelevant
Dit probleem verdraagt geen pappen en nathouden'	26/09/2019	Coded
geachte redactie	17/09/2019	Irrelevant
Geachte redactie	30/09/2019	Irrelevant
Hebben boeren Greta Thunberg monddood gemaakt?	03/10/2019	Irrelevant
Het jaar van de besluitsluis en de complimenten aan Den Haag	20/09/2019	Irrelevant
Juist boeren moeten weten dat je geld niet kunt eten	04/10/2019	Irrelevant

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Table A.1 – continued from previous page

Headline	Date	Status
Knallen	09/10/2019	Irrelevant
Red geen projecten, zorg dat de natuur vooruitgaat'	27/09/2019	Coded
Remkes laat stuwmeer aan bouwplannen liggen	27/09/2019	Randomly deselected
Saneren moet, of de boer het nou wil of niet	01/10/2019	Coded
Stikstofadvies laat alleen nog harde keuzes toe	26/09/2019	Coded
Veestapel saneren is de boeren uitkopen	26/09/2019	Coded
Gaskraan Groningen al over drie jaar dicht	11/09/2019	Irrelevant
Geachte redactie	09/09/2019	Irrelevant
Stikstofbesluit nekt ook het Eilân festival	09/09/2019	Randomly deselected
Tevreden	11/09/2019	Irrelevant

A.2 De Telegraaf

Headline	Date	Status
Stikstof verlamt land	12/09/2019	Coded
Noodwet stikstof geeft lucht	12/11/2019	Randomly deselected
Wilders presenteert noodwet stikstof	11/11/2019	Randomly deselected
Ook Merwe-Vierhavens onzeker door stikstof	22/10/2019	Coded
Stikstof donkere wolk	18/09/2019	Randomly deselected
Crisisoverleg bij VVD over stikstof	12/11/2019	Randomly deselected
Bouw platleggen om stikstof is rampzalig	23/10/2019	Coded
Gas loslaten om stikstof	26/09/2019	Coded
'RvS te strikt met stikstof'	24/09/2019	Coded
Stikstof strooit zand in raderen	09/11/2019	Coded
'Bouwcrisis op de loer door stikstof'	25/09/2019	Coded
Kwart woningbouw valt weg door stikstof	04/10/2019	Coded
Vijf vragen over hoofdpijndossier	25/09/2019	Coded
'Ons voordeel waait weg'	16/12/2019	Coded
Groene spoken splijtzwam	07/11/2019	Irrelevant
'Ondernemers nu al in problemen'	24/10/2019	Coded
Ondernemers nu al in problemen	24/10/2019	Irrelevant
'Clash politiek en bedrijfsleven'	16/11/2019	Irrelevant
Het is hoog tijd voor directe democratie	23/10/2019	Irrelevant
Protest zonder kranen	25/10/2019	Irrelevant
Boeren oplossing in aanpak woningnood	09/09/2019	Coded
'Nederlandse groei lager door minder investeren'	11/12/2019	Irrelevant
'De snelheidsverlaging is slechts een amuse'	15/11/2019	Coded
Chaos troef bij stikstofdossier	18/10/2019	Coded
Op slot	31/10/2019	Coded
'RUTTE, grijp in!'	31/10/2019	Irrelevant
Stikstofmethode in Duitsland soepeler	23/09/2019	Coded
'Bizar proefballonnetje'	10/09/2019	Coded
Aanpak fileleed tot vijf jaar later	21/11/2019	Coded
Boer vraagt 3 miljard voor hulp	21/11/2019	Coded
Groei op peil dankzij consument en overheid	15/11/2019	Irrelevant
Groene heilstaat dreigt te worden opgelegd	20/11/2019	Irrelevant
Rutte voorspelt nog meer ellende	25/11/2019	Coded

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Table A.2 – continued from previous page

Headline	Date	Status
Agrarische sector moet niet te vroeg juichen	15/10/2019	Coded
Klimaatvluchteling	30/10/2019	Irrelevant
'Regering zelf de schuldige'	01/11/2019	Coded
'Rutte moet de regie bouwcrisis nemen'	30/10/2019	Coded
Transitie lukt alleen met betrouwbare overheid	31/10/2019	Irrelevant
'Veehouder onterecht in het verdomhoekje'	16/10/2019	Coded
De mens denkt dat alles maakbaar is	21/09/2019	Coded
Formule 1-race op Zandvoort nog niet gelopen	25/09/2019	Randomly deselected
Onzinnig om het hele land plat te leggen	21/09/2019	Coded
'Politietop toont opnieuw ernstig gebrek aan visie'	23/09/2019	Irrelevant
'Visie Schouten te vaag'	01/10/2019	Coded
Nieuwe domper voor Hoekse Lijn	05/09/2019	Coded
Groene gesprekken	21/12/2019	Irrelevant
Starters sparen stug door	21/12/2019	Irrelevant
Stille ambities bij opkomende PvdA	24/12/2019	Irrelevant
Eerlijke onzin	13/12/2019	Irrelevant
'Er is weinig behoefte aan een feestje'	10/12/2019	Irrelevant
'Heel fijn om puur natuur te zijn'	09/12/2019	Irrelevant
Onzekerheid over boerenblokkades	17/12/2019	Irrelevant
Twijfels over groeneambities	12/12/2019	Irrelevant
'Weg met die roesballon'	17/12/2019	Irrelevant
5 vragen verkoop VolkerWessels	13/11/2019	Irrelevant
Achterban VVD: milieuregels rigide	11/11/2019	Coded
Boordevol	23/11/2019	Irrelevant
Bouwambities en haven in knel	29/11/2019	Coded
'Bouw stagneert door kennisgebrek'	21/11/2019	Irrelevant
Crisis	14/11/2019	Coded
De waterstofbus krijgt ruim baan	20/11/2019	Irrelevant
Eerder moe, net zo scherp	09/11/2019	Irrelevant
'Er moet meer gebouwd worden'	26/11/2019	Irrelevant
Filebestrijding op 1	22/11/2019	Irrelevant
'Geheugen kiezer slecht als hij moet stemmen'	18/11/2019	Irrelevant
Heilige koe geofferd	13/11/2019	Coded
Hilarische scoop	14/11/2019	Irrelevant
Hypocriet	19/11/2019	Irrelevant
Kun je rijden zonder AdBlue?	08/11/2019	Irrelevant
Oliespagaat	19/11/2019	Irrelevant
Onmacht	15/11/2019	Irrelevant
'Openheid over rendement van stadsverwarming'	14/11/2019	Irrelevant
Oranjeglorie ligt in het verschiet	18/11/2019	Irrelevant
Partijcongres als applausmachine	26/11/2019	Irrelevant
Slag om IJmuiden is begonnen	19/11/2019	Irrelevant
Spook	15/11/2019	Coded
Stikstofleed als de perfecte vuilnisdag	16/11/2019	Irrelevant
Stikstofprobleem als koekoeksjong	19/11/2019	Coded
Tegenstanders	20/11/2019	Irrelevant
Therapie	13/11/2019	Irrelevant
'Trauma's bij kinderen door antipietenprotest'	11/11/2019	Irrelevant
Vergunningafgifte voor nieuwbouw implodeert	21/11/2019	Irrelevant

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Table A.2 – continued from previous page

Headline	Date	Status
Vogelvrij	21/11/2019	Irrelevant
Vreugdevuren op losse schroeven	13/11/2019	Irrelevant
Boerengeweld 'fout en dom'	15/10/2019	Irrelevant
BRIEVEN	19/10/2019	Irrelevant
Gestrekt been riskant	17/10/2019	Irrelevant
HBG-terrein in hartje Rijswijk verloederd	31/10/2019	Irrelevant
Kabinet neemt de vlucht naar voren	30/10/2019	Coded
Klok niet voor- of achteruit	18/10/2019	Irrelevant
Nieuwbouw achter Strafhof op losse schroeven	17/10/2019	Irrelevant
Onze veiligheid ligt op historisch hoog niveau	30/10/2019	Irrelevant
Pronkenmet klimaat	02/11/2019	Irrelevant
Publiekstrekker	02/11/2019	Irrelevant
Stikstofregels blokkeren natuur	21/10/2019	Coded
Stikstofruimte	06/11/2019	Coded
Veel erger dan CO ₂	29/10/2019	Irrelevant
'Verlaging naar 100 km/u zorgt voor veilige wegen'	04/11/2019	Irrelevant
VVD de weg kwijt	05/11/2019	Irrelevant
VVD zwijgt, draait en stemt in	05/11/2019	Irrelevant
Boeren: 'Politiek ligt de kans geven wat te regelen voor ons'	03/10/2019	Randomly deselected
Boerenwoede over 'verrader'	04/10/2019	Irrelevant
BRIEVEN	12/10/2019	Irrelevant
BRIEVEN	28/09/2019	Irrelevant
Dierenwelzijn staat voorop	12/10/2019	Irrelevant
'Ik kan twintig jaar vooruit'	05/10/2019	Irrelevant
Knuffelboeren	10/10/2019	Irrelevant
Metro aan Zee lijkt verder weg	25/09/2019	Irrelevant
Niet alles kan	04/10/2019	Irrelevant
Onze klimaatpolitiek leidt tot natuurramp	27/09/2019	Irrelevant
Plattelandspracht protesteert pikant	30/09/2019	Irrelevant
Rechtszaak Wilders dilemma coalitie	17/09/2019	Irrelevant
Soja wint terrein op Nederlandse akkers	19/09/2019	Irrelevant
Stikstofaanpak: kabinet wil tijd	03/10/2019	Randomly deselected
Tractorblokkade	11/10/2019	Coded
Van Haga direct dwars	08/10/2019	Irrelevant
Vierkant achter de boeren	01/10/2019	Irrelevant
Bon gaat in de ban	03/09/2019	Irrelevant
BRIEVEN	07/09/2019	Irrelevant
'GEBREK NIEUWBOUW TYPISCH NEDERLANDS'	06/09/2019	Irrelevant
Op zijn beloop	14/09/2019	Coded
Stikstofclaims voorbereid	13/09/2019	Coded
Strijd barst los om Lelystad Airport	07/09/2019	Irrelevant
Verdient Nederland niet een uitzondering?	10/09/2019	Randomly deselected
Wiebes: gaswinning Groningen stopt eerder	11/09/2019	Irrelevant

A.3 Het Reformatorisch Dagblad

Headline	Date	Status
Oplossing gevraagd: hoe laat je een koe minder stikstof uitplassen	14/11/2019	Coded
Nieuwe acties vanwege stikstof	16/12/2019	Randomly deselected
Niet elke zwam kwijnt weg door stikstof	20/11/2019	Irrelevant
Linkse oppositie kritisch op spoedwet aanpak stikstof	05/12/2019	Coded
RvS: Kabinet moet veel meer doen tegen stikstof	27/11/2019	Randomly deselected
Aanpak stikstof laat op zich wachten	18/10/2019	Coded
Kabinet, provincies en boeren steggelen over stikstof	15/10/2019	Randomly deselected
Stikstof heeft bouw op zijn kop gezet	24/12/2019	Coded
Kabinet in het nauw door stikstof	06/12/2019	Randomly deselected
Weinig concreets op bijeenkomst stikstof	05/11/2019	Coded
CDA twijfelt over model stikstof RIVM	09/10/2019	Coded
Senaat voor spoedwet stikstof; boer krijgt kansen	18/12/2019	Coded
Stikstof: 10.000 minder nieuwe huizen in 2021	01/11/2019	Randomly deselected
Miljard voor stikstof en leraren	02/11/2019	Irrelevant
Impasse in de polder: wat is er aan de hand?	15/10/2019	Coded
DE MELKVEEHOUDEUR Werk maken van stikstofuitstoot	14/12/2019	Coded
Provincie gaat vergunningen weer verlenen	09/10/2019	Coded
PFAS: minuscule stoffen, grote problemen	29/10/2019	Coded
Boze boeren dreigen voedselvoorziening rond kerstdagen lam te leggen	06/12/2019	Coded
Hoogleraren: Het echte werk komt nog	14/11/2019	Randomly deselected
„Drempel biedt boer te weinig zekerheid"	28/11/2019	Coded
Premier Rutte over 100 km-grens: Banen gaan boven snelheid	13/11/2019	Randomly deselected
Beeldvorming	05/11/2019	Coded
Juristen waarschuwen voor stikstofbeleid	17/10/2019	Coded
Aanpassen Afsluitdijk staat op de tocht	12/09/2019	Coded
D66 wil intensieve veehouderij halveren	09/09/2019	Coded
Opgemerkt	07/11/2019	Irrelevant
Rutte waagt zich in het hol van de leeuw	07/11/2019	Coded
Coalitiepartijen botsen bij landbouwbegroting	10/10/2019	Coded
Nederland is nog niet uit het stikstofmoeras	26/09/2019	Coded
„Nog steeds onzekerheid voor duizenden boeren"	27/09/2019	Coded
Stikstofbeleid ingrijpend voor veehouderij	08/10/2019	Coded
Varkensboer roert zich om stikstofkwestie	11/10/2019	Randomly deselected
Verantwoord racen	01/10/2019	Irrelevant
Consument moet in 2020 de kar trekken	30/12/2019	Irrelevant
„Basisafspraken" boeren en kabinet	18/12/2019	Irrelevant
Supermarkten naar rechter om boerenactie	12/12/2019	Randomly deselected
„Gescheur op snelweg nergens voor nodig"	13/11/2019	Irrelevant
Opgemerkt	26/11/2019	Irrelevant
Plan boeren: snel minder stikstofuitstoot	20/11/2019	Coded
Prefab bouwen biedt uitkomst aan werken in weer in wind	23/11/2019	Irrelevant
Rekenmodellen maken Nederland kapot	14/11/2019	Irrelevant
„Snelheid naar 100 is een overwinning"	14/11/2019	Irrelevant
Stikstofspook	12/11/2019	Coded
Bouw en infra zonder shovel naar protest Malieveld	24/10/2019	Irrelevant
De januskop van de landbouwpolitiek	01/11/2019	Coded

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Table A.3 – continued from previous page

Headline	Date	Status
Grimmige acties	15/10/2019	Randomly deselected
Minder ammoniak dankzij koetoilet	29/10/2019	Coded
Tuytel: Liever aan het werk geweest	02/11/2019	Irrelevant
Vooruitzien in plaats van vooruitschuiven	26/10/2019	Irrelevant
De ronkende teksten van Bleker en de bekentenis van Graus	14/10/2019	Irrelevant
Kabinet legt eerste stukje stikstofpuzzel	05/10/2019	Randomly deselected
„Toekomst van landbouw is ieders verantwoordelijkheid"	12/10/2019	Irrelevant
„Vlees uit Azië, dat levert pas stikstofuitstoot op"	26/09/2019	Coded
„Je durft tegenwoordig bijna niet meer te zeggen dat je slager bent"	02/09/2019	Irrelevant
Maximumsnelheid deels omlaag	03/09/2019	Coded
Naar een gezond geestelijk klimaat	27/12/2019	Irrelevant
Premier verrast door acties	19/12/2019	Randomly deselected
„Regering moet christenvervolgung in het openbaar benoemen"	20/12/2019	Irrelevant
„RIVM geeft stikstofdata vrij"	31/12/2019	Coded
Brussel jaagt marktkoopman weg	07/12/2019	Irrelevant
DE FRUITTELER Alleen maar vooruit met gezond fruit	14/12/2019	Irrelevant
IN ZWAAR WEER Nog harder werken dan maar	14/12/2019	Irrelevant
„Landbouw heeft behoefte aan Deltaplan"	14/12/2019	Irrelevant
Moestuintje op Mars vol uitdagingen	11/12/2019	Irrelevant
„Nederland woensdag op slot"	17/12/2019	Irrelevant
PBL: Extra natuurgebieden hard nodig	13/12/2019	Irrelevant
Rutte regeert ook over rechts en ministers CU minder populair	16/12/2019	Irrelevant
100 kilometer	14/11/2019	Randomly deselected
Bekend van de 100- en 130-borden	26/11/2019	Irrelevant
Conservatief lijkt band met natuur kwijt te zijn	25/11/2019	Irrelevant
„Duurzame landbouw nodig"	21/11/2019	Coded
Handhaaf ons land als witte motor van duurzaam voedsel	19/11/2019	Irrelevant
Kabinet investeert fors in infrastructuur	22/11/2019	Irrelevant
Minder beschermde natuur toch optie	14/11/2019	Coded
Opgemerkt	19/11/2019	Irrelevant
Oud-VVD'er pleit voor crisis en Wilders zit met handen in het haar	11/11/2019	Irrelevant
PVV: Verklaar elk project van dringend belang	11/11/2019	Coded
„Verwacht niet dat je de nieuwste modellen voor de helft van de prijs krijgt"	25/11/2019	Irrelevant
Boerenprotest met trekkers	25/10/2019	Irrelevant
Commotie rondom SGP-voorzitter Zevenbergen houdt aan	04/11/2019	Irrelevant
Groei veroorzaakt problemen, maar helpt ook om ze op te lossen	02/11/2019	Irrelevant
„Het vinden van een woning wordt alleen maar moeilijker"	28/10/2019	Irrelevant
Knor, knor	29/10/2019	Irrelevant
„Kritiek op RIVM snijdt hout"	16/10/2019	Coded
„Regenboog teken van hoop voor mens én dier"	19/10/2019	Irrelevant
Stikstofcrisis treft ook schipper	28/10/2019	Coded
Uitstel brexit	29/10/2019	Irrelevant
Waarom niet alle boeren protesteren	16/10/2019	Irrelevant
Advies: belast vervuilende uitstoot landbouw	08/10/2019	Irrelevant
Boer Kemp: Bevolking staat achter ons	05/10/2019	Irrelevant
„Boer zorgt voor ons vlees, aardappelen en groente"	02/10/2019	Coded
Bouwbedrijven: Projecten snel weer hervatten	26/09/2019	Coded
Bouwvergunning laat op zich wachten	27/09/2019	Coded

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Table A.3 – continued from previous page

Headline	Date	Status
Kolderland	17/09/2019	Randomly deselected
Niet alles kan	27/09/2019	Randomly deselected
Opgemerkt	10/10/2019	Coded
Politiek aan zet na advies Remkes	26/09/2019	Coded
Remkes: Zaken liggen in een stevig aantal gevallen onnodig stil	04/10/2019	Randomly deselected
Rustiger rijgedrag en lagere snelheden urgenter dan ooit	28/09/2019	Irrelevant
Sinterklazina	05/10/2019	Irrelevant
Verlagen maximum snelheid heeft alleen maar voordelen	04/10/2019	Irrelevant
Werkgevers: Pak stikstofprobleem snel aan	18/09/2019	Coded
„Zolang de wereldbevolking groeit, is er genoeg plastic afval”	14/10/2019	Irrelevant
„Soms ben ik het even echt beu. Niet erg.”	09/09/2019	Irrelevant
Staatssecretaris zat tijdens hittegolf met voeten in teiltje water	02/09/2019	Irrelevant

A.4 Het Financieele Dagblad

Headline	Date	Status
Gijzeling woningbouw door probleem met stikstof is onnodige paniekreactie	02/09/2019	Coded
Schone stal stoot meer stikstof uit dan gedacht	08/11/2019	Coded
Emissiehandel kan efficiënte manier zijn om uitstoot stikstof te verminderen’	03/10/2019	Coded
Onderzoek: lng-truck stoot meer stikstof uit dan dieselwagen	19/09/2019	Irrelevant
Chef stikstof moet nu wheelen en dealen	10/12/2019	Coded
Stikstof uit veeteelt? Deze machine lost het probleem op	21/09/2019	Coded
Politiek en bedrijfsleven keken uit naar stikstofadvies	26/09/2019	Coded
Bouwers komen met megaschadeclaim	14/11/2019	Coded
Haags geloof in innovatie bemoeilijkt de oplossing van het stikstof-probleem	02/11/2019	Coded
Kamer in spagaat door advies over biomassa-bijstook	30/09/2019	Irrelevant
Stikstofcrisis kan zo nog een keer gebeuren, zegt BAM-topman	31/12/2019	Coded
Provinciale knieval voor boze boeren zet relatie met kabinet op scherp	16/10/2019	Coded
Complottheorieën’ over de RIVM zetten stikstofdebat op scherp	10/10/2019	Coded
Conflicterende doelen	21/09/2019	Irrelevant
Kabinet gaat met ‘honderden miljoenen’ de stikstofcrisis te lijf	05/10/2019	Coded
Afscheid van gas uit Groningen gaat veel sneller dan verwacht	11/09/2019	Irrelevant
Hoog tijd dat het Rijk goede intenties omzet in concrete resultaten en de woningbouw vlot trekt	03/09/2019	Irrelevant
Kabinet doorbreekt stikstofimpasse met rekentool	14/09/2019	Coded
Kabinet weet zich geen raad met boerenprotest tegen stikstofbeleid	19/12/2019	Coded
Maatschappelijk onbehagen vraagt heldere keuzen, met alleen overvloed kom je er niet	23/12/2019	Irrelevant
Eerste Kamer stemt morrend in met stikstofwet	18/12/2019	Coded
Stikstofcrisis dwingt bouwers zelfs te werken onder kostprijs	08/11/2019	Coded
Stikstofcrisis legt grote infraprojecten nog jarenlang lam	21/11/2019	Coded
Stikstofplan helpt bouwsector niet	18/11/2019	Coded
De bouwers zijn boos: ‘Regering verzandt in haar milieumaatregelen’	30/10/2019	Irrelevant
Continued on next page		

Table A.4 – continued from previous page

Headline	Date	Status
De overheid heeft ons op de handrem gezet'	31/10/2019	Coded
Half miljard euro voor aanpak stikstofcrisis	02/11/2019	Coded
Na tractoren komen de hijskranen: ook bouw tijgt naar Malieveld	29/10/2019	Coded
Waarom het RIVM onder vuur ligt van boeren	17/10/2019	Coded
Boerenkoepel LTO wijst advies af	26/09/2019	Coded
BRIEVEN	28/09/2019	Irrelevant
Hobbels op de weg bij aanpak stikstofcrisis	08/10/2019	Coded
Kabinet slaat advies over subsidiëren biomassa in de wind	07/10/2019	Irrelevant
Laat markt ruimte voor stikstofgebruik verdelen	11/09/2019	Coded
Ondoordacht' plan D66 voor halvering veestapel valt slecht binnen coalitie	10/09/2019	Coded
Voor onze toekomstige energiebehoefte heeft Nederland nu een stabiele gasector hard nodig	12/09/2019	Irrelevant
Geen vergunning nodig voor koeien in de wei'	20/12/2019	Coded
BRIEVEN	30/11/2019	Irrelevant
Verkoop van nieuwbouwwoningen zakt in: tegenvaller voor Van Veldhoven	13/12/2019	Irrelevant
Zeeschepen aan schonere 'walstroom' krijgen is complex en duur	16/12/2019	Irrelevant
Boeren vragen €3 mrd voor stikstofreductie	21/11/2019	Coded
Bouwers manen politiek in brandbrief tot concrete actie	11/11/2019	Coded
CDA bij vlucht naar voren in achilleshiel geraakt	12/11/2019	Irrelevant
Coalitie steeds verder in het nauw door stikstofcrisis	11/11/2019	Coded
Democratie stuit niet op 'rechtersstaat' maar op een falende wetgever	16/11/2019	Irrelevant
De software laat de transporteur zien of die klus wel iets oplevert'	14/11/2019	Irrelevant
Het liep anders, en dus koopt Reggeborgh VolkerWessels terug	13/11/2019	Irrelevant
Kredietrisico stijgt voor geplaagde staalsector	27/11/2019	Irrelevant
Ruttes grote stikstofuitruil stuit op felle kritiek	14/11/2019	Coded
Rutte waarschuwt: het wordt 'pittig'	25/11/2019	Coded
Saneren van veehouderij biedt oplossing voor drie problemen	25/11/2019	Coded
Stikstofbeleid voor de bühne	15/11/2019	Coded
Toch 130 kilometer per uur, met ureum	16/11/2019	Irrelevant
Verdeelde coalitie 'shopt' in eigen stikstofplannen	15/11/2019	Coded
Boerenprudentie	21/10/2019	Irrelevant
Boze boeren en bestuurlijk onvermogen	17/10/2019	Coded
Coalitie wil vangnet voor bouwsector vanwege problemen rond stikstofcrisis	30/10/2019	Irrelevant
Dringend gezocht: rust op het Malieveld	05/11/2019	Irrelevant
Geen prettige week	19/10/2019	Irrelevant
Heilzaam Halloween	04/11/2019	Irrelevant
Nederland moet snel een extra belasting op vlees invoeren	02/11/2019	Irrelevant
Rutte III trekt de knip, maar de onrust houdt aan	05/11/2019	Irrelevant
Stimuleren is makkelijker gezegd dan gedaan	01/11/2019	Irrelevant
Crisis? What crisis?	28/09/2019	Irrelevant
Groots en meeslepend' wordt het niet meer in Den Haag	12/10/2019	Irrelevant
Kringlooplandbouw voor boeren alleen haalbaar als Europa meedoet'	09/10/2019	Coded
Milieuofficier: wil om wet te handhaven ontbreekt bij Landbouw	27/09/2019	Irrelevant
Remkes: maximumsnelheid omlaag en vervuilende veebedrijven uitkopen	26/09/2019	Coded

Continued on next page

Table A.4 – continued from previous page

Headline	Date	Status
Veestapel moet kleiner en maximumsnelheid lager om stikstofcrisis'	23/09/2019	Coded
Waterbouw mist bijna miljard omzet door nieuwe aanpak chemische stoffen	25/09/2019	Irrelevant
Den Haag trekt geen lessen uit gepolariseerde klimaatdiscussie	14/09/2019	Coded
Druk maakt gasbesluit Wiebes onvermijdelijk	13/09/2019	Irrelevant

B

Codebook

Central to this study was the codebook used in the content analysis. Below the specific codebook that was used is shown.

B.1 Basics

- ▶ **Coder ID** Specific ID for each independent coder
- ▶ **Article ID** Specific ID for each individual article
- ▶ **Title of the article**
- ▶ **Newspaper**
- ▶ **Date of publication**
- ▶ **Word count**
- ▶ **Author (enter 0 if not present)**

B.2 Framing

These questions are based on the frameset by Semetko and Valkenburg [42].

Answer each of the questions stated below with either yes (checked) or no (unchecked) based on a single sentence. Paste the sentence in the cell next to the checkbox.

Attribution of Responsibility

- ▶ Does the story suggest that some level of government has the ability to alleviate the problem?
- ▶ Does the story suggest that some level of the government is responsible for the issue/problem? Disqualified for analysis
- ▶ Does the story suggest solution(s) to the problem/issue?
- ▶ Does the story suggest that an individual (or group of people in society) is responsible for the issue/problem?

Human Interest

- ▶ Does the story provide a human example or “human face” on the issue?
- ▶ Does the story employ adjectives or personal vignettes that generate feelings of outrage, empathy-caring, sympathy, or compassion? Disqualified for analysis
- ▶ Does the story emphasize how individuals or groups are affected by the issue/problem?
- ▶ Does the story go into the private or personal lives of the actors?

Conflict

- ▶ Does the story reflect disagreement between parties-individuals-groups-countries?
- ▶ Does one party-individual-group-country reproach/blame another
- ▶ Does the story refer to two sides or to more than two sides of the problem or issue?

Morality

- ▶ Does the story contain any moral message?
- ▶ Does the story make reference to morality, God, and other religious tenets?
- ▶ Does the story offer specific social prescriptions on how to behave?

Economic Consequences

- ▶ Is there a mention of financial losses or gains now or in the future?
- ▶ Is there a mention of the costs/degree of expense involved?
- ▶ Is there a reference to the economic consequences of pursuing or not pursuing a course of action?

B.3 Actors

For each actor that is mentioned by name, note their last name in the first column and their initials (if present or derivable) in the second. Do this by the order they are mentioned in the article. Also check the highlight section! Note their source as indicated by the sources table. Choose the source that is most prevalent in the article.

Actors	Name	Initials	Source
<i>Example</i>	<i>Smith</i>	<i>JB</i>	<i>Commentator</i>
Actor 1			
Actor 2			
Actor 3			
Actor n			
Actor ..			
Actor 15			

C

Full Venn-diagram

In the results section a partial Venn-like diagram is shown that illustrates the relationship between actor categories and in what articles they appear. For clarity that diagram only showed four of the nine actor categories. In the diagram below all categories are included in the diagram.

The diagram shows what number of articles within the sample feature what combinations of actors. The large number in each circle represents the article count (Also reflected in the size of the circle), while the numbers in brackets represent the combination of actors present. Created using nVenn program by Pérez-Silva, Araujo-Voces, and Quesada

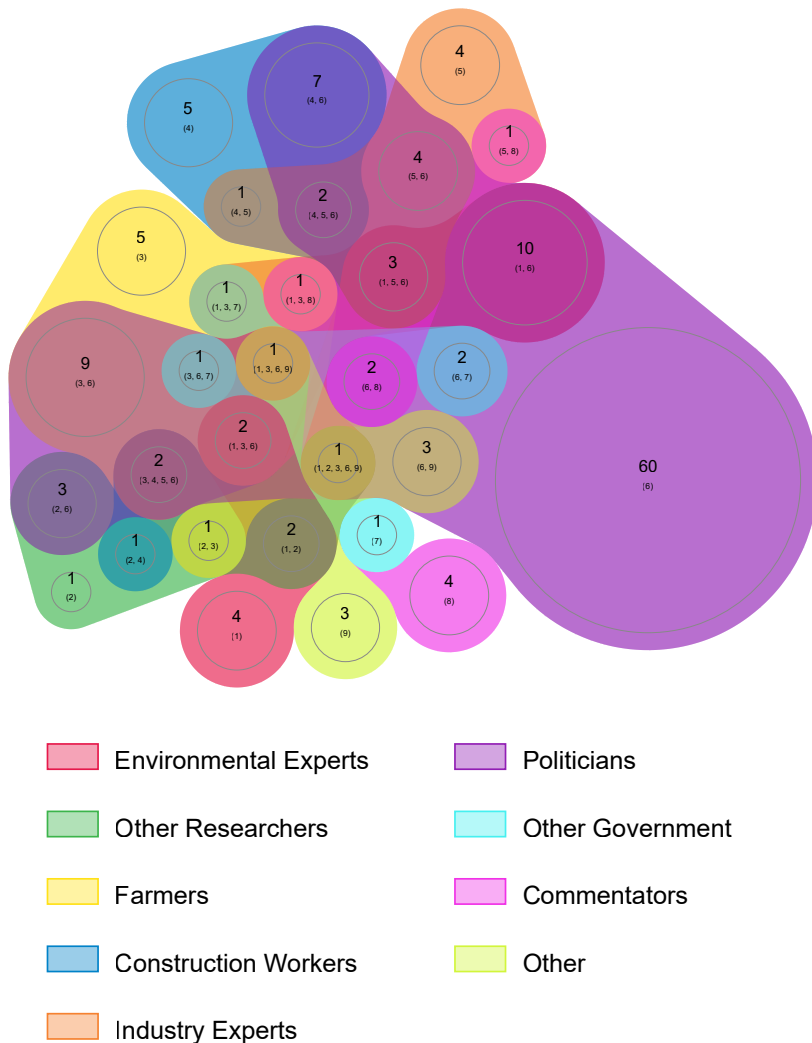


Figure C.1: Full Venn-like diagram containing all nine actor categories.

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