

Framing of compliance

An analysis of stakeholder communication about compliance
with the Manure Act

Datum	27 juni 2016
Status	Final

Colofon

Author:	E.B.Verhofstad
Student nr:	3998800
tel:	06-81468225
e-mail:	e.b.verhofstad@students.uu.nl
e-mail during internship:	Erik.Verhofstad@minienm.nl
Supervisor:	C. Dieperink
Second reader:	A. Barendregt
Internship organisation:	Ministerie van Infrastructuur en Milieu
Supervisor:	J. Busstra
Tel:	06 – 5131 9988
Email:	Jan.Busstra@minienm.nl

Summary

Reaching the Dutch water quality goals, as determined in the Water Framework Directive is currently threatened. One of the causes of this threat is the abundance of nitrogen and phosphate in the water bodies. There are a number of sources, yet leaching from agricultural parcels is the primary contributor for nitrogen and phosphate in water bodies.

Concerned with the impact of this leaching the Dutch government has introduced an array of legislation with regard to the production, transport and application of manure on arable land. The aim of this legislation is to ensure that the quality of ground and surface water allows the water to be used for a variety of purposes.

It is suspected that a number of farmers apply manure in excess of the usage norms. The government has been advised to consider how enforcement could be improved. Given that the Ministry of Infrastructure and the Environment is not responsible for the enforcement of the Manure Act, it is dependent on the actions of the Ministry of Economic Affairs which holds this responsibility.

The aim of this study is to determine which are the main factors that the different stakeholders use in the public debate about the Manure Act. This may make it possible to determine a course of action for the Ministry of Infrastructure and the Environment to improve compliance through different approaches than enforcement.

To be able to investigate the public debate about the manure act this study was carried out to develop a conceptual model of different factors which influence compliance.

To determine which of the identified factors in this model are most relevant a qualitative content analysis was carried out on articles which have appeared in the trade media, as well as a number of other sources.

It is assumed that the trade journals address the issues that play a significant role for their target audience. By comparing these results it was possible to identify the theoretical factors that the different stakeholders actually address and to observe differences between the targeted audiences.

A difference in the factors that are mainly addressed by the agricultural sector and those that the government addresses was identified, where the agricultural sector focuses on the business environment in which the farmer operates, and on the individual values of the farmer.

Examples of the factors that the agricultural sector focusses on are the presence of swindlers within the business environment, or the wish to ensure that the family company is passed onto the next generation.

These are factors which are less frequently addressed by the government which tends to focus its attention on the sanctioning role it fulfills and the importance of knowledge and science to achieve the goals behind its policies.

The difference in the factors that the stakeholders address in their communication could be a hinderance to a fruitfull collaboration. Efforts should focus on mutually beneficial projects which take both the interests of the government, and the agricultural sector into account.

Index

Summary 5

1	Introduction 9
1.1	Manure as a policy issue 9
1.2	Knowledge gap 10
1.3	Research aim and main question 10
1.4	Outline of the report 12
2	Which theoretical factors could be used in the public debate on compliance? 13
2.1	Introduction 13
2.2	Sociological point of view 13
2.2.1	The importance of goals 13
2.2.2	Social influences through nudges 14
2.2.3	Decision-making processes 16
2.2.4	Compliance in small and medium sized enterprises 17
2.2.5	Conclusion 19
2.3	Criminological point of view 19
2.3.1	The position of "green criminology" 19
2.3.2	Table of Eleven 21
2.3.3	ISOD model 23
2.3.4	The function of shaming 24
2.3.5	Conclusion 25
2.4	Adapting the Muijnck-model to a conceptual model 26
3	The influence the theoretical factors have had in legislation 29
3.1	Introduction 29
3.2	Manure legislation and the nutrient cycle 29
3.3	Current developments in the legislative system 30
3.4	Other relevant developments related to compliance with the Manure Act 34
3.5	Conclusion 37
4	Methodology 39
4.1	Introduction 39
4.2	Method 39
4.3	Article selection criteria 40
4.4	Coding process 40
4.4.1	Classifying the source and target audience 40
4.4.2	Coding the articles 41
4.4.3	Coding examples 42
4.5	Analysis 45
5	Results 47
5.1	Introduction 47
5.2	Reference to factors in articles 47
5.2.1	Exclusion of a number of articles 48
5.3	Average usage of the different factors in the studied articles 49

5.4	Relevance of the different factors for the agricultural sector	53
5.5	Factors that the government addresses	54
5.6	Differences between the agricultural sector and the government	54
5.6.1	Sanctioning role of the government	55
5.6.2	Facilitating role of the government	55
5.6.3	Social environment	57
5.6.4	Knowledge and science	58
5.6.5	Individual values	59
5.6.6	Goals and means	59
5.6.7	Influence of business environment	61
6	Conclusion, discussion and recommendations.	63
6.1	Conclusion	63
6.2	Discussion	64
6.2.1	Comments on the conceptual model	64
6.2.2	Gain further experience with the Qualitative Content Analysis for policy studies.	64
6.2.3	Subjectivity of the method:	65
6.2.4	The average farmer does not exist	66
6.2.5	Incentives in the current system	66
6.3	Recommendations	67

Bibliography 69

Appendix A: An overview of the development of the Dutch manure policy up until 2009. 75

Phase 0: 1974 - 1986	Identification of manure as an issue, and the Green Front	75
Phase 1: 1987 - 1990	Manure Act is accepted and a stabilization of production	76
Phase 2: 1991 - 1994	"Manure as a mineral problem for the individual farmer"	77
Phase 3: 1995 - 2000	Towards balanced fertilization, "Manure as innovation and volume problem"	78
Phase 4: 2000 - 2003	Manure and the Water Framework Directive	79
Phase 5: 2004 - 2009	Implementing the ruling, and the Derogation	80

Appendix B: Overview of articles used for the text analysis 82

Appendix C: Overview of articles used for inter coder analysis 83

1 Introduction

1.1 Manure as a policy issue

Within the European Union, a number of directives have been accepted to ensure the protection of water bodies. Both the Nitrate Directive (Council of the European Union 1991) and Water Framework Directive (European Parliament 2000) aim to reduce the anthropogenic influence on water bodies. To ensure cooperation within river basins the Water Framework Directive contains the obligation for each nation to bring water bodies to a good state. This is done through a process of river basin management plans which describe the water issues which a particular river basin faces, and upcoming projects which are aimed at resolving these issues. The river basin management plans have a planning period of 6 years.

The Dutch river basin management plans for the planning period 2016-2021 are finalized. In these plans a series of measures are proposed which the water authorities will take to ensure that the water quality goals which follow from the Water Framework Directive are attained within the individual river basins.

Given the influence that the application of fertilizer to agricultural parcels has on the water quality (Council of the European Union 1991) and the recommendation that enforcement of Manure Act is to be improved (van Gaalen et al 2016) it can be concluded that the Dutch fertilizer policy can be seen as a highly specialized form of Water Governance.

To evaluate if the effectiveness of the planned measures is large enough that the Netherlands will reach its Water Framework Directive goals, the Netherlands Environmental Assessment Agency carried out an ex-ante evaluation of the proposed measures. (van Gaalen, Tiktak et al. 2015; van Gaalen et al 2016)

In this evaluation one of the characteristics of the Dutch system of environmental legislation comes to the fore:

- The municipalities and water boards are responsible for the permitting and enforcement of most activities which take place in the environment, the main source of nitrogen and phosphate in the ground and surface water bodies comes from agricultural sources. (van Gaalen et al 2016)
- From its heritage as the Ministry of Agriculture, the Ministry of Economic Affairs has the prime responsibility for the legislation and enforcement surrounding the use of fertilizers and pesticides.

In effect this means that the Minister of Infrastructure and the Environment is responsible for the attainment of the goals from the Water Framework Directive, but for the attainment of nutrient goals is dependent for a large part on the efforts of the Minister of Economic Affairs.

The legislation which governs the use of manure as fertilizer is the Dutch interpretation of the Nitrate directive. This directive is primarily aimed at protecting drinking water sources, but also aims to ensure that eutrophication does not become a problem. This clearly indicates that the Nitrate Directive has to be seen in conjunction with the Water Framework Directive.

1.2 Knowledge gap

Given the expected increasing impact that leaching of nutrients from agricultural parcels will have on the water quality the attainment of Water Framework Directive goals is under threat. (van Gaalen et al 2016) Amongst others the recommendation is given that the responsible authorities both investigate the scope of the problem, and if possible to take measures to improve compliance with the Manure Act through better enforcement. (van Gaalen, Tiktak et al. 2015)

This study was carried out to aid the Ministry of Infrastructure and the Environment in determining what the Ministry can do with this recommendation.

To be able to do something with this recommendation, it is required to understand the motives people have for complying with legislation.

A number of authors have used focused on the motives for farmers to comply with legislation (Wiering 1999, Winter and May 2001, Backbier & Van Erp 2002, Herzfeld and Jongeneel 2012, Barnes, Toma et al. 2013). But the majority of studies concerning the use of manure focus on issues in the manure policy cycle. (van Rijswijk 2004; Wright 2006; Hees Rougoor & Van der Schans 2012; Ozanne, Hogan et al. 2001; Oenema, Van Keulen et al. 2011)

None of these studies focus on the way in which different stakeholders, such as the government, NGO's and the agricultural sector, address these motives or factors for compliance in the public debate on the Dutch manure policy.

If the framing that is used is better understood, it may be possible to use this to adapt the way in which the debate about normative behavior within the manure management chain is carried out. This will then hopefully lead to wider support for the manure policy within the agricultural sector.

1.3 Research aim and main question

The aim of this study is to improve the understanding on what the essential ingredients are for an effective policy intervention related to both behavior of individuals and the attainment of environmental goals. For this it is necessary to understand what kind of framing the stakeholders display in the public debate on compliance with the Manure act.

Central to this project is the following research question:

- *In what way differ the factors that stakeholders address in their public communication about the compliance with the Manure Act??*

To be able to answer this research question, several sub questions have to be answered first:

1. What factors could different stakeholders in theory address in their communication about compliance issues?

A literature review has been carried out to identify factors that influence behavior according to a number of different fields of study. The factors that are identified will be used to come to a conceptual model explaining the different factors inducing compliant behavior.

2. In what way are these factors elaborated in the current system of manure legislation?

It was expected that the different factors from the conceptual model will be reflected both in the debate about agricultural developments and the system of legislation because the public debate has influenced the legislative system.

To determine if this is the case, an analysis of the current system of legislation that governs the use of manure and current developments in the agricultural sector will be made.

3. Which stakeholders address which factors in their public communication?

To be able to come to a conclusion on which of the factors is most relevant for compliance with the Manure Act an analysis will be made on the use of the factors in both trade media and media aimed at the general population. This will make it possible to determine how the different stakeholders adjust their message based on the target audience.

The scheme in figure 1 shows how these sub questions are used in this study to find an answer to the research question.

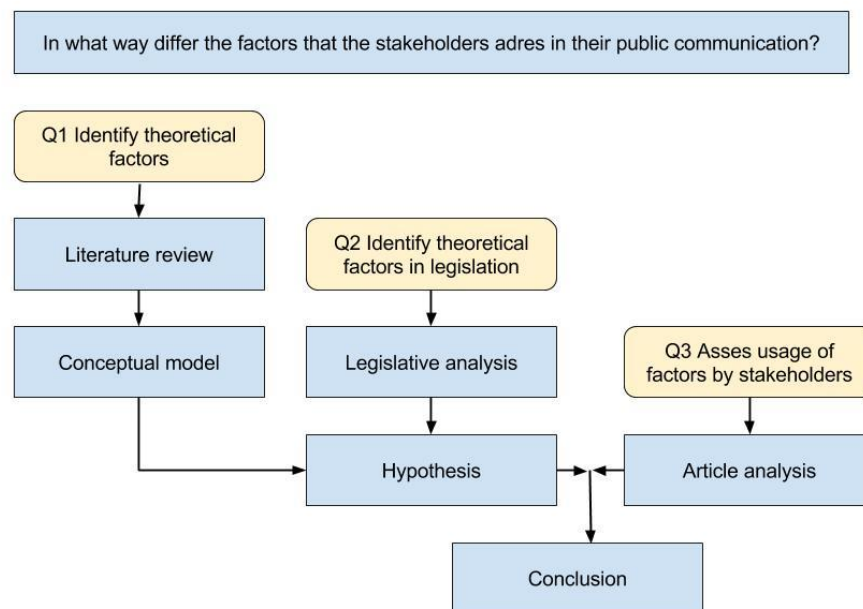


Figure 1: The research framework in which the sub questions fit

1.4 Outline of the report

In the second chapter the focus is on the different factors that are identified in different fields of study as relevant to behavior that is in compliance with legislation. This provides an answer to the first research question and results in a conceptual model which can be used in a further analysis to determine which of the different factors prevail in the public debate.

Background information on the way the current Dutch legislative system surrounding the Manure Act works, and what current developments are influencing this system is described chapter three. The developments which relate to different factors from the conceptual model are identified.

To be able to determine to what extent the factors are used in different media, and how the different stakeholders use these factors, a research method is described in chapter four. This chapter focuses on the methodology of the Qualitative Content Analysis, the choices that were made in the selection of articles and the coding guidelines.

The results of this analysis can be found in chapter five which contains the results of the Qualitative Content Analysis for the total body of text and an analysis of the factors that the agricultural sector and the government use in their communication. Chapter six contains the conclusion, reflects on the vulnerabilities and possible points of improvement of this study. Also a number of recommendations that follow out of this study are given.

Appendix A covers a brief history on how the Dutch system of manure legislation came into being. Appendix B and C contain overviews of the articles that were used for the coding analysis, and inter coder analysis.

2 Which theoretical factors could be used in the public debate on compliance?

2.1 Introduction

There are a large number of both environmental and social factors at play which influence the decision of an individual to behave in compliance with expected norms. To be able to determine which factors are used in the public debate about the Manure Act, first of all an overview of theoretical factors that can be used has been made. In this chapter an analysis is made of factors that in different fields of study have been identified as relevant factors in influencing the behavior of people. The initial focus lies on sociological points of view, followed by more criminological and business oriented points of view. The factors that are identified in these different studies are then used to come to a conceptual model which provides insight in reasons behind compliant behavior.

In light of the interaction between these varied fields of study, Heath notes that generally assumed motives and concepts which have been rejected from a criminological point of view, are often still considered valid concepts within the field of business ethics.(Heath 2008) To ensure validity of the conceptual model, when assessing different theories particular attention will be paid to factors that different fields of study identify as relevant for compliance.

2.2 Sociological point of view

Sociologists are interested in the reasons why people make decisions. From social sciences a similar interest has lead to a wide range of publications. In this paragraph a number of important theories will be addressed with the aim to come to a conceptual model that contains both criminological and sociological elements which can be used in an analysis to determine how stakeholders frame their message in the public debate on the manure policy.

2.2.1 *The importance of goals*

The decision to disregard a social norm is dependent on a large number of variables. These variables play a role when a decision is taken to strive for a certain goal. How an individual perceives his goals influences which compliance factors come to the forefront.

A number of different goal frames have been distinguished, each with certain characteristics.(Lindenberg and Steg 2007)

The hedonic goal: This goal frame relates to the benefits the person gains in one particular situation. Typically the result of hedonic goal attainment is an improvement in how the person feels due to an action which does not take to much effort. An example of hedonic goal attainment would be the feeling of happiness/relief when one sits down after finishing household chores.

The gain goal: This goal frame relates to the influence that actions have on personal resources. The main motivator is the realization of an improvement in personal resources, or discouraging the decrease of personal resources. The process of setting a gain goal covers the actions over the medium to long term, and differs from the hedonic goal in that the actions which are taken follow out of a conscious decision to strive for a certain goal.

A normative goal: A person can also set a goal which is strongly related to the desire to conform to social norms. In this case the immaterial gains of goal attainment outweigh the material costs. Generally attainment of normative goals takes place over a long time span. A good example in the case of agriculture is the transfer of the company from one generation to the next.

Often these different goals are at play simultaneously, but in different strengths. Most often hedonic goals dominate the decision making process, due to the short term gratification.

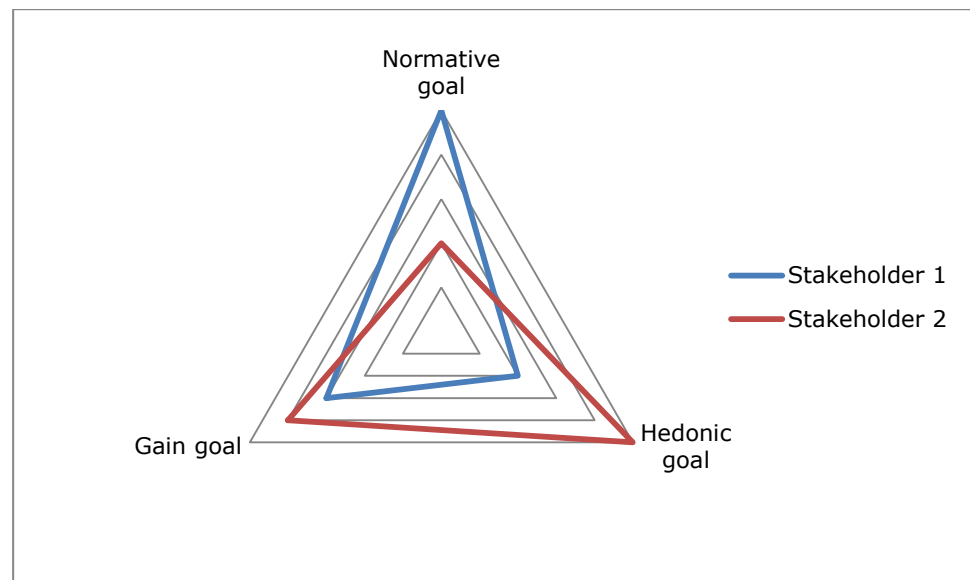


Figure 2: Different stakeholders can have different goals (Lindenberg and Steg 2007)

As shown in figure 2, in the case of complying with environmental legislation the goal that one of the stakeholders has decided upon a set of goals with a mainly normative character, which may or may not conform to the world view of a different stakeholders. If these views do not match, compliance may be negatively influenced.

“Interventions could be aimed at rendering gain and hedonic background goals less incompatible or even compatible with normative goals, that is, making environmentally friendly behavior more attractive or pleasurable via the use of incentives, and/or behavior with negative environmental impact less attractive or pleasurable by the use of disincentives. Alternatively, gain goals may be made more compatible with a normative goal-frame by influencing the range of aspects considered as gain.” (Lindenberg and Steg 2007)

Application in this study

Whether references to these different goals can be recognized in the public debate remains to be seen, as it is expected that the main actors in the public debate are representatives of groups of stakeholders who adjust their message based on the target audience and will be based mainly on normative goals.

2.2.2

Social influences through nudges

One way in which authorities can influence the worldview of an individual is through the introduction of nudges alongside a policy change. (Sunstein 2014) Well designed nudges have the possibility to improve compliance for a relatively low cost, while maintaining the freedom of choice for individuals. Sunstein has catalogued the following nudges as relevant for policy makers to consider:

1. Default rules
Default rules improve compliance due to the fact that they are valid for everyone. Having to actively choose for a different option provides a nudge to stick with the default option.
2. Simplification.
Understanding how legislation works, and what actions to take to comply with the legislation is an important factor in compliance. Complex legislation that is hard to understand by those that are affected by the legislation will likely have less compliance when compared with a legislation that is simple to understand.
3. Use of social norms.
People are influenced what is considered acceptable within their social environment. Explicit use of these social norms by the government can lower the threshold for an individual.
4. Increases in ease and convenience
People often choose to take the option that is most convenient. Efforts to increase the ease of compliance will likely lead to increases in the compliance.
5. Disclosure
The government holds, possibly embarrassing, information on the behavior of individuals and companies. Disclosing, or the threat of disclosing this information to the general public can provide a motivator for compliance.
6. Warnings, graphic or otherwise
Warning individuals on the negative consequences that a choice can have, can reduce the amount of people who make a certain choice. A good example is the use of warning labels, and pictures on cigarette packages.
7. Precommitment strategies
While people may have good intentions external pressures can cause them to delay implementation of these intentions. People who precommit to a certain path, for example by signing up to a program, are more likely to fulfill their intentions.
8. Reminders
People may choose to delay an action until a further point in time. When other matters take priority, the original plan may be forgotten. By reminding people in such a way that action can immediately be taken, compliance can be improved.
9. Eliciting implementation intentions
People who have publically committed to a certain course of action are more likely to actually take this course. A good example of such a strategy is the involvement of the Dutch Federation for Agriculture and Horticulture in the Treaty of Amersfoort.
10. Informing people of the nature and consequences of their own choices.
Governments hold a lot of information about choices that people have made in the past and the consequences of these choices. Making this knowledge available can induce people to make other decisions when faced with a similar situation.

Application of these nudges at the appropriate moments can aid in achieving policy goals. The Dutch Council for the Environment and Infrastructure has developed a framework which can be used to identify appropriate nudges. (Raad voor de Leefomgeving en Infrastructuur 2014)

The main downside I see for the introduction of nudges in the Dutch manure policy, is that the current policy is the result of 30 years of debate, enforcement experience, EU regulations, and politically sensitive issues, and is relatively slow to change. An effort to introduce nudges into this system will likely take a relatively long time before the benefits become clear.

Another downside has been identified by Lindenberg and Steg.
“Thus, the selection of strategies to change behavior should be based on analyses of factors inhibiting engagement in pro-environmental behavior. Although these strategies may increase engagement in the particular behavior, chances are that people will revert to their previous behavior as soon as the (dis)incentives cease” (Lindenberg and Steg 2007)

Application in this study

Depending on how policies are introduced, the government is able to facilitate developments which align with its own policy goals. The model should include a way to distinguish this facilitating role.

2.2.3 *Decision-making processes*

In a business, an entrepreneur is constantly making decisions on what actions to take to improve the viability of the business. As part of the evaluation of the Manure Act in 2007 the way in which stakeholders in the agricultural sector make sense of the legislation was investigated. (Termeer, Breeman et al. 2007)

One of the conclusions of this study concerned the way in which decisions are made on farms. This process is described as a fragmented decision making funnel, with 4 different distinct phases:

Informing

In the informing phase the farmer is actively looking for information on a certain subject, where both experiences of advisors, colleagues, the internet and the authorities is used.

Discussion

Mainly in fragmented networks of likeminded people the farmer discusses topics with colleagues and advisors to form an opinion.

Advice

Out of the discussion, a general line of thought follows. In this phase the farmer mainly approaches the advisors and accountant to gather input on the available means to reach a certain goal.

Decision

After gathering all this input the farmer makes the decision on how to achieve a certain goal. The main parties which are involved at this step in the process are the farmer, his or her partner and the accountant.

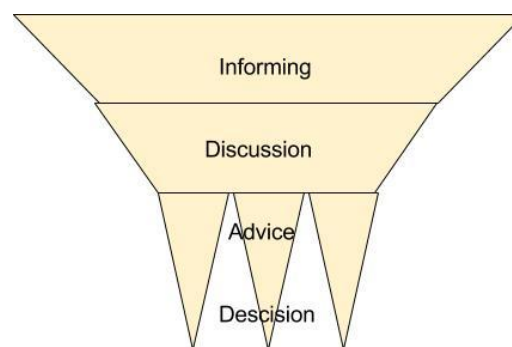


Figure 3: The fragmented decision making funnel(Termeer, Breeman et al. 2007)

One of the main conclusions that Termeer draws in relation to factors which influence compliance is that in the agricultural sector the financial costs and benefits

of measures often outweigh the other factors. (Termeer, Breeman et al. 2007) This contrasts with the conclusions of Denkers, who states that moral convictions play at least an equally important role in the decision-making process. (Denkers, Peeters et al. 2013)

It also supports the idea that with methods like the Table of Eleven, the influence that governmental actions have on the decision making process should not be overestimated.

Application in this study

In the process before a decision is made, the individual is open to receiving new ideas and experiences of others. The role that practical knowledge and science have in the informing phase will have to find a place in the model. Also, due to the fact that the role for the government is limited to the informing phase, I believe that in a model for compliance, the governmental influence should be present, but not paramount.

2.2.4

Compliance in small and medium sized enterprises

The behavior and attitude of an individual in an organization towards compliance tend to be dependent on the role that the individual fulfills within a company. Individual employees tend to reflect normative behavior to their direct colleagues, while the intentions of company directors generally reflect the normative behavior of the sector. (Denkers, Peeters et al. 2013) In larger companies this can lead to an incoherent ethical culture within the company, where there can be a different interpretation between management and ordinary employees in what is seen as professional ethical behavior. (Kluin 2014)

Due to the fact that a large percentage of the agricultural companies are family owned and operated companies, it is likely that there is a more coherent ethical culture due to the fact that the distinction between micro- meso- and macro levels of organization is relatively slim in family owned farms. This is in line with the concept of the fragmented decision making funnel. (Termeer, Breeman et al. 2007)

Brummelkamp distinguishes two main factors which influence compliance in small and medium sized enterprises, environmental and organizational factors. (Brummelkamp & Suyver 2004)

These environmental factors are described as the external factors which influence the decision making process, and are divided in a number of sub-categories.

- Administrative/governmental: is a category in which a number of indicators give an idea on how the entrepreneur perceives the government. This is influenced by the role that the enforcing agency has, the effectiveness of its enforcement efforts. Aside from enforcement efforts, the clarity of rules and legislation, and the speed with which government introduces rule changes also influences how the government is perceived.
- Entrepreneurial factors: The organization wishes to use its means to maximize production. A number of factors influence the decision-making process, such as the pressure of the market prices on the operational results of the company. In this the presence of swindlers in the market can also influence market conditions. Other factors include the general time span of planning with which the entrepreneur deals, and the common return of investment rate that is used in a sector.
- Social factors also play a role, mainly through the social pressure that an individual experiences, and the importance that that individual gives to maintaining a positive image.

Aside from these environmental factors Brummelkamp identifies a number of internal organizational factors also influence the decisions that an entrepreneur makes in relation to compliance.

- Compliance as rational choice.
The classical approach when looking at a business, is that the entrepreneur is using his assets to maximize profits. When the costs of complying with the legislation outweigh the benefits for the entrepreneur it is assumed that the likelihood of non compliant behavior increases.
- Compliance as a consequence of professionalism.
If the legislation conforms with what the entrepreneur perceives as fitting with his professional standards, compliance will be easier to reach. This is especially the case for legislation that comes with a number of technical and administrative measures.
- Compliance dependant on the morals of the enterprise
Any organization develops its own set of morals which govern the way in which business is done and discussions are led. (Frouws 1994). These morals have an important influence the effort that the organization puts into achieving compliance.

For small and medium sized entrepreneurs a conceptual model has been developed which identifies a number of important factors for compliance, mainly categorized as opportunities and motives. (Muijnck 2002).

The opportunities for compliant behavior that a business perceives consist of:

- The administrative environment which regulates the conditions under which the business operates.
- The availability of knowledge and science that the entrepreneur is able to use to generate profit.
- The social environment of which the entrepreneur is a part.

The motives for compliant behavior are influenced by:

- The norms and values of the entrepreneur and his employees.
- The goals and means that the entrepreneur has available.
- The business environment in which the entrepreneur is operating.

The advantage of the factors that Muijnck has identified is that they form a generic model in which the factors that have been identified by the other authors fit.

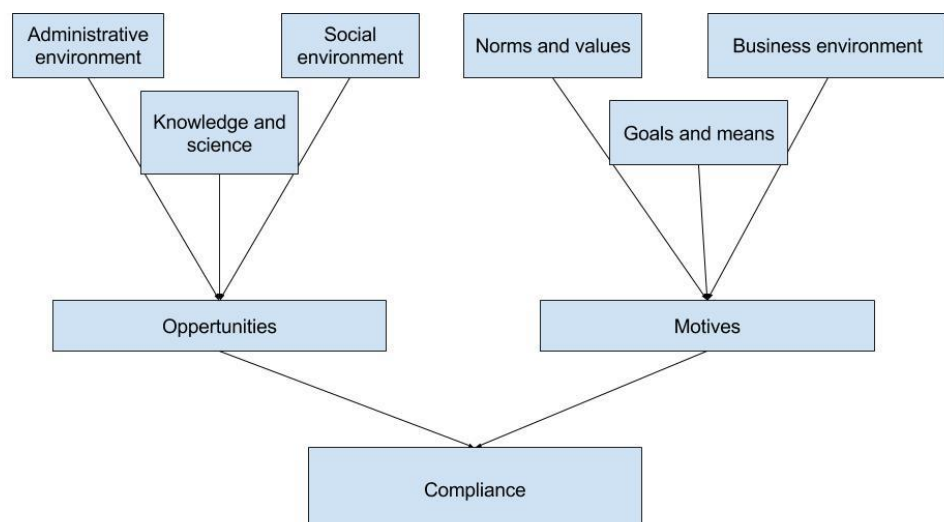


Figure 4: Model of the factors influencing compliance according to Muijnck

What I consider to be the downside of this model is that the administrative environment has a dual role of facilitating development and sanctioning transgressions which influences the opportunities for compliance that an entrepreneur sees.

Appliation in this study

The model designed by Muijnk contains an extensive overview of the different relevant factors which influence compliance. It will form the basis of the conceptual model for this study.

2.2.5 *Conclusion*

From this analysis a number of motives for compliance come to the fore that are less pronounced in criminological studies. These are the facilitating role that the government can have (Raad voor de Leefomgeving en Infrastructuur 2014; Sunstein 2014), the influence of the business environment on decision making processes (Termeer, Breeman et al. 2007), and goals that an individual has for himself. (Lindenberg and Steg 2007)

2.3 **Criminological point of view**

Given the interest that governments have in changing behavior of individuals or groups through issuing legislation, the interdisciplinary field of criminology came into being to provide a scientific framework for understanding and influencing non-compliant or even criminal behavior.

Influenced by both social and behavioral sciences, criminology has been exploring the motivations behind crime. This has lead to a wide range of theories on the causes of criminal acts, and ways for society to cope with these. (Piquero, Jennings et al. 2010) In this paragraph the focus will be on green criminology, a number of criminological models and the function of shame.

With the emerging concern for the human impact on the environment in the 80's, national governments introduced legislation to protect the environment. (Vinke and IJff, 2009) To this development the field of criminology adapted, to the extent that the fields of green and/or environmental criminology are now considered specific fields of study. (Lynch and Steretsky, 2014)

2.3.1 *The position of "green criminology"*

Traditionally criminology has focused on the study of crime between persons. With the increasing interest in the regulation of human influences on the environment, the field of green criminology is gaining traction. In an interview, Rob de Rijck, a public prosecutor aptly concludes that "*In environmental crime there is no corpse*" (Bressers 1994; Dongen 2014)

The field of green criminology is different from the more traditional criminology in the sense that the perception that environmental non-compliance is considered a crime is a relatively new concept. (Stretesky and Lynch 2014)

The reason for this lies with the factors which are critical for universal condemnation as identified by Ellis. (Ellis 1988):

- There should be an intent for the act to occur in the sense that most people could have foreseen the consequences, and the person who performed the act had reason to desire those consequences.
- A specific victim of the act should be identifiable.
- The victim should be a member of the same social group as the person making the evaluative response.
- The act should not simply serve to defend oneself or one's possessions (including spouses and children).
- The crime should not threaten to overthrow a disliked government.

A regular occurrence in the case of green crimes is the lack of a clear identifiable victim. Aside from making it harder to prove that a crime happened, this also enables perpetrators to use neutralization techniques to influence how the public perceives the crime. (Sykes and Matza 1957)

However, when the consequences of green crimes are investigated, the concept of a victimless crime breaks down.

In the case of the application of manure, the excess nutrients that leach to ground- and surface waters poses a threat to the drinking water supply. (Wuijts, Bogte et al. 2014) The victim in that case would be the consumer, as the drinking water companies have to invest in methods to ensure that the quality of the drinking water complies with the Drinking Water Act. As these costs have to be recouped, the price of drinking water for the consumer would increase.

This means that instead of a victimless crime, a green crime is a crime where the costs of coping with the consequences of the crime are externalized to civil society. (Plater 1993) This is in line with the definition that is given by Lynch and Long:

"We posit that a green crime is a behavior that produces unnecessary ecological harm—harms that can be avoided by organizing production in different ways than are currently practiced. "(Lynch, Long et al. 2013)

To ensure that the European states take measures to ensure that polluters are held responsible for their influence on the environment, the European Parliament established the Environmental Liability Directive. (European Parliament 2004)

It is estimated (Jongeneel, Polman et al. 2014) that the externalized costs of Dutch farming practices are 35% of the total value added. The majority of these external costs relate to emissions to the air, while 17.6% of the external costs relate to emissions to water, that is about 5% of the total added farming value. Due to this externalization of costs, non compliance with the Manure Act is considered to be a green crime. In the Netherlands this is operationalized through the inclusion of the manure legislation in the Economic Offenses Act.

Application in this study

Because the main motive for non compliance with environmental legislation is assumed to be the externalization of costs, in the conceptual model a place has to be found for the monetary gain that non-compliance can yield to an individual.

2.3.2 Table of Eleven

To gain insight in compliance behavior in 1994 a tool, the Table of Eleven, was developed with the goal to aid Dutch enforcement agencies in gaining a better understanding of the motives behind the choices that individuals make. (Ruimschotel, Van Reenen et al. 1996) The Table of Eleven gains its name because it identifies 11 different factors which contribute to compliance within a target group. Within the Netherlands, this tool is widely used to identify strong and weak points for compliance in a wide range of cases. (Backbier & Van Erp 2002) (Ostrovskaya and Leentvaar 2011)

The factors of the Table of Eleven can be distinguished in 2 main types of factors: factors of spontaneous compliance and factors of induced compliance.

Factors of spontaneous compliance are the factors which influence the behavior of the individuals through the environmental cues that they pick up.

As an example: The reaction of one's environment to certain types of behavior can lead to the individual being excluded from certain social gatherings.

The following factors fit in the category of spontaneous compliance:

1. Knowledge of the rules
Knowing that there are rules governing a certain action is an important step in complying with those rules. However, compliance is also influenced by the clarity of the rules, where vague or difficult rules negatively influence compliance. One of the best examples of this issue is in the slogan of the Dutch Tax and Customs Administration: *"We cannot make it any more fun, but we can make it easier"*.
2. Costs/ benefits
The goal of an entrepreneur is to earn money through an activity. If complying with the rules benefits the entrepreneur financially or in another way, the motivation to comply will be higher than when compliance bears a high cost. Aside from financial costs and benefits, immaterial benefits also play a big role. For example, if compliance increases the likelihood that a family business can be transferred to the successor the financial costs of compliance may be less of an issue.
3. Degree of acceptance
The acceptance of a certain policy goal, and the measures that are designed to reach that goal are an important driver for compliance. Often when new legislation is introduced which does not follow the interest of a particular group, the degree of acceptance of the legislation within that group can be an issue. A good example was the introduction of the Dutch Law on the Pollution of Surface waters, where especially industrial companies heavily contested the associated charges in court. (Vinke 2009).
4. General norm conformity
In an environment where people generally conform with the authority of governments or institutions, new rules generally are better received than in environments where this authority less accepted.
5. Social control
Being addressed by one's peers for non compliant behavior is an important mechanism which influences compliance. This can be done informally between individuals, or in a more formal setting, such as through a voluntary certification scheme.

Aside from the factors of spontaneous compliance, *factors of induced compliance* are the factors which influence the behavior of the individual through the efforts of the enforcing agency.

6. Chance that others report a violation to the authorities.
The perceived chance that a violation of a rule is reported to the responsible authorities by others can influence the behavior of an individual. This factor is closely related to social control, but differs in that the authorities are given the role to address the individual.
7. Chance of inspection
The perceived chance that the performance of an organization is inspected by the authorities influences compliance behavior of the organization. An example is a noted increase in compliance with environmental legislation when the number of inspections in a certain sector is increased for a relatively brief period.
8. Chance of detection
Being inspected by an authority is one thing, however if the chance that a certain violation is actually detected during the inspection is perceived to be slim, this can also affect compliance. The chance that a violation is detected is related both to the practices in the field that is being governed, and on the way that the legislation has been written to relate to these practices.
9. Selectivity
Under pressure to both maintain a high efficiency and to target “the bad guys” inspecting authorities will focus their efforts. The perception that a violation may be detected by the authorities through a selective controls can play a role in compliance.
10. Sanction certainty
This factor indicates the certainty that the target group has that a detected violation will be sanctioned. An example is that enforcement of traffic speeds through the use of section control systems is very effective, because the high certainty that a sanction will be issued for violations.
11. Sanction severity
The height and type of sanction for a violation can be a factor in compliance. For example, for a person a fine based on a day-fine system is more likely to be experienced as severe, than a fine based on a standardized system. (Lappi-Seppälä 2006)

These eleven factors together form the basis of the Table of Eleven. The composition of the tool makes it clear that there are multiple factors at play, and that both the sanctioning role of the government, the social environment, and perceived goal achievement can influence the actions of an individual.

Operationalisation of the Table of Eleven.

Within the Dutch government, the usage of the Table of Eleven is relatively popular. The main reason for this is that the Dutch Centre for Crime Prevention and Safety have made a tool available for enforcement agencies to use. In the literature, a number of examples are found where the tool has been used to analyze compliance in agriculture. (Backbier & Van Erp 2002) The reason for this use is likely due to the fact that with six of the eleven factors in the model being dependent on the actions of the enforcing agency, which is interested in what actions it could take to improve compliance

However, in this system more than half of the factors are dependent on the efforts of the enforcing agency. In a study where different frames are compared with each other I am not convinced that the efforts of an governmental agency exert a greater influence on the decision making process of an individual, than personal considerations.

Application in this study

In the conceptual model, the influence of the factors of spontaneous compliance will have to be incorporated in a way, with particular attention to the social aspects of compliance. However, the role that the government has will not be as big as it is in the Table of Eleven model for the aforementioned reasons.

2.3.3

ISOD model

In 2007 the Dutch Platform Bijzondere Opsporingsdiensten introduced the ISMA methodological model. This model was one of the results that came out of a wide ranging study to identify major factors which play a role in the occurrence of fraudulent actions. (Platform Bijzondere Opsporingsdiensten 2007)

The study lead to the identification of the following factors as the primary explanatory factors which could explain non compliant behavior. Other factors have been identified, but are deemed to have less impact on the behavior.

Internal norms:

Like in other studies (Ruimschotel, Van Reenen et al. 1996; Backbier & Van Erp 2002), the internal norms of the individual play an important role in the decision to commit to a certain action. In some cases internal norms, and professional ethics can overlap. (Frankowski 2014)

Social Norms:

As an individual is judged by society, the way in which the social environment reacts to perceived transgressions can form an important threshold for the individual. An example of such a norm can be a culture of stigmatization. (Piquero, Jennings et al. 2010)

Opportunities for non-compliance:

Aside from these normative factors, the individual has to have a certain opportunity to exhibit non compliant behavior.

Deterrence:

Authorities have an interest in maintaining a level playing field for all parties in a sector. As fraudulent behavior generally has an economic motive, the monetary gains of non compliant behavior have to outweigh the costs of compliant behavior. Through the use of sanctioning measures, it is hoped to deter the occurrence of non compliant behavior.

In this light however it has to be noted that the effectiveness of relatively large fines as a deterrence to repeated emissions to the environment can be underestimated. (Stretesky, Long et al. 2013)

Application in this study:

While these factors give a good overview of the possible factors which influence the behavior of individuals, I believe that limiting a study to these four factors does not provide enough insight in how the different stakeholders use different factors in the public debate. For example, there is a difference between deterrence due to governmental actions, and deterrence due to the way that a business community accepts swindlers within its community.

2.3.4 *The function of shaming*

One of the leading theories in the field of criminology is Braithwaite's theory on the influence that stigmatization and reintegrative shaming can have on the behavior of individuals. (Piquero, Jennings et al. 2010)

Stigmatization is the process that can occur when a individual displays non compliant behavior, and is convicted to a form of punishment. If after the punishment this individual finds that his position in society has changed with a slim chance of redemption he could be considered stigmatized.

An example would be the fall of Willem Aantjes, a prominent Dutch politician who had to step down from his position as leader of the CDA party when it came to light that the Netherlands Institute for War Documentation was investigating his past activities for the SS during the 2nd World War. While in the end it turned out that the allegations were false, Aantjes position in Dutch politics was tainted.(Bouwman 2002)

This change in position can be such that the individual becomes excluded from common discussions on normative behavior, and looks for others who can relate to his situation. This exclusion increases the risk of that the individual continues with non-compliant behavior.

Stigmative shaming contrasts with regenerative shaming, as in that process, the sanctioning and reaction of the social environment is primarily focused on conveying the disapproval of a certain behavior without excluding the individual from society. This makes it possible for the individual to redeem himself over time, while at the same time society makes it clear that non compliant behavior is not tolerated.

Aside from the distinction between regenerative shaming and stigmatization, Braithwaite also notes that there is a relation between the way in which the offender manages the shame of punishment and the likelihood of reoffending.

Regenerative shaming	Stigmatization
Disapproval while sustaining relation of respect	Disrespectful approval
Ceremony to certify deviance, ended with a ceremony to decertify deviance	Ceremony to certify deviance, no ceremony to decertify deviance
Disapproving of the deed, without disapproving the person	Labelling the person, not the deed as evil

Table 1 Distinguishing factors for the two types of shaming.(Piquero, Jennings et al. 2010)

In the case of acknowledged shame an offender recognizes shame for the non compliant behavior, accepts that society disapproves of the offence, and feels sorry for the victim of his behavior. This enables the offender to reintegrate within society.

The opposite of this is unacknowledged shame, in which case the offender rejects the fact that his behavior may have been non compliant or the justness of the social norm. This in turn reduces opportunities for reconciliation and generally sets the offender apart from society.

"The theory of responsive regulation, very simply put, argues that regulation will be most effective when restorative approaches, strong in reintegrative shaming, are given first priority in attempts to change behavior, but backed up by mechanisms based on deterrence and incapacitation (but not stigmatization)"

Nathan Harris in (Piquero, Jennings et al. 2010)

An example that such stigmatization is occurring in the manure market is the fact that, as a part of anti fraud measures, the ministry of Economic Affairs has announced that in the future new intermediaries will have to be approved in accordance with the Public Administration (Probity Screening) Act (BIBOB) before entering the manure market.

With a total of 300 companies, and a significant number of reoffenders amongst them, the use of this act is meant to prevent convicted offenders from reentering the market. (Dijksma 2015)

While the process of shaming undoubtedly influences the way in which people discuss issues surrounding the manure policy, it is unsure how open the debate is. It is possible that the different actors censor themselves in the public debate. Avoiding certain topics, in favor of topics which are politically deemed more acceptable, may lead the public debate in an direction in which certain topics are avoided.

Application in this study

Shaming can occur in a number of ways. Both in the social and business environment in which an individual operates, shaming is able to influence the position of the individual. In the conceptual model, the function of shame will be incorporated in a number of factors.

2.3.5

Conclusion

From the criminological point of view, legislation functions to deter non-complaint behavior. The decision to comply is influenced both by the goals that can be achieved by compliance, by the reaction of the social environment to non-compliance of an individual(Piquero, Jennings et al. 2010), understanding and acceptance of the reasoning behind legislation(Ruimschotel, Van Reenen et al. 1996; Backbier & Van Erp 2002) and the deterring effect of inspections and sanctions(Ruimschotel, Van Reenen et al. 1996; Platform Bijzondere Opsporingsdiensten 2007).

2.4

Adapting the Muijnk-model to a conceptual model

On one hand, the government has a facilitating role in creating conditions for business development (Kemp and Loorbach 2003), while on the other hand the government has a sanctioning role to maintain certain standards and ensure a level playing field. (Platform Bijzondere Opsporingsdiensten 2007). To clearly distinguish these roles, and adapt the model to better incorporate the factors of sanctioning and opportunities for non compliance as identified in the ISMA model, Muijnk's model was adapted.

Compliant behavior is the result of both having the opportunities to develop this behavior, and the motive to do so. Both opportunities and motives are influenced by a number of different factors.

This leads to the following conceptual model of the different factors that influence compliance.

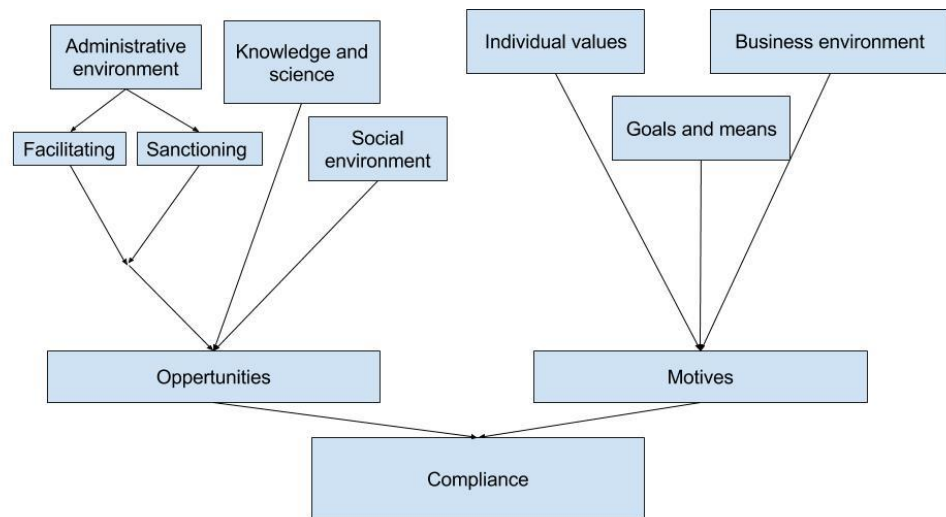


Figure 5: Conceptual model of the factors influencing compliance

This model is derived from a number of generic studies into opportunities and motives for compliance. Because the manure legislation came into being over a long period of time in which the farmers were able to lobby for measures that protect their interests it is expected that both in the Dutch Manure Act, the current developments in the agricultural sector, and in the public debate elements from this model can be recognized.

Opportunities:

The *administrative environment* consists of the government, the legislation that is introduced, and the interaction between the government, the business and the general public. In this environment, the government displays both a facilitating and a sanctioning role.

The *sanctioning role* of the government refers to the efforts of the government to maintain a level playing field through effective enforcement efforts. A number of different factors have been identified (Ruimschotel, Van Reenen et al. 1996) which influence the effectiveness of the enforcement efforts. These are the chances which the individual perceives that an inspection will take place, and the chance that a violation is detected.

The government influences this perception as well, through the spreading of knowledge on how companies are selected for an inspection. If it is also clear to an individual what the certainty is that sanction will be handed out, and the consequences that this sanction holds, compliance will likely be improved.

(Ruimschotel, Van Reenen et al. 1996)

On the other hand, the government also has a *facilitating role* in compliance. If the different roles and stances that governmental organizations hold towards a sector, the clarity of legislation, and the speed with which legislative interventions follow each other match with the developments in a sector and mindset of individuals, compliance is likely better than when there is a mismatch. (Ruimschotel, Van Reenen et al. 1996)

The *social environment* consists of those who the entrepreneur considers relevant for his or her social position and the way these people react to non compliant behavior. The social environment can influence compliance in a number of different ways, such as:

Having the possibility for an individual to attain normative goals which are respected in his social environment while operating within the legislative framework that society has provided. (Lindenberg and Steg 2007) In an environment where through the presence of a mechanism of social control (Ruimschotel, Van Reenen et al. 1996) norm conformity is achieved the requirement of a formal sanctioning systems is redundant. (Ruimschotel, Van Reenen et al. 1996)

If a culture of regenerative shaming exists, someone who displays non compliant behavior is likely to be able to avoid becoming a reoffender. (Piquero, Jennings et al. 2010)

The possibility to apply practical *knowledge and science* to achieve ones goals can also provide an opportunity to display compliant behavior. This can be through both the knowledge and understanding of the best practices for a specific activity, but also knowledge on the legislation which governs that activity. (Ruimschotel, Van Reenen et al. 1996) To ensure that actual developments in the field of study are incorporated the involved decision making process (Termeer, Breeman et al. 2007) is generally used before substantial investments are made.

Motives

Aside from having the opportunity to display compliant behavior, there are also a number of possible motives that influence the decisions that an individual makes.

Each individual has *individual values* which influence how they make decisions. Individual values tend to be aimed at long term processes. The possibility to attain hedonic or normative goals (Lindenberg and Steg 2007) and the immaterial costs and benefits (Ruimschotel, Van Reenen et al. 1996) are critical for the acceptance of legislation by the target group. (Ruimschotel, Van Reenen et al. 1996)

Compliance is not just a matter of individual values. It also comes with a number of costs and benefits for the entrepreneur. Economic *goals and means* are assumed to be one of the factors which provide a motive for (non)-compliance. Goals and means are typically used to address issues for the short term. Typical indications are the attainment of gain goals (Lindenberg and Steg 2007) and the material costs or benefits that are associated with compliant behavior. (Ruimschotel, Van Reenen et al. 1996)

A company does not operate on its own, but in an *business environment* which influences the way the company behaves. A variety of factors in the composition of the business environment influence the decision making processes.

If within the business environment the presence of swindlers (Ruimschotel, Van Reenen et al. 1996) is generally accepted, and there is no system in place which stigmatizes those who display non compliant behavior (Piquero, Jennings et al. 2010) the barrier for an individual to display non compliant behavior lowers.

In this process the pressure of the market price on operations, combined with material costs for compliance can be crucial determinants. Aside from these factors, the business environment is also influenced by the typical time span of planning for a sector, and the typical return of investments that are used when making investment decisions. (Brummelkamp & Suyver 2004)

Conclusion

In this section a number of different theories on motivations for compliant behavior have been discussed. This has lead to a conceptual model in which the following different factors have been identified which could be used in the public debate on compliance with the manure legislation.

Sanctioning role of government
Facilitating role of government
Social environment
Knowledge and science
Individual values
Goals and means
Influence of the business environment

Table 2: Overview of the different factors influencing compliance hailing from the conceptual model

If this conceptual model is valid, these factors should be recognizable in the system of legislation and developments in the agricultural sector. The next chapter will focus on determining if this is the case.

3 The influence the theoretical factors have had in legislation

3.1 Introduction

The Dutch manure policy has been shaped by decades of experiences with compliance, negotiations between stakeholders, inspections and enforcement. If the conceptual model is valid, it should be possible to recognize the factors from the model in the current system of manure legislation and in current developments in the agricultural sector. This provides an indication on the validity of the conceptual model.

This section uses an overview model of the agricultural sector, containing both livestock farmers, source of natural manure and agriculturists, the users of natural manure. A part of the crops is used as fodder and a part for human consumption. Additional to the feed crop stockfeed is used for the feed of the livestock. In the ideal situation this cycle is balanced such that there is no excess of nitrogen and phosphate that leaches from the agricultural parcels into the ground- and surface water. In practice this balance is hard to achieve because there is no direct relation between this global balance and the decision making of private farmers.

3.2 Manure legislation and the nutrient cycle

To understand why there are reasons for a farmer to be non compliant with the Manure Act, it is necessary to understand how the Manure Act and its associated decrees and regulations influence practices on farms. For this, a basic understanding of the nutrient cycle on a farm is needed.

As crops are grown on agricultural parcels, nutrients are taken up by the crops and leach into the surface and ground water. This leads to a reduction in the amount of nutrients that are available for the following crops, leading to a decreased production over time. (Faber, op Akkerhuis et al. 2009)

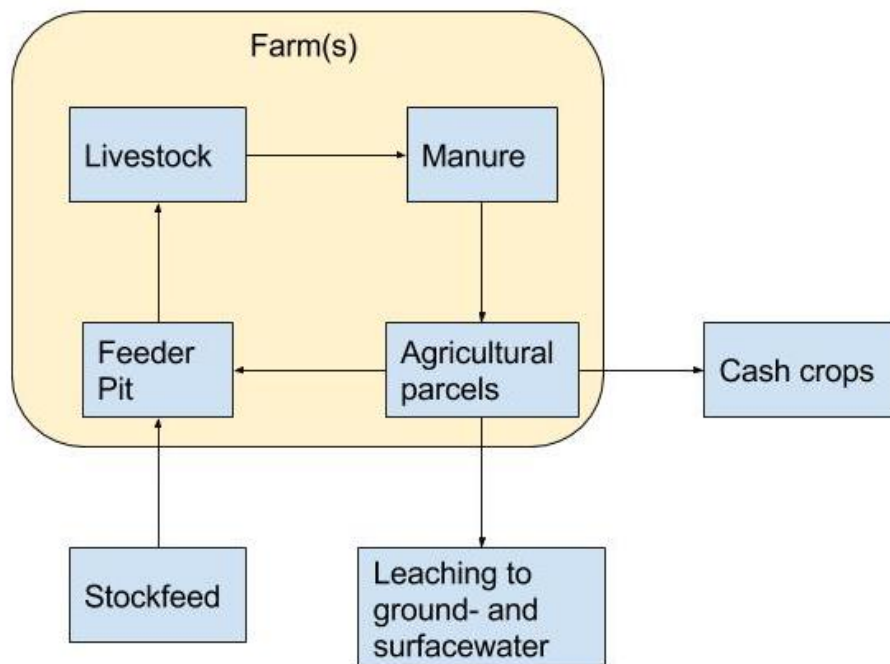


Figure 6 The flow of nutrients within a farm

To counter this process, fertilizers can be applied to these parcels. This can be in the form of manure, or artificial fertilizer. If more nutrients are applied than can be converted in organic matter by the crop, the surplus nutrients will leach to the surface and ground waters.

3.3 Current developments in the legislative system

The current legal system surrounding the application of manure is the result of decades of experiences. A description on how the current system came into being can be found in appendix A. The main focus in the legislative system is on maintaining a level playing field through sanctioning actions in response to non compliant behavior.

When the 4th Nitrate action programme was being developed, it became clear that to be able to comply with the agreement that by 2015 there should be an equilibrium between the amount of nutrients that are taken up by the crops and the amount of nutrients that are added to the soil.

In figure 7 an overview is given of how the flow of nutrients is governed. In red the legislative interventions are given. Blue represents different subjects which gain specific attention in discussions surrounding the Manure Act. Green represents external conditions which influence certain regulations that influence the decisions farmers can make.

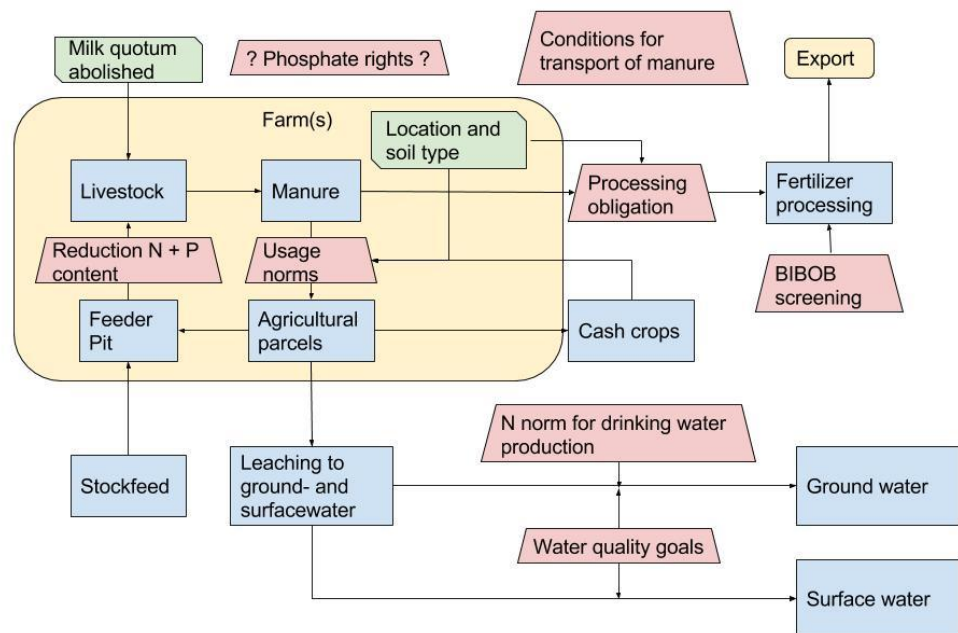


Figure 7: The current system governing the nutrient flow on a farm.

Usage Norms

Usage norms for phosphate have been introduced in 1987. With a usage norm for phosphate that was far above the norm that would fit with the concept of a balanced fertilization policy, with a gradual reduction over time was intended. (Wiering 1999) The goal is to reach an equilibrium between the amount of fertilizer that was spread out over the parcels and the amount of nutrients that left the parcels. It was realized that this equilibrium would take time to reach. The sector was given 20 to 30 years to reach this goal. (Frouws 1994)

In the 5th Nitrate Action Programme the government decided to decrease the usage norms for areas and crops which are more susceptible to leaching, while for some soil types norms were increased in response to concerns on reported agricultural yield losses.

The way in which the government handles the usage norm is a clear indicator of both the sanctioning and facilitating roles of the government.

Reduction in nitrogen and phosphate in stock feeds

The nutrients that leach to the water bodies, enter the nutrient cycle through the fodder that the livestock feeds on. One of the first measures that was taken to reduce the impact of manure on the environment, were measures that regulated the nitrogen and phosphate content in the stock feeds.

Abolishment of the milk quota and phosphate rights

In this period, another development took place which was to have a large impact on the dairy production. Since 1984 a European system of milk quota has been in place to provide a limit to the dairy production. Under pressure from the farming community the European Commission decided in 2008 that the quorum system was to be reduced and abolished on 1st of April 2015. This is an example of the business environment influencing the government in such a way that certain developments are facilitated.

While in the run up to abolishment of milk quota the dairy farmers generally saw good chances for growth. In the media the 1st of April 2015, the day of abolishment was described as a sort of liberation day for the dairy sector.

In the lead up to this day, the dairy farmers expanded farms and increased the number of cows that were kept. In 2015 alone the Dutch cattle herd grew by 5%. (Schaftenaar 2016)

Noting the probable growth of the dairy sector, the state secretary of Economic Affairs was adamant in warning the sector that the phosphate ceiling was not to be exceeded and that if this would be the case the Dutch government would intervene.

It turned out that the market was unable to respond to the rapid increase in production of the dairy sector. Due to the abundance of milk on the market, the market price dropped rapidly. In June 2015 a farmer earned 30,4% less for a liter of milk when compared with June 2014. (CBS 2015) This directly influences the means that are available for investments.

On the 2nd of July 2015 it was clear that the efforts from the dairy sector to limit the phosphate production were unsuccessful. The phosphate ceiling which was a condition for the derogation from the European Commission was breached. This led to the announcement that the government would introduce a system of phosphate rights to control the size of the Dutch phosphate production. (Dijksma 2015) Through the phosphate rights system, the emission of phosphate from livestock will be reduced between 4 to 8%.

As of the moment of writing the exact form on how this system is to take form and how wishes relating to the tradability, cattle grazing and the contrast between intensive and extensive cattle farming will be incorporated are not yet taken.

Manure processing

Because the adjusted usage norms reduce the amount of manure that can be spread on parcels, this leads to increased pressure on the manure market. To alleviate this pressure, the government decided to promote alternative uses of manure.

From 2014 a system was introduced which obliges a farmer to ensure that a certain percentage of the manure surplus is processed. This can both mean that the manure is used to produce energy, or that it is prepared for export to areas which have a nutrient deficit. Annually this processing percentage is reviewed and can be adjusted. (Commissie Deskundigen Meststoffenwet 2015)

Due to the spatial distribution of agricultural companies and the influence of the soil type on leaching processes, a distinction is made in the processing obligation between the eastern, southern and other Dutch regions.

	East	South	Other	Total manure processing obligation (mln. Kg phosphate)
2014	15%	30%	5%	17.0
2015	30%	50%	10%	28.0 – 29.7
2016	35%	55%	10%	32.8
2017	50%	60%	10%	38.5

Table 3: Gradual increase in the obligation to process a percentage of the manure surplus (Commissie Deskundigen Meststoffenwet 2015)

Growing concern on the occurrence of fraudulent behavior in the manure market

One of the issues which increasingly came to the fore during this period is that the compliance with the manure legislation is lacking. A number of concrete measures were taken to improve the enforceability of the legislation:

Conditions for the transport of manure

With the advances in technology, in 2006 the obligation was created for manure transporting companies to have a GPS case on the vehicle which automatically transmit the location of the start and end of manure transports to the authorities.

Enforcement experiences lead to the adaptation of this legislation, so that this ADR/GPRS equipment now has to be inseparably connected to the chassis of the vehicle.

Aside from this location data, vehicles which are adapted for the transport of liquid manure have to be equipped with an automatic sampling system. For solid manure, a system of obligatory independent sampling is also being developed.

The reason for this measure is that through manipulation of samples an individual could increase the amount of manure that leaves the farm according to the manure administration. The difference can then be disposed of in a way that is not in compliance with the manure legislation.

Public Administration Probity Screening Act (BIBOB)

One of the issues that the NVWA encountered, was that manure fraud was so lucrative that sanctions were not enough to prevent fraudsters from reentering the business. This has a negative effect on overall compliance and support for the legislation. (Brummelkamp & Suyver 2004)

To counter this pressure, it was decided that the Public Administration Probity Screening Act was to be used when new players came onto the manure transport market. This act enables the government to ban an individual from being active in a business environment due to prior convictions. In effect this is a form of legalized stigmatization of offenders. (Piquero, Jennings et al. 2010)

Conclusion

Within the legislative system a number of the different factors can be recognized. The sanctioning and facilitating role of the government, development of knowledge and science and the influence that the business environment. The developments in the legislation are partially induced by the agricultural sector and partially by the government. It is possible that for these different stakeholders there is a difference between which of the factors are more important than others.

3.4 **Other relevant developments related to compliance with the Manure Act**

In 2014 in 158 municipalities more nitrogen was applied to arable land than the usage norms allow. (van Gaalen et al 2016) This indicates that non compliance is a wide spread problem. In the literature a number of reasons are presented which influence the readiness of farmers to exhibit noncompliant behavior. (Herzfeld and Jongeneel 2012)

Introduction of Annual Nutrient Cycling Assessment.

To gain a deeper understanding of the nutrient cycle on a dairy farm, Wageningen UR has been developing a management system to chart and improve the environmental performance of a dairy farm. (Holster, de Haan et al. 2013) The idea behind this system is that with a more efficient use of the phosphate, the quantity of milk that is produced can be increased without increasing the phosphate production.

In an effort to ensure that the dairy sector contained its phosphate production under the phosphate ceiling and ensure that governmental intervention would be unnecessary, a coalition in the dairy sector obliged farmers who's farms had an surplus of phosphate to start using the Annual Nutrient Cycling Assessment. (Dijksma 2015) This is a good example of the way knowledge and science influence the farming practices.

Cost of compliance

The Dutch usage norms limit the amount of nutrients that can be applied to arable land. A number of companies do not possess enough arable land to distribute all their manure on their own parcels within the legal limits.

As the supply of manure is a result of the demand for animal products and generally not the demand for manure, this leads to the situation where the owners of parcels set a price to the acceptance of manure on their parcels. (de Hoop, Bunte et al. 2011) Currently the cost for the producers is estimated to be between €20 and €26 per m³ of manure. (Schaftenaar 2016)

For the dairy sector the cost for manure disposal per year on average increased from €3206 to €6987 in 2015. (Stokkermans 2016) This average hides the fact that within the dairy sector there is a difference between intensive and extensive farming operations. Extensive farms have enough arable land to be able to spread their manure without the need to pay for external processing, while intensive farms need the external processor to dispose of the manure that is produced on the farm.

As the production of manure exceeds the available surface area on which it can be spread, alternative routes have been set up to dispose of the excess. Examples are the use of poultry manure for energy production and the export of manure.

As the amount of manure which can be spread out on parcels is regulated through the usage norms, a reduction in usage norms, means that the percentage of manure that has to be disposed of through these alternative means increases. In turn, this means an increase in the production costs for the farmers.

If the farmer is unable to charge these costs to his customers, the income of the farmer will be reduced. (Baltussen, Hoste et al. 2010)

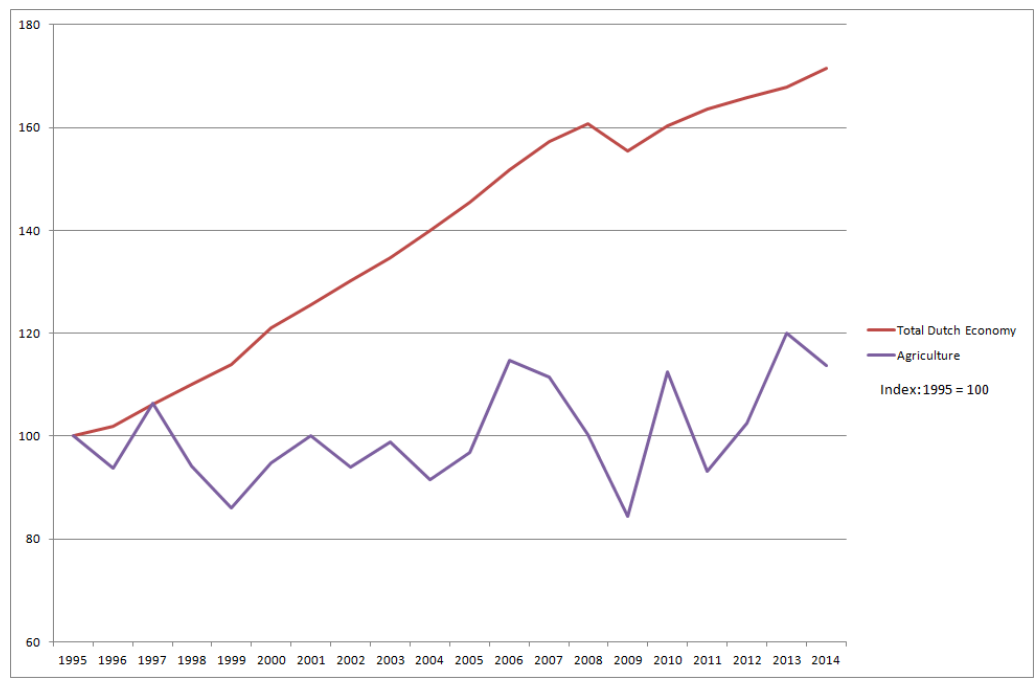


Figure 8: Development of the Dutch Agricultural income per year compared to that of the total economy (CBS 2015)

As figure 8 shows there is a discrepancy between the growth of the income of Dutch agricultural companies and that of the total Dutch economy. It is possible that the available means influence the environmental goals that a company is able to attain.

This economic situation, together with the possibility for arable farmers to get paid for accepting manure has lead to a situation where for some farmers, acceptance of manure is considered the "fifth crop".

It is estimated that in 2015 the arable farmers were paid roughly €227.000.000 for the acceptance of manure on their parcels. (de Koeijer, Buurma et al. 2015)

This process has increased the means that are available to the individual arable farmer, while decreasing the means that livestock farmers have available to them.

Family companies

Pride in one's professional accomplishments is an important driver for self-respect. (Verbrugge 2005)

In the case of the Dutch farming community, the accomplishment of running a successful farm carries an additional gravity.

63% of the Dutch farms is identified as a family business. This means that there can be a strong feeling of duty to ensure that the farm can be passed on to the next generation and debts of gratitude to the previous generation. (Talma 2013)

Aside from these feelings, the family business plays a specific role in decision making processes. When discussing factors concerning the influence of general society on company policies, Heath notes the following: *"For most people, work is the center of their lives. Not only do they spend more waking hours at work than anywhere else, but they do most of their socializing there as well. Their entire circle of social interaction is often limited to family and coworkers."* (Heath 2008)

In the case of a family business, the family are the coworkers. This increases the risk that the social environment does not give feedback when non-compliant behavior is exhibited, due to a shared commitment to the business. This lack of feedback may be one of the factors at play which cause the perceived gap between the values of the producers and the values of the consumer. (s.n. 2013)

This gap between producers and consumers can also influence the policies of the government. In the study *Omgaan met mest*, Termeer *et al* note that there is a gap between the economically motivated policy theories that civil servants base assumptions on and the perceptions that influence the decision making process of farmers. (Termeer, Breeman *et al*. 2007)

In such an environment, it is possible that the wish of an entrepreneur to accomplish hedonic or gain goals, can exceed the desire to display normative behavior. (Backbier & Van Erp 2002)

Conclusion

In the other developments that are related to the production and use of manure, the influence of goals and means, the social environment and the values of individual farmers are clearly recognizable. The question that then rises, is which of these factors is most relevant for the different stakeholders?

3.5

Conclusion

All of the factors from the conceptual model can be recognized in the current debate on manure legislation. As an example:

The abolishment of the milk quota is a clear indicator of the role individual values and the influence of the business environment play in the debate. When the government facilitates this development, the consequence that available goals and means are used to facilitate a large growth in the livestock population. This growth may not always be acceptable within a social environment, due to the side effects. This in turn requires governmental intervention, possibly through sanctions to prevent overreaching the agreed upon boundaries. Alternative methods to dispose of excess manure are then proposed, based on newer technologies and experiences with export.

The fact that all of the different factors from the conceptual model can be recognized in the legislature and developments is an indication that the factors that are identified in the literature as relevant for small and medium sized enterprises also cover farming practices.

As farms are generally family owned corporations with a small staff, they tend to fit the definition of a small and medium sized enterprise. (European Commission 2003)

While farms fall under the same category as a number of other enterprises, it is unknown how the agricultural sector uses the frames from the conceptual model. This justifies further investigation on the frames that the different stakeholders use in the public debate. For this reason the following hypotheses will be tested:

1. *Not all of the factors which are used in the public debate are equally important for the agricultural sector.*

With the conceptual model comprising of seven different factors, it is likely that not all of these factors are equally relevant for the agricultural sector. As the agricultural sector is the stakeholder who's business practices are directly affected by the manure policy, understanding which the factors are most relevant for compliance to this sector can aid in devising effective policy solutions.

2. *There is a difference between the factors which the agricultural sector finds most relevant, and the factors that the government focuses on when engaging in the public debate.*

The debate on usage of manure in the environment has been going on for decades, without reaching consensus on the desired state. One of the possible reasons that may contribute to this ongoing debate could be that the frames that the different stakeholders use to make their points do not match with the values of the other stakeholders.

To find an answer to these questions, a method is required which makes it possible to analyze the different frames that the stakeholders use in the public debate. This method should also be able to accommodate the conceptual model that was devised in chapter 2.

4 Methodology

4.1 Introduction

To determine which of the factors from the conceptual model the different stakeholders use in the public debate a research method is required. In this chapter the choices that were made which lead to the use of a quantitative content analysis method will be explained, as well as the way in which this method was used to come from a number of articles to quantifiable data.

4.2 Method

The study was carried out through the use of a Content Analysis method. These are *"research techniques for making replicable and valid inferences from texts (or other meaningful matter) to the context of the texts"*. (Krippendorff 2012)

In the case of this study, the content analysis is carried out on a number of articles which concern manure and/or fraud which have appeared in Dutch media. This should make it possible to conduct an analysis of the frames that are used by the different stakeholders.

Content analysis methods can generally be divided in 2 main methods. Quantitative methods generally focus on the frequency with which certain words or phrases are used, allowing for replication while qualitative methods focus on the message that is given and the context which surrounds that message. (Marsh and White 2006)

The Qualitative Content Analysis method (Mayring 2014) was selected because the categorization system this method uses was well suited for use with the factors which follow from the conceptual model. Another advantage was the possibility to use a web based tool, QCAmapp, for text analysis on the website (www.qcamap.org), avoiding the need to install a program on corporate computers.

Underlying assumption

For this analysis it is assumed that the trade media focuses most of its attention on issues that its prime target group, the farmers, find most relevant to their interests and in such a way that the farmers recognize their own interests.

This means that the frequency with which the different factors related to compliance occur within articles is an indicator of the relative importance of these factors to the farmers.

4.3 Article selection criteria

To gather a body of articles for analysis, several sources were used. For selecting articles from the media, the main source was the LexisNexis database. There the selection criteria were the occurrence of “manure” or “manure + fraud” in the text for Dutch language news sources and an article length exceeding roughly 600 words.

Aside from articles in news sources, a number of other documents were also analyzed. These were mainly documents which were intended to influence the public debate in a more formal way than via news sources. This includes letters and policy papers which were found on the websites of agricultural organizations and were intended to influence the position of governmental organizations.

The main focus for the period in which the articles appeared was between September and December 2015. A number of older articles were encountered when searching explicitly for the combination of “manure + fraud”, because there have been a number of headline grabbing prosecution cases which were deemed relevant to include. Most of the articles which were analyzed have the agricultural sector or the government as sender.

In appendix A an overview is given of the articles which were used for the text analysis.

4.4 Coding process

When analyzing an article, a number of guidelines are followed to allow for consistent classification and coding. In this study coding is used to describe the assigning of factors to different passages in the articles.

4.4.1 *Classifying the source and target audience*

When analyzing written media it is necessary to keep in mind that the sender of information may be adjusting his message based on the intended target audience. For this reason a method of classification was devised.

Generally articles include quotes or descriptions from an individual other than the author. The job description or role that this individual plays in a debate is often given by the author to provide a framework for the article. By distinguishing between people who work in the agricultural sector, for the government and for NGO's, it is possible to sort articles in different categories.

For determining the target audience the main criteria that is used is the type of media in which the article is placed. Articles which are placed in the national media are assumed to target the general public, while articles which are placed in the trade media are assumed to target the agricultural sector. Documents which aim to influence actions of the government are often more extensive than news articles and either directly addressed to the government, or referred to by representatives of the sector. Table 4 provides an overview of the different senders and target audiences that were identified.

Senders	Target audiences
Agricultural Sector	Agricultural sector
	General public
	Government
Government	Chamber of Representatives
	Agricultural sector
	General public
	Horticultural sector
Horticultural sector	Horticultural sector
Non Governmental Organisation	General Public
	Agricultural sector

Table 4: The different senders and target audiences that were identified

To give two examples on how this classification works;
On the 15th of December 2015 an interview appeared in the Boerderij, one of the news sources for the agricultural sectors with the chairman of the Dutch Dairy Farmer Union (NMV). This interview was classified with the agricultural sector as source and the agricultural sector as intended audience.
On the 24th of May 2014, the coordinating public prosecutor for environmental crimes gave an interview to a general newspaper describing the issues he encounters. This article was classified with the government as source and the general public as intended audience.

4.4.2

Coding the articles

The process of coding the articles is kept as simple as possible. This is done by reading the articles, while being conscious that the aim is to identify the occurrence of the different factors from the conceptual model.

Code	Factor	Key concepts
B1	Sanctioning role of government	Fines, control, inspection
B2	Facilitating role of government	Policy, alleviation
B3	Social environment	Social control, shaming
B4	Knowledge and science	In practice, new technologies
B5	Individual values	Responsibility, cooperation
B6	Goals and means	Personal gain, ability to fund adaptations
B7	Influence of the business environment	Influence of other producers on market conditions

Table 5: Overview of the different factors influencing compliance hailing from the conceptual model

If a passage is encountered which according to the coder addresses one of the different factors, the passage is selected and marked as being a reference to a certain factor. In table 5 an overview is given of the key concepts which were used when coding.

Through the use of the QCMap program, the coding guidelines provide a framework for the analysis. By also having the coding guidelines physically available when coding, the coder is able to quickly review a passage to determine if it fits within one of the factors.

Because it is possible that the coder feels that in one statement, several of the factors are addressed, it is possible that a passage is marked for multiple factors. It is also possible that a factor occurs a number of times in an article.

To aid in the application of the conceptual model when coding the different articles, a set of coding guidelines was developed. This was done primarily to aid in the distinction between the different factors.

4.4.3 Coding examples

Sanctioning role of government

A passage is to be marked as *Sanctioning role of government* when the reader interprets the passage to relate to the efforts of the government to maintain a level playing field. Key concepts for this factor are references to fines, inspections or control mechanisms.

The following passages were coded as related to this factor.

"High fines, even in arrangements. And we will increase the frequency with which we review the possibility to tackle the permit of a company. In severe cases we prosecute supervisors personally and we demand a jail sentence. Also publicizing the verdict is a greater deterrence than the use of punitive fines." Rob de Rijck in the article "Bij milieuzaken is er geen lijk" BN/DeStem 24-05-2014.

"The fines for farmers who illegally accept manure are no small change. Per cargo the administrative fine is €300. On top of that, there is a fine of €7 per kilogram nitrogen and €11 per kilo phosphate that cannot be placed on the company. After that, because of the cross compliance checks, the allowance from the CAP is abated. Depending on the situation this abatement varies between 1 to 20 percent of the total allowance" From the article "Omvangrijke handel zwarte mest", Boerderij, 16-03-2010

Facilitating role of government

A passage is to be marked as *Facilitating role of government* when the reader interprets the passage to relate to the process surrounding the introduction of legislation or the interaction between the government and businesses. This factor can be both interpreted positively or negatively, because changes that the government affects can benefit one group of individuals, while disadvantaging another group.

An example of the positive interpretation of this factor is the following passage: *"Since the European milk quatum has been abandoned in april, farmers are allowed to produce as much milk as they want. And that is exactly what they are doing: farmers all over Europe have, just like Agnes, acquired additional dairy cows. In the Netherlands the amount of dairy cows grows with 1 percent per month."* From the article "Boer zoekt protest" de Stentor 13-08-2015

An example of the negative interpretation of this factor is the following passage: *"Especially the governmental policy, but also fluctuating prices ensure an unstable business for farmers. This causes them to behave as very conservative entrepreneurs."* From the article "High Welfare Floor" Financieel Dagblad 14- 11-2015.

Social environment

Passages which relate to the influence that the social environment has on the individual entrepreneur are marked when the reader recognizes one of the following aspects in the text.

- The attainment of normative goals
- Having a culture of regenerative shaming(Piquero, Jennings et al. 2010)
- General norm conformity within the environment(Ruimschotel, Van Reenen et al. 1996)
- Social control(Ruimschotel, Van Reenen et al. 1996)
- The perceived chance that a violation will be reported.(Ruimschotel, Van Reenen et al. 1996)

An example of reference to the influence of social norms is the following passage.
"Some weeks ago at a party I was talking to someone who asked me why we were protesting. The man traded in LED lights and told me his company also had a lot of competition. "I am not going to protest in the Hague if I cant sell my lights without profit?!" he said. I had to agree with him." From the article "Er is geen eerlijke prijs" Boerderij 22-9-2015.

Knowledge and science

In quite a few articles a reference is made to the application or development of knowledge and science, related to manure use. When a passage refers to one of the following aspects, it is marked in the text as relating to knowledge and science.

- Professional pride and ethics
- Knowledge and understanding of best practices
- Knowledge of the legislation(Ruimschotel, Van Reenen et al. 1996)
- Involved decision making process

An example of a passage where the application of knowledge comes to the fore is found in the article "Emissiearm bemesten vergroot opbrengst" Boerderij 8-9-2015
"The question is if this is attainable in practice. The answer is no, because such a protein low ration is barely achievable and in practice taking the weather conditions into account when spreading manure is impractical."

Another example of such a statement:

"He expects to be more stringent with the grass harvest and thus improve phosphate profits. "By being smart about the moment when we mow the grass we can increase the amount of raw protein in the grass." From "Wel de stal, niet de koeien" Boerderij 4-8-2015

Individual values

An important factor in agriculture is that the majority of the companies are family companies, which leads to a close link between the employees and the director. (Denkers, Peeters et al. 2013) This closeness likely results in a coherent set of *individual values* within the company which influence decision making processes. When the reader identifies the passage with the following indicators it is categorized with this factor.

- Hedonic goal attainment (Lindenberg and Steg 2007)
- Degree of acceptance
- Immaterial costs/benefits of compliance

For example the following passage clearly indicates a degree of acceptance with the governmental intervention:

"To bad that phosphate rights are needed. Its an additional expense, but we have to take our responsibility for the phosphate surplus." From "Wel de stal, niet de koeien" Boerderij 4-8-2015

An example of hedonic goal attainment is displayed in the following passage:
"The farmers were happy to cooperate. Free non registered minerals meant less expensive artificial fertilizer and higher crop yields." From "Mijd zwarte mest als de pest" Boerderij 16-03-2010

Goals and means

Compliance is not just a matter of the practical application of norms and values. It also comes with a number of costs for the entrepreneur. The ability to adjust (financial) *goals and means* form one of the most important factors in compliance.

- Gain goal attainment
- Material costs/ benefits of compliance. (Ruimschotel, Van Reenen et al. 1996)

The following passages are examples on how goals and means can be addressed in articles:

"That is remarkable, because the past year dozens of project were canceled because it turned out not to be possible to make the financial ends meet" from "Mest is het problem en de oplossing", Volkskrant 12-12-2015

"But there is a certain inclination that economic advantage induces behavior that is not allowed" from "Waarom moet de toezichthouder dat allemaal handhaven?" NRC 9-12-2015

Influence of the business environment

A company does not operate on its own, but in an *business environment* which influences the way the company behaves. In the articles factor may be displayed by references to

- Stigmatization of people who display non compliant behavior
- Immaterial costs/benefits
- Pressure of the market price on operations (Brummelkamp & Suyver 2004)
- Presence of swindlers on the market
- The typical timespan of planning
- The rate of return of investments (Brummelkamp & Suyver 2004)

Examples of references to the influence of the business environment are the following passages:

"And because fraudsters dump their manure cheaply, bonafide manure processors have a hard time obtaining enough manure." from "Mestverwerking lijdt onder sjoemelaars" Volkskrant 20-2-2014

"Some see him as a Robin Hood who helps cattle farmers to cheaply get rid of their excess manure. Someone who knows the loopholes of a law which was designed to break the agriculture. A rebel who outsmarts the government. Others call him "a quack, a bungler who disturbs the manure market."" From "De stront afdekken met een laagje mest" NRC Next 26-09-2012

Example of a coded article

In figure 9 an example is given of a coded article. In this figure the passages coded as B7 refer to the influence of the business environment, B2 to the facilitating role of government and B1 to the sanctioning role of government. As shown in this example, it is possible for an article to contain multiple passages which refer to a specific factor.

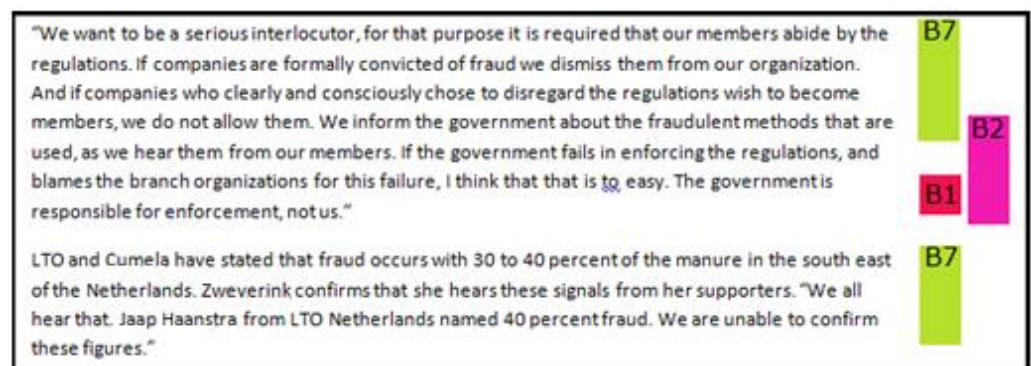


Figure 9: Example of a coded article

4.5 Analysis

After coding the articles, a dataset is generated. By determining the average occurrence of the different factors in articles of the different stakeholders, it becomes possible to assess differences between the frequency with which the different stakeholders address the different factors.

To establish a baseline, the average number of references per article was calculated for the total body of articles and for the different stakeholders.

By subtracting the average number of references from the total body of texts from the average use of a factor by a stakeholder when different target audiences are addressed, it became possible to distinguish which factors play an important role in the expressions of the different stakeholders.

To establish a baseline, a calculation was made for:

- A = the average number of references to a factor per article for the total amount of articles,
- A_s = the average number of references per article per stakeholder.
- A_{sf} = The average use of a factor by a stakeholder addressing a specific target audiences

By calculating $(1 - A_{sf} / A) * -1$ for every stakeholder, audience and factor combination it became possible to distinguish which factors play an important role in the expressions of the different stakeholders.

Determining inter coder reliability

As the analysis depends on the interpretation that the coder gives to certain passages, attention has to be paid to the fact that different people can give different interpretations to texts. (Neuendorf 2002)

To determine if the coding system that was designed for use with the model is more generally applicable and to analyze if the results that are presented here could also be attained with a different coder, a inter coder reliability assessment was carried out.

B3	In the agricultural sector and the intermediary manure sector the opinions about the trader from Brabant are divided. That appears out of reactions on the website of de Boerderij after the magazine reported that he had to pay in excess of 1 million euros in fines because he systematically violated the Manure Act. Some depict him as a Robin Hood who aids dairy farmers to cheaply dispose of manure. Someone who knows the loopholes in the legislation which is only meant to destroy	IC-B3	IC-B7
B7	agriculture. A rebel who outsmarts the government.		
B5	Others call him "a bungler", "a cheat who screws up the manure market". They accuse him of unfair competition. He is said to often strike a bargain with pig farmers. If they sell him pigs, he will rid them of their excess manure for a low price.	IC-B7	IC-B3

Figure 10: Example of one of the analyzed texts. On the left the coded passages according to the prime coder, on the right those of the inter coder (IC). B3 refers to the social environment, B7 to the business environment and B5 to individual values.

In this assessment a number of randomly selected articles were analyzed by civil servants who play a role in the Dutch manure legislation, using the coding guidelines as described in paragraph 3.2.3. An overview of the articles that were used for this analysis can be found in appendix C.

Comparison

When comparing the passages which were coded by the different coders a number of possibilities exist:

- If the coder marks a passage and the inter coder does not, there is no agreement. It is also possible that the inter coder marks a passage which the coder didn't.
- If the coder marks a passage and the inter coder marks the exact same passage, there is perfect agreement on a factor.
- If the coder marks a passage and the inter coder marks a portion of that passage for the same factor, there is agreement on the fact that the passage is related to a specific factor, but disagreement on the length.
- If the coder marks a passage under one factor and the inter coder marks the passage under a different factor, there is agreement that the passage relates to a factor that influences compliance, but disagreement on which factor is most prevalent.

5 Results

5.1 Introduction

Using the Qualitative Content Analysis, a number of articles were analyzed to come to an answer to the following hypotheses.

1. *Not all of the factors which are used in the public debate are equally important for the agricultural sector.*
2. *There is a difference between the factors which the agricultural sector finds most relevant and the factors that the government focuses on when engaging in the public debate.*

In this chapter the results of this analysis are presented and a conclusion is given on which of the factors from the conceptual model is addressed most often by different stakeholders.

This chapter starts with a quantitative overview of the results of the analysis and is followed by a more detailed discussion of the results for both the agricultural sector and the government.

5.2 Reference to factors in articles

For this study a number of articles were analyzed using the Qualitative Content Analysis method. In table 6 an overview is given on how the articles were distributed between the different senders and target audiences. The prime focus was on articles from the agricultural sector and government.

Sender	Total number of articles	Number of articles the sender aimed at the addressed target audiences
Agricultural Sector	46	
		Agricultural sector: 25
		General public: 9
		Government: 12
Government	15	
		Chamber of Representatives: 2
		Agricultural sector: 3
		General public: 7
Horticultural sector	2	Horticultural sector: 3
Non Governmental Organisation	2	
		Horticultural sector: 2
		General Public: 1
		Agricultural sector: 1

Table 6: Overview of the number of articles that were analyzed, per sender and for each target audience

Following the coding of the articles, the number of references to the different factors were counted for each of the different senders.

Sender	Sanctioning government	Facilitating government	Social Environment	Knowledge and Science	Individual values	Goals and means	Influence of business environment
Agricultural Sector	31	78	84	58	56	59	65
Government	37	28	27	22	9	16	20
Horticultural sector	1	2	2	2	0	2	3
Non Governmental Organisation	1	2	4	1	1	2	2

Table 7: Overview of the number of references to the different factors by the different senders

A similar analysis can be made to determine which of the different factors are typically used when addressing the different target audiences.

Target audience	Sender	Sanctioning government	Facilitating government	Social Environment	Knowledge and Science	Individual values	Goals and means	Influence of business environment
Agricultural sector	Agricultural Sector	22	32	37	36	31	28	43
	Government	7	2	3	6	2	3	2
	Non Governmental Organisation	1	2	0	0	1	0	0
Government	Agricultural Sector	8	29	34	16	13	19	13
General public	Agricultural Sector	1	17	13	6	12	12	9
	Government	16	10	10	4	7	3	9
	Non Governmental Organisation	1	0	0	4	1	0	2
Horticultural sector	Government	8	1	3	4	0	0	0
	Horticultural sector	1	2	2	2	0	2	3

Table 8: Overview of the amount of references to the different factors aimed at the different target audiences.

5.2.1 Exclusion of a number of articles

From these results it becomes clear that the debate concerning manure is dominated by the agricultural sector and the government. With 4 articles found which have the horticultural sector and NGO's as senders, this is not enough to draw conclusions on. For this reason it was decided that these senders would not be involved in the further study.

For a similar reason it was decided to exclude two letters from the State Secretaries of Economic Affairs and Infrastructure and the Environment to the Chamber of Representatives.

Because such letters aim to provide background information for the Representatives, whose familiarity with the subject cannot be assumed to be perfect, the Ministries tend to be incorporate a lot of background information in such letters. This can include information that can be assumed to be general knowledge for individuals who work within a sector. Incorporation of these letters in the analysis would exert a large influence on the end results. For this reason they were excluded as well.

5.3

Average usage of the different factors in the studied articles

Because the number of articles which were analyzed differs per sender and target audience, it was necessary to convert the absolute results to averages, divided per sender and target group. Comparing the average number of references to the different factors provides a first insight in the differences in the way the different stakeholders communicate. As an example, on average an article contains 1 reference to the sanctioning role of the government, but if the article has the government as sender, it is likely that there will be more than 2 references to this factor in the article.

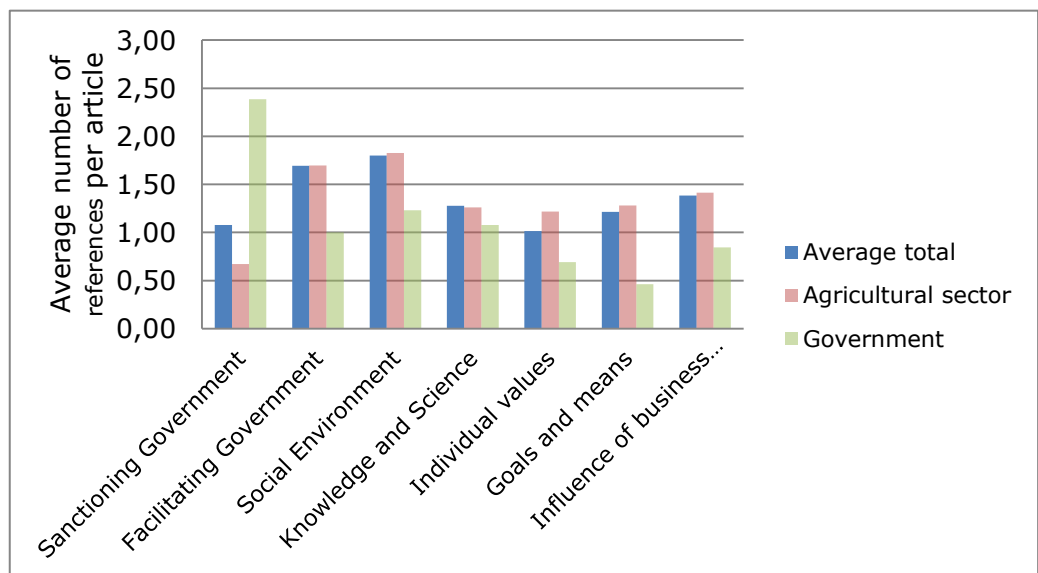


Figure 11: Average number of references to the different factors

It also becomes clear that there are differences between the different stakeholders on which of the factors are most likely to be addressed. While this provides insight in the different factors that are typically addressed, due to the differences in the number of articles from the different senders and target audiences a direct comparison does not provide an answer to the research question.

With all of the different factors from the conceptual model being recognized in the expressions of the different stakeholders, it can be concluded that the Qualitative Content Analysis method is a tool that can be used to analyze the usage of the different factors in a body of text.

By calculating the average number of references to a factor per target audience and per sender and converting this to a fraction it becomes possible to make a comparison. This is done by determining how the calculated averages for the different senders differ from the average number of references to the factor. In figure 12 an overview is given of these results. In the figures 12 to 21 the 0.0 line represents the average number of references.

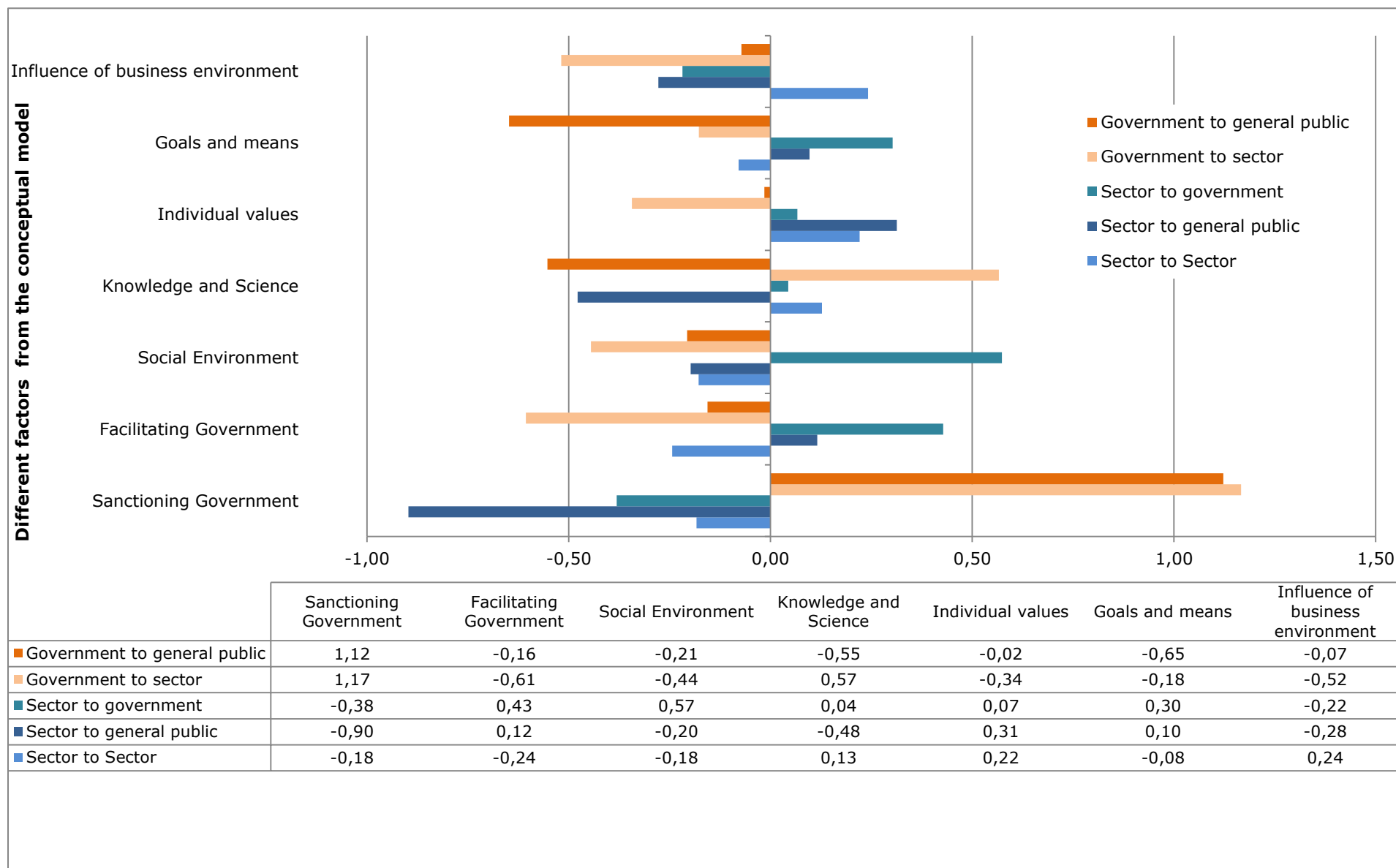


Figure 12: Overview on how the average use of a factor by a specific stakeholder deviates from the average number of references to that factor

5.4 Relevance of the different factors for the agricultural sector

In figure 11 the average reference to the factors is given for all senders. This includes the factors which are addressed when the agricultural sector is addressing the government or the general public.

To be able to distinguish between the different target groups, figure 13 displays the deviation from the average number of references to the individual factor when the agricultural sector is addressing a specific target group.

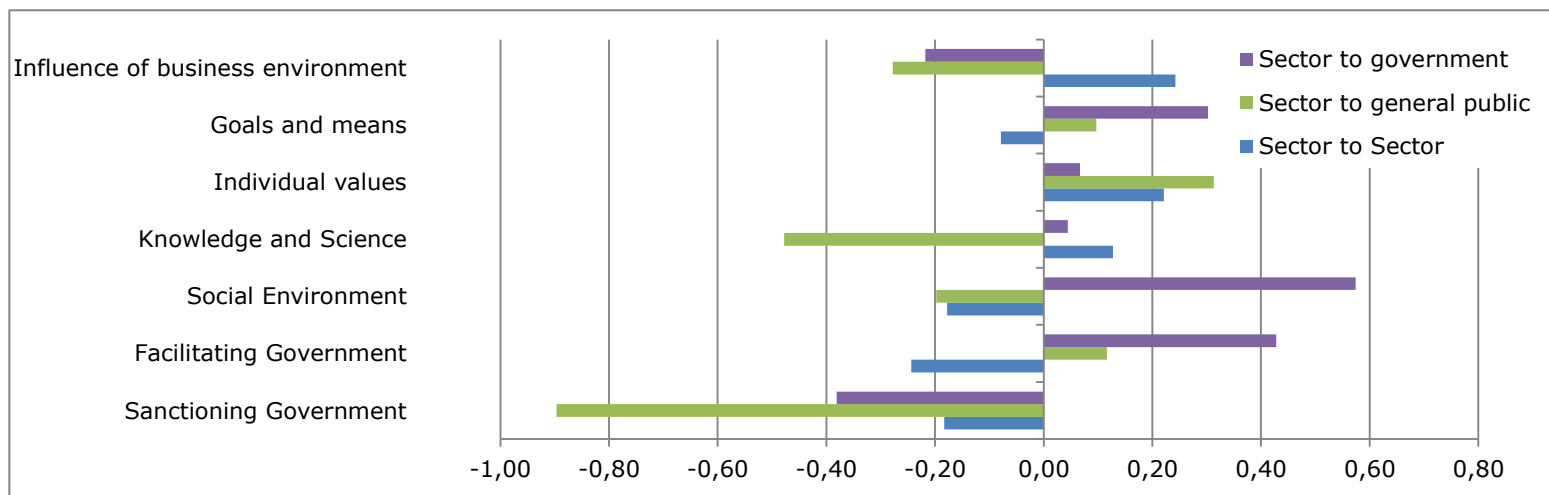


Figure 13: Deviation of the average use of different factors when the agricultural sector addresses different target audiences

From this it can be concluded that the importance of the different factors for the agricultural sector is dependent on the target audience. For example, it appears that when the agricultural sector addresses the government, the social environment plays an important role, while this factor is addressed less frequently when addressing the general public.

Likewise it is rare for the agricultural sector to refer to the sanctioning role the government is fulfilling. A possible explanation could be that the cases in which the government has to enforce legislation are the excesses that would not improve the image of the agricultural sector for the general public.

This means that the first hypothesis, which states that not all of the factors which are used in the public debate are equally important for the agricultural sector is true.

5.5 Factors that the government addresses

When compared to the other factors, the governmental agents display a clear preference to addressing the sanctioning role that the government has. For the other factors, the frequency with which government tends to address these is below average, apart from the use of knowledge and science.

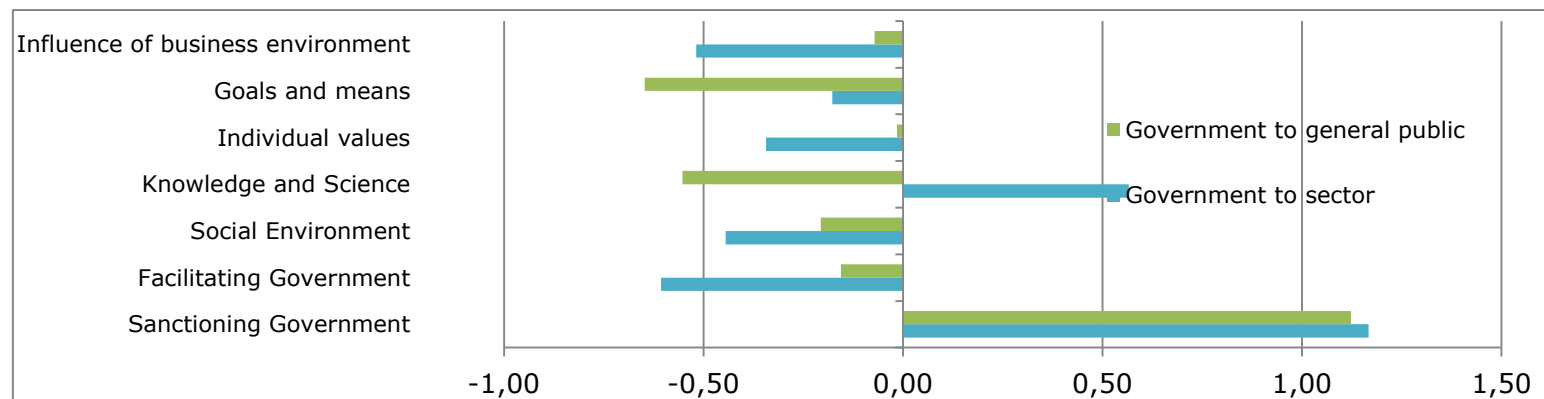


Figure 14: Deviation from the average use of factors when the government addresses different target audiences

It is clear that the frequency with which the government addresses a specific factor is dependent on the target audience.

The fact the results for the communication from the government to the horticultural sector varies wildly is likely a consequence of the relatively low number of articles in this category that were analyzed.

5.6 Differences between the agricultural sector and the government

As figures 12 shows there are a number of notable differences between the factors that the government and the agricultural sector address.

In the following paragraphs for each individual factor from the model the results where the agricultural sector and government are the senders are displayed next to each other.

5.6.1 *Sanctioning role of the government*

When addressing the issues surrounding the use of manure, the government has a tendency to address its sanctioning role in the maintenance of a level playing field. This frequency may be influenced by the fact that a number of articles were included in the dataset where people who are active in the enforcement side of governance.

The main difference for this factor is between the communication towards the general public. When the agricultural sector communicates to the general public, the sanctioning role of the government is hardly referenced at all. A reason for this could be that the sector has a strong interest in maintaining an image of compliance with the legislation. Discussing transgressions by individuals might endanger this image.

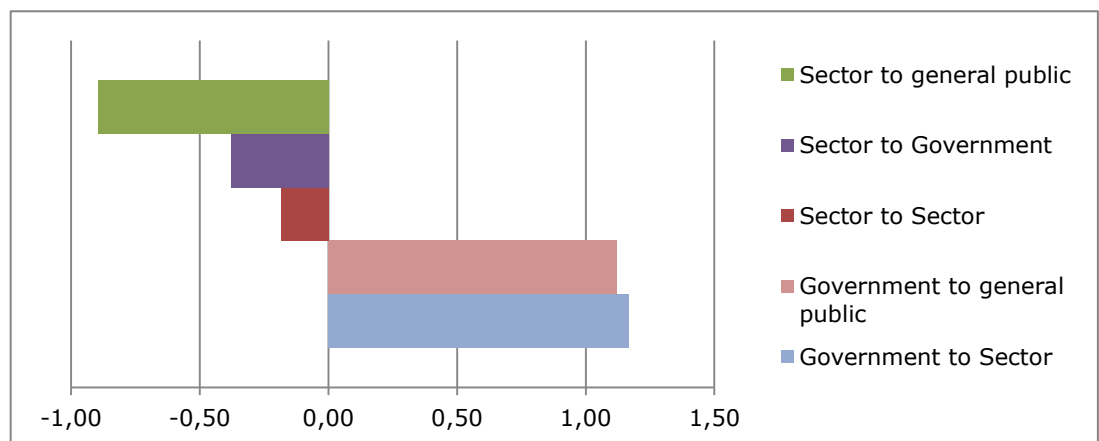


Figure 15: Deviation from the average references to the sanctioning role of government when different target groups are addressed

5.6.2 *Facilitating role of the government*

When reviewing the results from the factor for the facilitating role of the government it is clear that there are two notable differences in how the sector and government discusses this factor.

The agricultural sector frequently uses this factor when addressing the government. This can be explained by the fact that the selection criteria these articles was that they were written by sector representatives and were intended to influence the actions of the government to improve conditions for agriculture.

A possible explanation for the difference between communication from the sector to the government and within the sector could be that there is a common desire to gain more entrepreneurial freedom, but that discussions on the way in which such freedom is used by individual companies is seen as less desirable to publically have. This may have played a role in the rapid growth of the Dutch dairy herd in the lead up to the abolishment of the dairy quota and the subsequent governmental intervention when the sector turned out to be unable to keep the phosphate production under the limits as agreed upon with the European Commission.

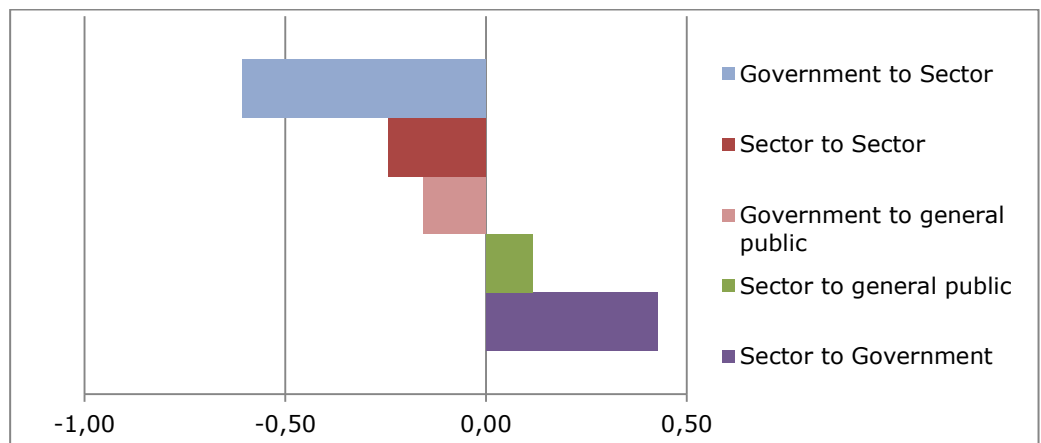


Figure 16: Deviation from the average references to the facilitating role of government when different target groups are addressed

The other gap is between the communication from the sector to the government and from the government to the sector.

A possible explanation for this gap is that the current system is the result of decades of experiences and negotiations with a wide range of stakeholders.

Rapprochement towards the desires of the agricultural sector by the government may lead to conflicts with other stakeholders. This, combined with a general desire of the government to reduce its role in society leads could be an explanation for this difference. (Binnema 2014)

5.6.3

Social environment

The referencing to the factor social environment occurs most frequently when the agricultural sector is addressing the government. This displays a similarity to the distribution of the reference to the Facilitating role of the government. It could be the case that over time the representatives of the agricultural sector have found that referring to the social environment in which the farms operate is an approach that decision makers are sensitive to.

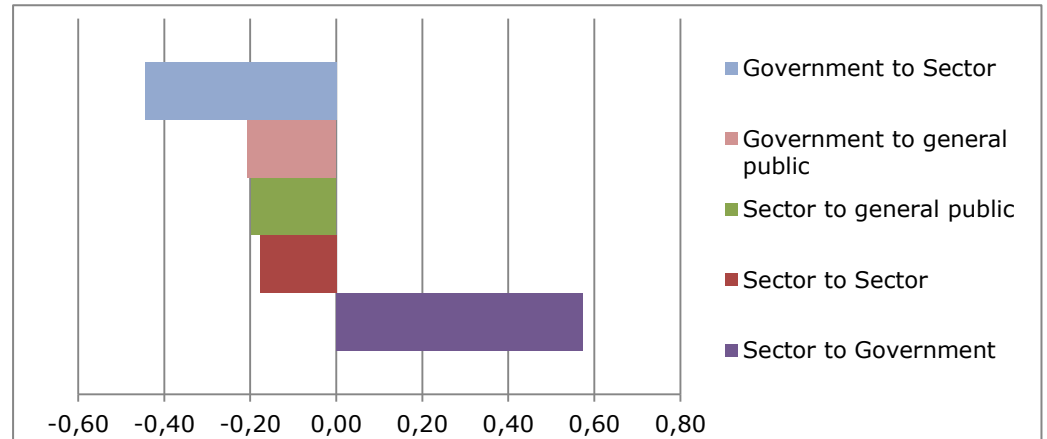


Figure 17: Deviation from the average references to the influence of the social environment when different target groups are addressed

In contrast, the government tends to avoid addressing this factor. A possible explanation could be that this factor is related to a more normative style of governance, while the Dutch manure legislation has taken the form of a highly technical system. The presence of this technical system could be an inhibitor to a discussion on normative goal attainment, due to the vested interests in the current system.

5.6.4

Knowledge and science

The attention that is given to this factor both when the government communicates to the sector and within the agricultural sector is an indication that the faith in technical solutions to the manure problems as identified by Frouws is still prevalent. (Frouws 1994)

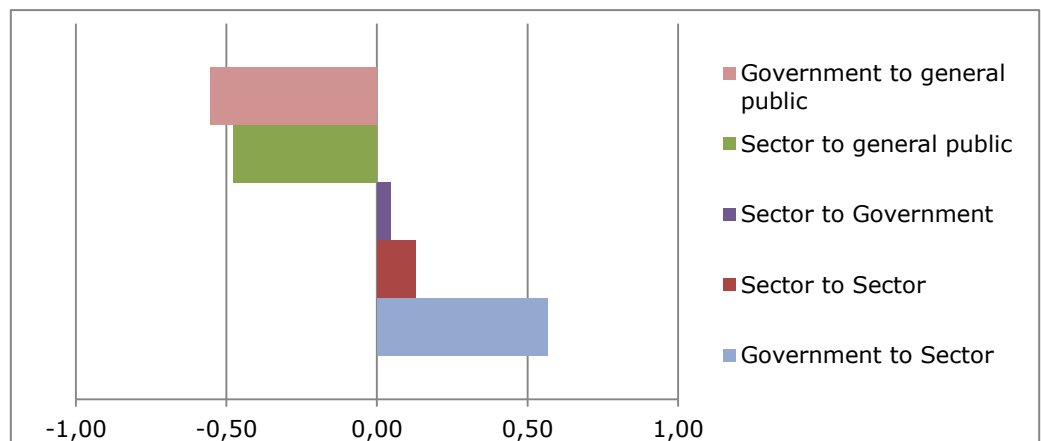


Figure 18: Deviation from the average references to the use of knowledge and science when different target groups are addressed

When analyzing the distribution of the occurrence of references to the use or development of knowledge and science it is interesting to note that this factor is used sparsely when either the government or the agricultural sector is addressing the general public, but above average when the target audience is more familiar with the developments in the agricultural sector.

This combined with the fact that the developments in the agricultural sector are of a highly technical nature which does not always stroke with the public perception of farming, could potentially widen the gap between general public and the agricultural sector.

5.6.5

Individual values

Individual values are addressed in greater frequency by the agricultural sector when compared to the government. This is likely caused by the fact that the farmers are the people who are directly affected by changes in the Manure Act. This means that the farmer reviews changing regulations from the effect these have on his business practices and in light of his or her personal values.

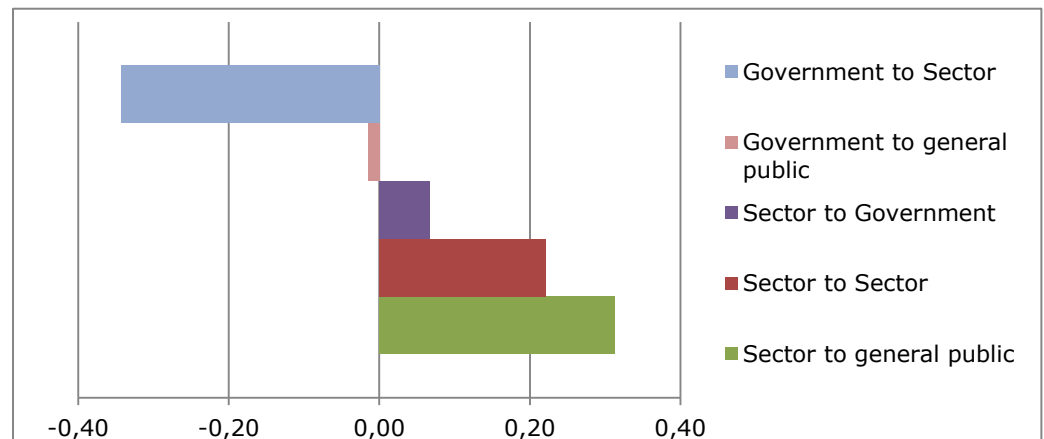


Figure 19: : Deviation from the average references to the role of individual values when different target groups are addressed

Acceptance of new legislation is likely to be directly related to the perceived impact a change in legislation will have on the status quo of the individual business practices. This contrasts with the government which aims to reach a specific goal and introduces legislation to reach that goal, where conforming with individual values plays a different role in the decision making process.

5.6.6

Goals and means

Out of the analysis of the frequency with which goals and means are addressed in the articles, it becomes clear that there is a large division in the amount of attention that is paid to this factor.

Most remarkable is that when the sector addresses the government, the goals and means are given explicit attention, while in articles that are addressed to and from the sector the frequency with which they are addressed is below average.

A possible explanation for this difference may lie in the fact that the classification of "Sector to government" is most often given to documents which are meant to influence the government in such a way that decision making processes do not negatively influence the goal attainment capacity of the agricultural sector.

From the side of the government the frequency with which the government addresses goals or means relation to the manure debate is below average, especially when addressing the general public.

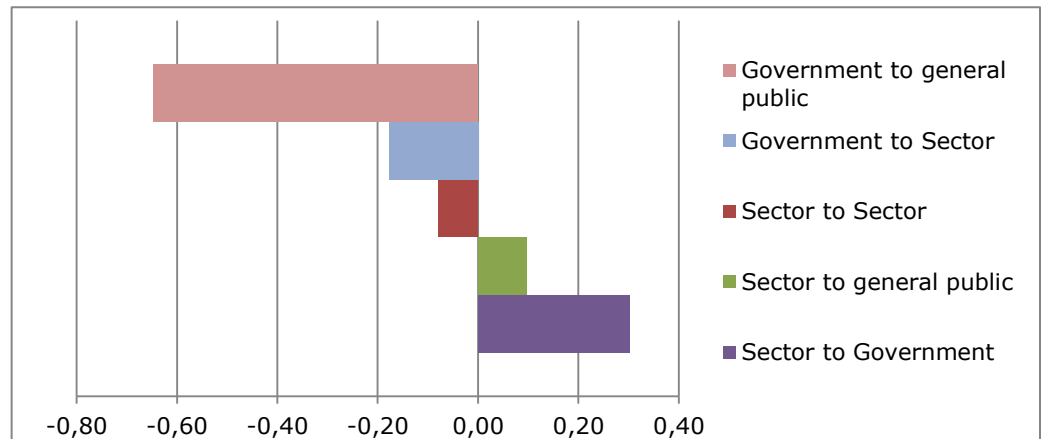


Figure 20: Deviation of average use of references to the influence of goals and means when addressing different target groups.

This could be partially explained due to the incorporation of a number of articles where law enforcement officers are interviewed. Due to the role that these individuals have in the policy process, it is to be expected that the goals and means that the agriculture has are mentioned less frequently than for example the findings of the sanctioning process.

5.6.7

Influence of business environment

The occurrence of the factor influence of the business environment is remarkable. This because this factor occurs most frequently in articles which are classified as sector to sector communication, while in articles where the sector addresses the government or the general public this factor is addressed below average. Aside from this difference in how the sector addresses this factor the occurrence with which the government addresses this factor when communicating to the sector is far below average.

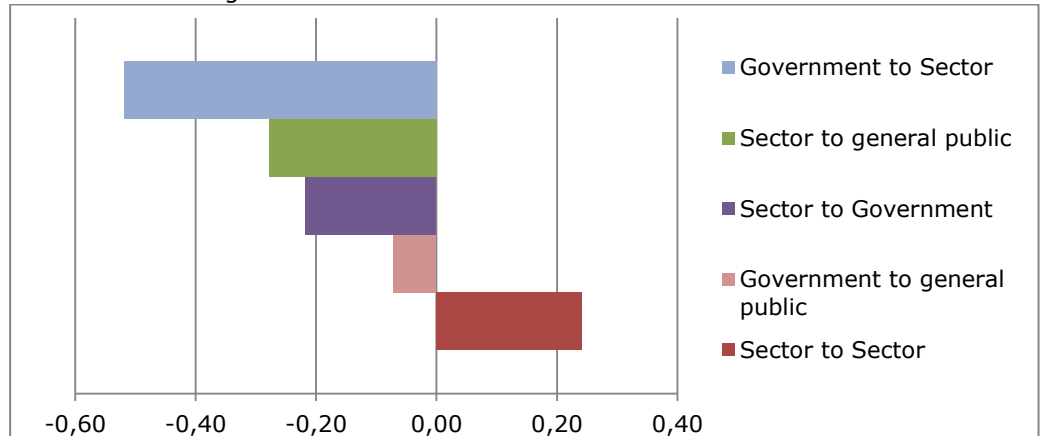


Figure 21: Deviation of average use of references to the influence of the business environment when addressing different target groups

6 Conclusion, discussion and recommendations.

6.1 Conclusion

In this study, an attempt has been made to find an answer to the question:
In what way is there a difference between the factors that the different stakeholders use when addressing compliance with the Dutch Manure Act?

This has been done by determining the usage of factors from the conceptual model for compliance in different articles to and from different stakeholders. While the use of a Qualitative Content Analysis method is sensitive to interpretations by the coders it can be successfully used to come from a conceptual model to quantifiable information.

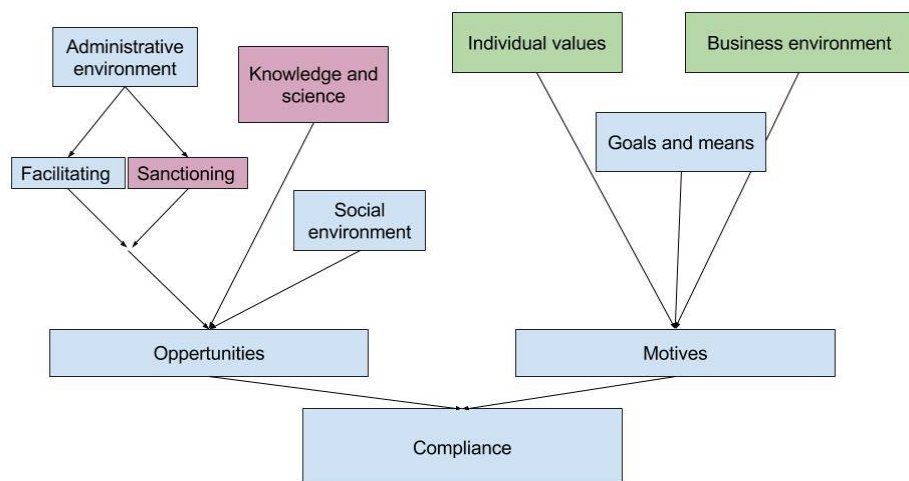


Figure 22: The conceptual model, with the factors that are most relevant for the government (purple) and the agricultural sector (green)

From the analysis in this study it can be concluded that all of the factors from the conceptual model are used, both in the current system of legislation and when the different stakeholders address issues surrounding the Manure Act. The specific factor which gains most attention is dependent both on the party who is sending the message and the intended target audience.

In general the agricultural sector tends to focus on motives in its communication to the agricultural sector. The factors which gain most attention are:

- The influence of the business environment in which the farmer operates
- The individual values of the farmer.

For the government, the focus is more on opportunities for compliance. The main factors that the government addresses when addressing the agricultural sector are:

- The sanctioning role of the government
- The role of knowledge and science.

This indicates that there is a difference between the primary factors that the agricultural sector addresses in its communication and the factors that the government focuses on when conveying a message to the agricultural sector and that the hypothesis is true.

6.2 Discussion

During the course of this study, it became clear that there are a number of points of discussion. In this section these will be addressed.

6.2.1 *Comments on the conceptual model*

To be able to mesh different theories, the model used by Muijnck (Muijnck 2002) was adapted to provide a conceptual model. While this model is usable for the required Qualitative Content Analysis, it is by no means a definitive compliance model.

In this, I agree with Brummelkamp who has stated:

"There is no clear model or all encompassing theory which can explain or predict compliance of companies" (Brummelkamp & Suyver 2004)

Following the inter coder analysis a number of comments were made on the conceptual model. These remarks could likely be alleviated by involving the inter coders more in the development of the coding scheme.

The administrative environment and its role in non-compliance

In the conceptual model the role of the government is divided into 2 factors, the sanctioning role and the facilitating role. The facilitating role in the model can be seen both in a positive and a negative way.

In the positive interpretation the government facilitates entrepreneurial development by removing barriers and restrictions. In the negative interpretation the government facilitates fraud by introducing control mechanisms which are hard to implement in a practical manner or impossible to enforce.

In the way the model currently works, it is not possible to make a distinction between these two interpretations.

If the model that was adapted for this study is reused, depending on the goal of the study it may be beneficial to consider if such a distinction aids in answering the research question.

Distinction between individual values and goals and means

It was found that making the distinction between a reference to the individual values of a farmer and the goals and means can be hard to make. This is due to the fact that in conversation the discussion often is about attainable goals and means, while references to the attainment of individual values are often less pronounced.

6.2.2 *Gain further experience with the Qualitative Content Analysis for policy studies.*

The conclusions presented in this report are based on the qualitative content analysis. This method inherently incorporates a degree of subjectivity.

Verification of the findings in this report through for example a number of structured interviews with people from both governmental organizations and the agricultural sector would be able to provide verification in the findings of this report. This was not part of the scope of this project.

If a Qualitative Content Analysis method used for further verification, it would be advisable to expand the number of primary coders and use a larger set subsamples when assessing inter coder reliability. With the set of selected articles, a sample set

of 50+ articles would have been advisable for the inter coder analysis. (Neuendorf 2002)

6.2.3

Subjectivity of the method:

The interpretation that an individual gives to an article is formed by both the context in which the individual reads the texts and by the background of the individual. This means that the use of a content analysis method is inherently a method that is of a subjective nature.

To quantify the subjectivity of the analysis for this study, the inter coder agreement was determined. This was done through use of the rating scheme described in paragraph 4.4.2. The inter coders analyzed a number of randomly selected articles.

Due to fact that coders were free to chose factors which they find fitting for a text, there is a large percentage of passages on which there is no agreement that they are related to any of the factors, or that there is agreement that a passage says something about a factor of compliance, but disagreement on which factor prevails.

When one of the inter coders agrees that a passage refers to the same factor as the primary coder did, it is likely that the other inter coder agrees with this as well.

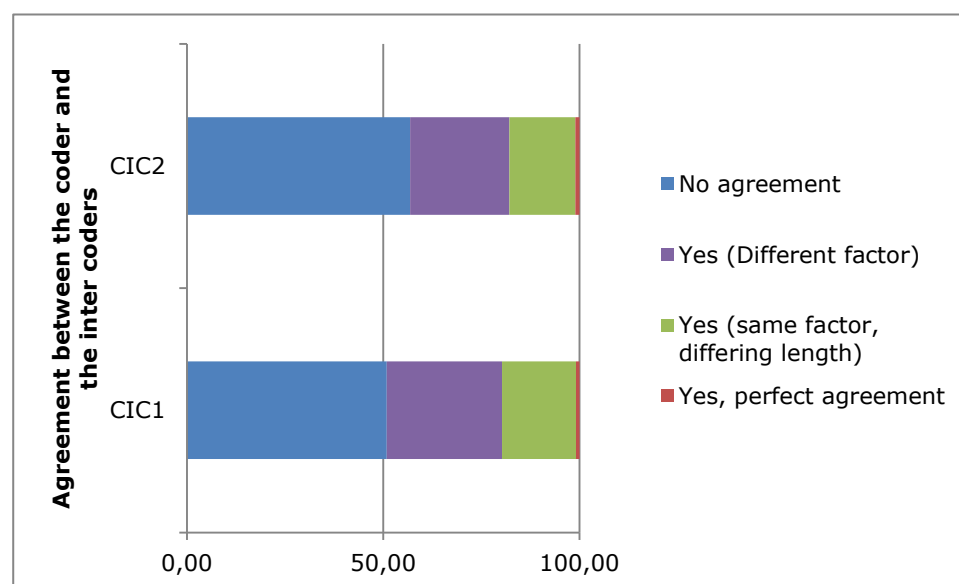


Figure 23: Percentage agreement with the two inter coders

The inter coder agreement indicates that, while the analysis provides an insight in which of the theoretical factors are relevant for the different stakeholders, the measurement precision is such that insights gained from the analysis should be used reservedly until verified through further study.

It would increase the reliability of the analysis if a number of different coders were used. Another valid option would be to use the findings in this report to provide input for a number of structured interviews with farmers and others who are active in the manure management field with the aim to verify the findings in this report.

Under the constraints that came from both the available capacity and the agreement

between the Ministry of Economic Affairs and Infrastructure and the Environment to focus on available information in the literature, it was not possible to include this in this study.

In the case of this study, it has to be recognized that apart from the quantifiable uncertainty on inter coder agreement, there are a number of different known but unquantifiable factors which may have had a large influence on the outcome of this study. These are the selectivity of the search algorithm that was used to find the articles in the Nexis database, the selection process of the articles which were to be analyzed and determining if the individuals which were interviewed in the articles fully represent the stakeholder group in which the article has been classified.

The effect of these contextual factors is likely to have exerted a large influence on the outcome of this study. Given that the study is aimed at analyzing the frames that are used by different stakeholders and coming to possible policy suggestions, this is not insuperable, as the findings on the importance of the different factors are in broad alignment with the conclusions of a number of other authors on the fact that there are more factors behind compliance with environmental legislation than just the economic cost/benefit approach that the government tends to focus on. (Ozanne, Hogan et al. 2001; Winter and May 2001; Oenema, Van Keulen et al. 2011; Herzfeld and Jongeneel 2012; Barnes, Toma et al. 2013) This, combined with the fact that one should always be careful when basing policies on just statistical evidence (Wasserstein & Lazar 2016) leads me to believe that while the method can be criticized, the conclusions from this study do not deviate much compared to other more regularly used research methods.

6.2.4 *The average farmer does not exist*

Whenever an analysis is made of a group of people, a certain form of generalization is used to be able to come to a system where statements and opinions can be categorized.

In this study the agricultural sector is used to refer to a wide range of farming activities. From intensive poultry farming to extensive cattle farming. Between farms and farmers large practical, organizational and motivational differences can exist. In this project the analysis was made to compare a generalized stance of the agricultural sector with a generalized stance of the government.

In practice, the differences between individuals will likely have a large impact on the opportunities and motives that an individual finds most important for the way legislation is dealt with.

6.2.5 *Incentives in the current system*

Recently a number of authors have been studying successful intervention methods which can be used to improve the compliant behavior of a group. (Raad voor de Leefomgeving en Infrastructuur 2014; Sunstein 2014) One of the main conclusions is that the presence of positive incentives could improve compliance.

In the case of the Manure Act, the main legislative principles behind the Manure Act have focused on deterring non compliant behavior. This in turn means that the main incentive from the governmental side, has become the absence of punitive measures. For the agricultural sector itself, the sanctioning role of the government is hardly addressed in the public debate. This means that the government focusses its message on a frame that plays a small role in the day to day decision making on a farm.

An exception to this was the period where the limitation of via the use of loss standards was in place. In this system a monetary incentive was in place to motivate a farmer to optimize the efficiency of manure application. (Mallia and Wright 2004)

When due to the ruling of the European Commission, the use of loss standards was stopped, the incentive they provided was also lost. (Court of Justice of the European Union 2003)

This means that the incentives which were identified by Backbier & van Erp are likely to remain the main incentives for compliant behavior. (Backbier & Van Erp 2002)

"The main motive for compliance are the immaterial considerations of the individual entrepreneur about the image of the company, its environmental impact, the entrepreneurial responsibility and the importance of compliance. The other main reason for compliance are the chance that a violation is detected and the deterrence that the threat of sanctions brings" From (Backbier & Van Erp 2002)

This absence of clear positive incentives in the Manure Act is not per se an issue that has to be solved. In fact, the introduction of a positive incentive (in the form of a tangible reward) could negatively influence the motivation of those individuals who previously complied with the legislation for immaterial reasons. (Deci, Koestner et al. 1999)

6.3 Recommendations

Aside from the gap between the agricultural sector and the government, a widening gap between the agricultural sector and the consumer has been perceived. With the different frames that the stakeholders are using in the public debate, a number of recommendations can be drawn which may aid in finding more common grounds that the stakeholders can agree upon.

Use mutually beneficial projects to elicit implementation intentions

Given the importance that the individual values and the business environment have for farmers, the focus by the government on its sanctioning role has the potential to widen the perceived gap between policy and practice. As Frankowski has stated: *"Good work is stimulated by recognition, room for action and trust, not by misgiving and suspicion."* (Frankowski 2014)

Efforts by the government to reduce the input of nitrogen and phosphate into water bodies should not only focus on the deterrence that goes out from administrative measures and sanctioning, but also on influencing the underlying motives that farmers use when making decisions.

A good example is the Delta Plan for Agricultural Water Management, where farmers and water managers cooperate to resolve local water management issues through mutually beneficial projects.

Use of BIBOB to deter swindlers and institutionalize shaming.

Based on the importance the business environment has on compliance, the use of the Public Administration (Probity Screening) Act (BIBOB) to govern the introduction of new intermediaries in the manure market is likely to improve compliance with the manure legislation. This because this Act enables the government to bar swindlers from entering the market which has a direct influence on the composition of the business environment. With the absence of swindlers in the market, the opportunities for a farmer to display non-complaint behavior are reduced.

Do not focus on simplification for the sake of simplification.

In 2015 a motion was passed in the Chamber of Representatives which calls upon the government to simplify the manure legislation.(Geurts 2015) Simplification of legislation is but one of the different nudges the government could use to improve compliance with the legislation (Sunstein 2014). An analysis of the manure legislation, using the guidelines provided by the Council of the Environment and Infrastructure may be able to identify points of improvement that are missed when the focus is purely on simplification of legislation.(Raad voor de Leefomgeving en Infrastructuur 2014).

Communication from the NVWA about its enforcement efforts should expand.

A final remark I wish to make is that the NVWA communicates to the general public via a number of ways. When reviewing the news articles that are placed on its website and messages placed on Twitter the number of references to enforcement of manure legislation pales in comparison to the importance that this issue has for the attainment of the water quality goals.

Bibliography

Backbier & Van Erp (2002). "Naleving en beleving van de Meststoffenwet." B&A Groep

Baltussen, W., R. Hoste, et al. (2010). Economische gevolgen van bestaande regelgeving voor de Nederlandse varkenshouderij, LEI Wageningen UR.

Barnes, A., L. Toma, et al. (2013). "Comparing a 'budge'to a 'nudge': Farmer responses to voluntary and compulsory compliance in a water quality management regime." *Journal of Rural Studies* 32: 448-459.

Binnema, H. (2014). "Terugtrekken of opzij stappen. Beleidsadviezen over minder overheid en meer samenleving." *Bestuurskunde* 23(3): 47-55.

Bloemendaal, F. (1995). *Het mestmoeras*, Sdu Uitgevers The Hague.

Bouwman, R. (2002). *De val van een bergredenaar: het politieke leven van Willem Aantjes*, Boom Koninklijke Uitgevers.

Bressers, J. T. A. (1994). "De effectiviteit van instrumenten voor milieubeleid."

Brummelkamp & Suyver (2004). "Verklaren en voorspellen van naleving: uitwerking van een ex ante schattingsmethode."

CBS (2015). "CBS: Inkomsten landbouw blijven achter bij productiestijging." from

CBS (2015). CBS: Melkprijs daalt, forse krimp exportwaarde zuivel.

Commissie Deskundigen Meststoffenwet (2015). "Advies 'Mestverwerkingspercentages 2016'." WOt-technical report 43.

Council of the European Union (1991). Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources

Court of Justice of the European Union (2003). C-322/00 Commission of the European Communities v Kingdom of the Netherlands.

de Hoop, D., F. Bunte, et al. (2011). Economische analyse van de mestmarkt; opties voor het stimuleren van innovaties, LEI, onderdeel Wageningen UR.

de Koeijer, T., J. Buurma, et al. (2015). "Beleid waterkwaliteit: kosten voor de landbouw."

Deci, E. L., R. Koestner, et al. (1999). "A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation." *Psychological bulletin* 125(6): 627.

Denkers, A., M. Peeters, et al. (2013). "Waarom organisaties de regels naleven."

Dijkema, S. A. M. (2015). Regels ten behoeve van een verantwoorde groei van de

melkveehouderij (Wet verantwoorde groei melkveehouderij) M. o. E. Affairs.
Dijkma, S. A. M. (2015). Voortgang inzake fraudemaatregelen meststoffenwet. M. o. E. Affairs.

Dongen, A. v. (2014). Bij milieuzaken is er geen lijk. BN/DeStem.

Ellis, L. (1988). "The victimful-victimless crime distinction, and seven universal demographic correlates of victimful criminal behavior." *Personality and Individual Differences* 9(3): 525-548.

European Commission (2003). 2003/361/EC: Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises

European Commission (2005). 2005/880/EC: Commission Decision of 8 December 2005 granting a derogation requested by the Netherlands pursuant to Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources (notified under document number C(2005) 4778)

European Parliament, C. o. t. E. U. (2000). Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy Brussels.

European Parliament, C. o. t. E. U. (2004). Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage

Faber, J., G. J. op Akkerhuis, et al. (2009). "Ecosysteemdiensten en bodembeheer."

Frankowski, A. (2014). "Kop of munt? Twee zijden van zorgfraude. Over onjuiste zorgdeclaratie in de geestelijke gezondheidszorg door middel van DBC's."

Frouws, J. (1994). Mest en macht. Een politiek-sociologische studie naar belangenbehartiging en beleidsvorming inzake de mestproblematiek in Nederland van 1970, Landbouw Universiteit.

Geurts, J. (2015). Motie van het lid Geurts over versimpeling van de mestwetgeving.

Heath, J. (2008). "Business ethics and moral motivation: A criminological perspective." *Journal of Business Ethics* 83(4): 595-614.

Hees Rougoor & Van der Schans (2012). Van mestbeleid naar bemestingsbeleid: Relas van een ontdekkingsreis, CLM Onderzoek en Advies B.V.

Herzfeld, T. and R. Jongeneel (2012). "Why do farmers behave as they do? Understanding compliance with rural, agricultural, and food attribute standards." *Land Use Policy* 29(1): 250-260.

Holster, H., M. de Haan, et al. (2013). KringloopWijzer, goed geborgd!= Annual Nutrient Cycling Assessment (ANCA), adequately assured!?, Wageningen UR Livestock Research.

Jongeneel, R., N. Polman, et al. (2014). Costs and benefits associated with the

externalities generated by Dutch agriculture. 2014 International Congress, August 26-29, 2014, Ljubljana, Slovenia, European Association of Agricultural Economists.

Kemp, R. and D. Loorbach (2003). Governance for sustainability through transition management. Open Meeting of Human Dimensions of Global Environmental Change Research Community, Montreal, Canada.

Kluin, M. (2014). Optic Compliance: Enforcement and Compliance in the Dutch Chemical Industry, TU Delft, Delft University of Technology.

Krippendorff, K. (2012). Content analysis: An introduction to its methodology, Sage.

Lappi-Seppälä, T. (2006). "Finland: a model of tolerance." Comparative Youth Justice. Critical Issues. London: Sage: 177-195.

Lindenberg, S. and L. Steg (2007). "Normative, gain and hedonic goal frames guiding environmental behavior." Journal of Social issues 63(1): 117-137.

Lynch, M. J., M. A. Long, et al. (2013). "Is it a crime to produce ecological disorganization? Why green criminology and political economy matter in the analysis of global ecological harms." British Journal of Criminology: azt051.

Mallia, C. and S. Wright (2004). "MINAS: a post mortem?".

Marsh, E. E. and M. D. White (2006). "Content analysis: A flexible methodology." Library trends 55(1): 22-45.

Mayring, P. (2014). "Qualitative content analysis-theoretical foundation, basic procedures and software solution."

Muijnck (2002). "Nalevingsgedrag van MKB-ondernemers."

Neuendorf, K. A. (2002). The content analysis guidebook, Sage.

Oenema, J., H. Van Keulen, et al. (2011). "Participatory farm management adaptations to reduce environmental impact on commercial pilot dairy farms in the Netherlands." NJAS-Wageningen Journal of Life Sciences 58(1): 39-48.

Ondersteijn, C., A. Beldman, et al. (2002). "The Dutch Mineral Accounting System and the European Nitrate Directive: implications for N and P management and farm performance." Agriculture, ecosystems & environment 92(2): 283-296.

Ostrovskaya, E. and J. Leentvaar (2011). ENHANCING COMPLIANCE WITH ENVIRONMENTAL LAWS IN DEVELOPING COUNTRIES: CAN BETTER ENFORCEMENT STRATEGIES HELP?, Conference paper-INECE 9th International Conference on Environmental Compliance and Enforcement.

Ozanne, A., T. Hogan, et al. (2001). "Moral hazard, risk aversion and compliance monitoring in agri-environmental policy." European review of agricultural economics 28(3): 329-348.

Piquero, A., W. Jennings, et al. (2010). "Encyclopedia of criminological theory." Plater, Z. J. (1993). "From the beginning, a fundamental shift of paradigms: A theory and short history of environmental law." Loy. LAL Rev. 27: 981.

- Platform Bijzondere Opsporingsdiensten (2007). "Fraude in beeld." The Hague: Ministry of Social Affairs and Employment.
- Raad voor de Leefomgeving en Infrastructuur (2014). Doen en laten: Gedragsanalysekader voor de ontwikkeling van effectiever milieubeleid. R. v. d. L. e. Infrastructuur.
- RIVM (2002). Minas en Milieu. Balans en Verkenning.
- Ruimschotel, D., P. Van Reenen, et al. (1996). De Tafel van Elf: een conceptueel kader en een instrument bij rechtshandavingsvraagstukken, Beleidsanalyse.
- s.n., S. I. (2013). Maatschappelijk waardevol en lokaal gegund : inventarisatie van activiteiten op het terrein van maatschappelijke waardering door agri- en foodsectoren.
- Schaftenaar, M. (2016). Mestprijs schrikt af, nog wel voldoende ruimte. Boerderij.
- Schaftenaar, M. (2016). RVO: aantal koeien stijgt met 5 procent. Boerderij Vandaag.
- Stokkermans, P. (2016). Melkvee: marge onder nul. Nieuwe Oogst
- Stretesky, P. B., M. A. Long, et al. (2013). "Does environmental enforcement slow the treadmill of production? The relationship between large monetary penalties, ecological disorganization and toxic releases within offending corporations." *Journal of Crime and Justice* 36(2): 233-247.
- Stretesky, P. B. and M. J. Lynch (2014). *Exploring green criminology: Toward a green criminological revolution*, Ashgate Publishing, Ltd.
- Sunstein, C. R. (2014). "Nudging: a very short guide." *Journal of Consumer Policy* 37(4): 583-588.
- Sykes, G. M. and D. Matza (1957). "Techniques of neutralization: A theory of delinquency." *American sociological review*: 664-670.
- Talma, M. L., G.; Avric, B (2013). Gaat het wel goed daar? Boerenkans.
- Termeer, C., G. Breeman, et al. (2007). *Omgaan met mest*.
- van Gaalen et al, F. (2016). "Waterkwaliteit nu en in de toekomst. Eindrapportage ex ante evaluatie van de Nederlandse plannen voor de Kaderrichtlijn Water."
- van Gaalen, F., A. Tiktak, et al. (2015). "Waterkwaliteit nu en in de toekomst, Tussentijdse rapportage ex ante evaluatie van de Nederlandse plannen voor de Kaderrichtlijn Water."
- van Rijswijk, H. (2004). "Het Nederlands mestbeleid te kakken gezet." *Nederlands tijdschrift voor Europees recht* 3(2004): 48-56.
- Verbrugge, A. (2005). "Geschonden beroepseer." G. van den Brink, T. Jansen en D. Pessers (red.), *Beroepszeer. Waarom Nederland niet goed werkt*. Amsterdam: Boom: 108-123.

Vinke, G. B. I., J (2009). Over de WVO gesproken... : herinneringen uit de rijke historie van de Wet verontreiniging oppervlaktewateren, en een doorkijkje naar de toekomst, op initiatief van Rijkswaterstaat en de Unie van Waterschappen opgetekend uit de mond van betrokkenen ter gelegenheid van het veertigjarig bestaan van de wet, Pincio Uitgeverij.

Wasserstein, R. L. & N. A. Lazar (2016) The ASA's statement on p-values: context, process and purpose, The American Statistician,

Wiering, M. A. (1999). Controleurs in context: handhaving van mestwetgeving in Nederland en Vlaanderen, Koninklijke Vermande Lelystad.

Winter, S. C. and P. J. May (2001). "Motivation for compliance with environmental regulations." Journal of Policy Analysis and Management 20(4): 675-698.

Wright, S. A. L. (2006). "The failure of the Dutch MINAS policy: a transaction cost analysis." Environmental Economics and Investment Assessment 98: 107-117.

Wuijts, S., J. Bogte, et al. (2014). "Eindevaluatie gebiedsdossiers drinkwaterwinningen." RIVM rapport 270005001.

Appendix A: An overview of the development of the Dutch manure policy up until 2009.

How has the Manure Act changed over time?

Wiering identifies a number of distinct phases in the goals and context in which the Dutch Manure Act has to be seen in the period 1980-2000. Following his analysis, a number of distinct phases in the period 2000 - 2015 were identified.

For each of these phases a number of research questions were posed:

1. What were the main drivers which lead to the distinction between this phase and the previous?
2. What control mechanisms were implemented/discontinued in this period
3. and what was the reasoning behind these decisions?

Phase 0: 1974 - 1986 Identification of manure as an issue, and the Green Front

Traditionally there was a strong connection between the Ministry for Agriculture, the representatives of the agricultural organizations and the Commission for Agriculture of the House of Representatives. In the period between 1974 and 1986 the strength of this connection gradually reduced, primarily as a consequence of increasing concern amongst civilians about the quality of the environment. (Frouws 1994)

For the manure policy, the attention of the public focused initially on the stench that came with the spreading of manure on agricultural parcels. Combined with the appearance of nitrate in drinking water wells and the discovery of severe soil pollution in Lekkerkerk, the government was forced to take action to limit anthropogenic influences on the environment. (Wiering 1999)

Amongst others, this debate lead to a compromise between the Ministry of Agriculture and that of Public Health. A number of measures were taken concerning the use of manure. In the Soil Protection Act usage norms for the quantity of fertilizer that could be applied to a parcel were introduced and an interim law was accepted with the goal to limit the growth of pig and poultry farms. (Frouws 1994)

While the legislation did not succeed in limiting the growth of pig and poultry farms and lead to an increase in dairy farming as well, the introduction of the legislation was a clear signal to the farming community that future growth plans would need the consent of the government.

The government decided on a phased introduction of usage norms to reduce the problems surrounding manure, so that the agricultural sector would have time to adept to the limitations (Frouws 1994).

One decision in this period that is still a major factor in the debate, was the decision that phosphate would be the main mineral indicator for manure production instead of nitrogen. The reason for this decision lies with the fact that the nitrogen concentration in manure fluctuates when compared to phosphate, which is also easier to influence through the animal fodder. (Frouws 1994)

Phase 1: 1987 – 1990 Manure Act is accepted and a stabilization of production

With the acceptance of the Manure Act and the Law for the protection of the soil a framework was in place to gradually reduce the pressure that agriculture was exerting on the environment.

In the normative discussion, the impact of possible limiting measures on the agricultural sector was given priority above the possible environmental impact. This led to a compromise with the introduction of a usage norm for phosphate that was far above the norm that would fit with the concept of a balanced fertilization policy, with a gradual reduction over time. (Wiering 1999) The goal here was to reach an equilibrium between the amount of fertilizer that was spread out over the parcels and the amount of nutrients that left the parcels. It was realized that this equilibrium would take time to reach. The sector was given 20 to 30 years to reach this goal. (Frouws 1994)

Alongside the usage norms, the obligation for farmers to keep accounts of the quantity of manure that is produced, acquired and disposed off was introduced so that it would be possible to verify if a farmer complies with the usage norms.

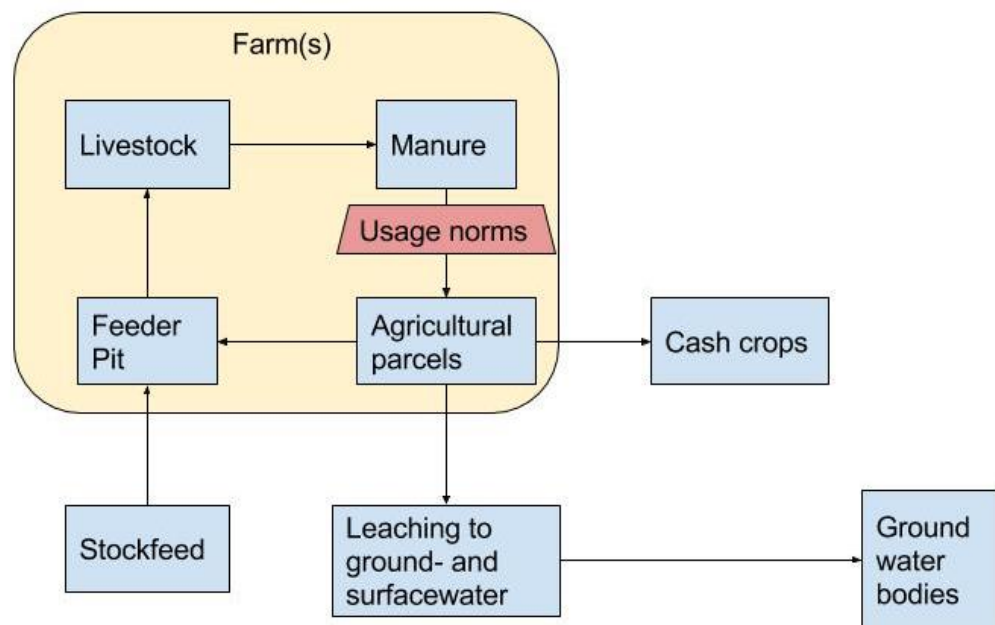


Figure 24: The flow of nutrients in a farm with the usage norm limiting the quantity of manure that can be spread on a parcel

The agricultural organizations exerted a large influence on the debate about how the manure accounts were to be kept. (Frouws 1994)

The influence of agricultural organizations on the debate resulted in legislation that ensured both that the entrepreneurs had the flexibility expand their production and the responsibility for the environmental impact of their companies. This phase was also a time of faith in technical measures. 55% of farmers which were interviewed in 1988 expected that within 10 years the manure issues would be resolved through technical measures. (Frouws 1994)

Phase 2: 1991 – 1994 “Manure as a mineral problem for the individual farmer”

In the period 1991- 1994 agricultural organizations advocate that usage norms should be more area- and farm specific, so that the farmer can adapt his manure usage to local circumstances. To this effect agricultural organizations proposed a system where the farmers are individually responsible for the accounts of mineral flows on their farms. The decision is made to aim for a generic reduction of the mineral rights, to induce more balance in manure market. The main method which is chosen to reach this goal is through changes in the composition of the stockfeed.

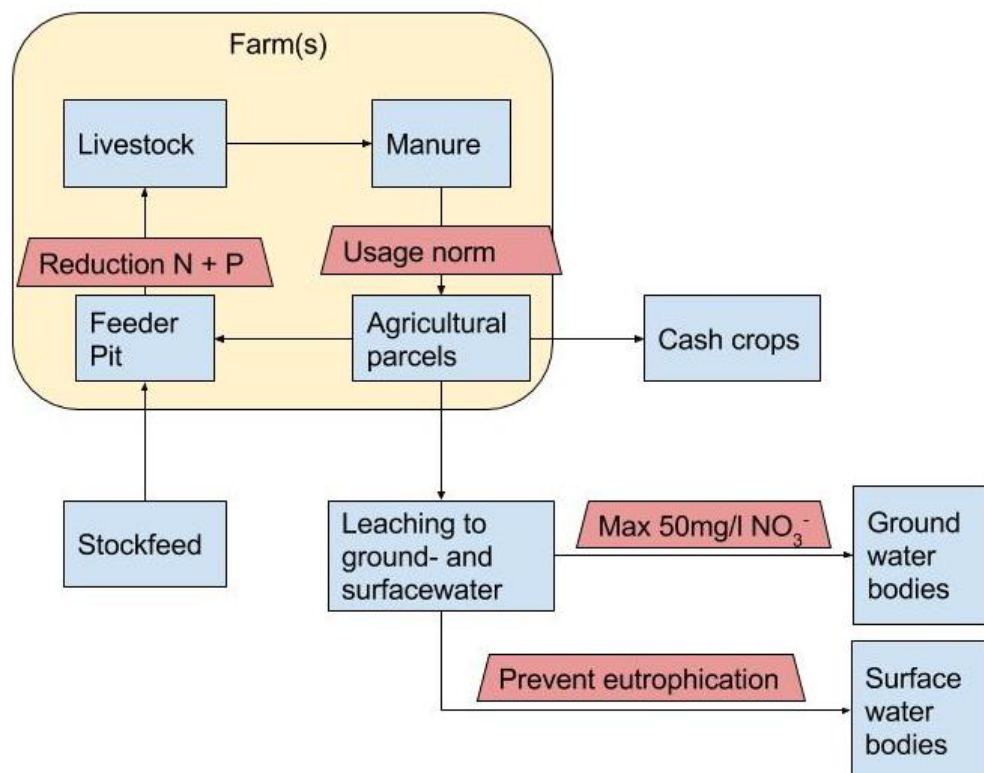


Figure 25: The flow of nutrients on a farm with measures to reduce the amount of nitrogen and phosphorous that are taken up by the livestock, and a water quality goal to protect drinking water sources

In Europe the Nitrate directive is accepted to provide a coherent approach to limit the influence that nitrogen from agriculture has on the water quality. (Council of the European Union 1991) This directive limits nutrient spreading to 170 kg nitrogen per hectare per year, sets a clear target of 50 mg/l nitrate in ground water bodies and directs national governments to take measures to reduce and prevent eutrophication in surface water bodies.

Phase 3: 1995 – 2000 Towards balanced fertilization, “Manure as innovation and volume problem”

In the period between 1995 and 2000 several large changes occurred in the Manure Act. The new minister of Agriculture Van Aartsen considered the fertilizer policy up to then to be unsuited to solving the issues surrounding the use of manure. To solve this issue, a number of working groups are started with the goal to develop alternative legislative options, while avoiding overly detailed legislation. (Bloemendaal 1995; Wiering 1999)

In the revised legislation, the decision is made to introduce a system where businesses with a high livestock density are obliged to report on their mineral management. If the applied minerals exceeded the predetermined loss standards the company would be fined. This approach allowed the farmer to the freedom to use his expertise to minimize mineral losses. (Ondersteijn, Beldman et al. 2002; RIVM 2002)

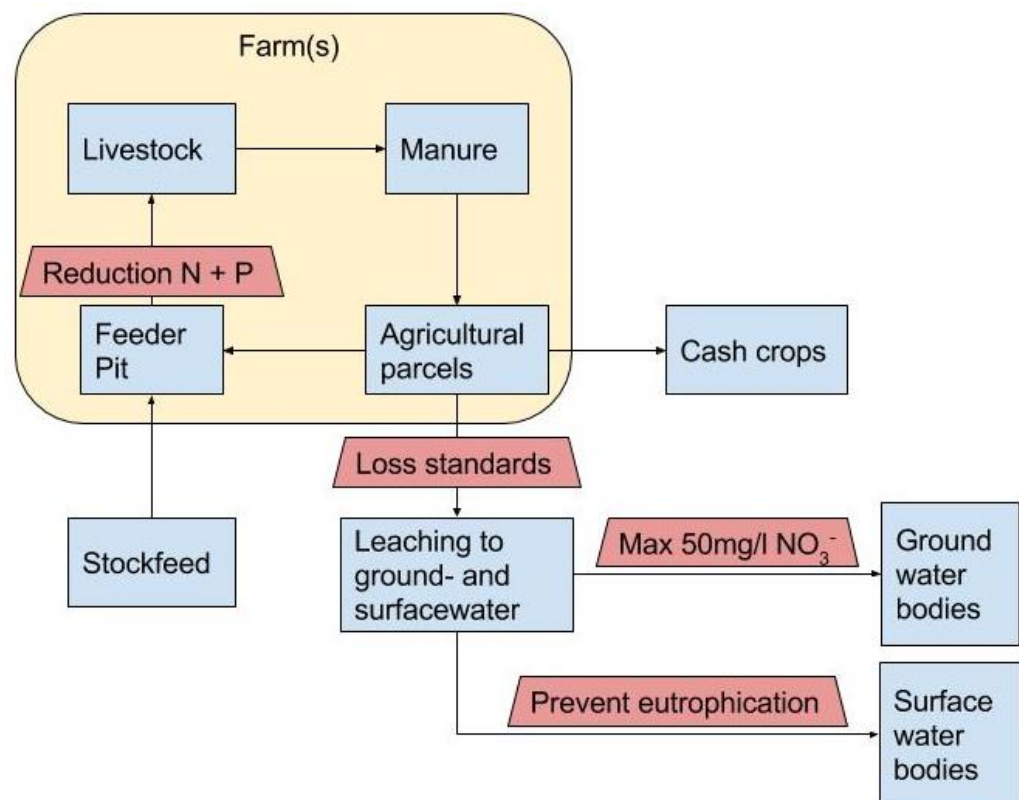


Figure 26: The flow of nutrients on a farm with loss standards limiting the leaching to the ground and surface water, instead of limiting the amount of manure that can be spread.

It should be noted that with the decision to use a system of loss standards, the European Commission started infringement proceedings against the Dutch state. This because the Commission was of the opinion that the Nitrate directive explicitly calls for usage norms and that the Dutch interpretation would be unable to prevent or undo surplus application of manure.

Phase 4: 2000 – 2003 Manure and the Water Framework Directive

In 2000 the European Parliament accepted the Water Framework Directive. This directive introduced a system whereby member states are to work on a series of river basin management plans with the goal to reach a good chemical and ecological water quality by 2015. (European Parliament 2000)

The Water Framework Directive goals are aimed at reducing the impact of human activities on the water quality, not just for the protection of drinking water sources as governed by the Nitrate directive, but for the protection of the ground and surface water bodies for their different uses such as drinking water, transport, recreation, ecology and agriculture.

This leads to system of clear water quality goals for chemical and ecological parameters. Because the ecological goals that the water managers set go beyond the goal of the nitrate directive to limit eutrophication, the goals that follow from the Water Framework Directive are more stringent than the goals from the Nitrate Directive.

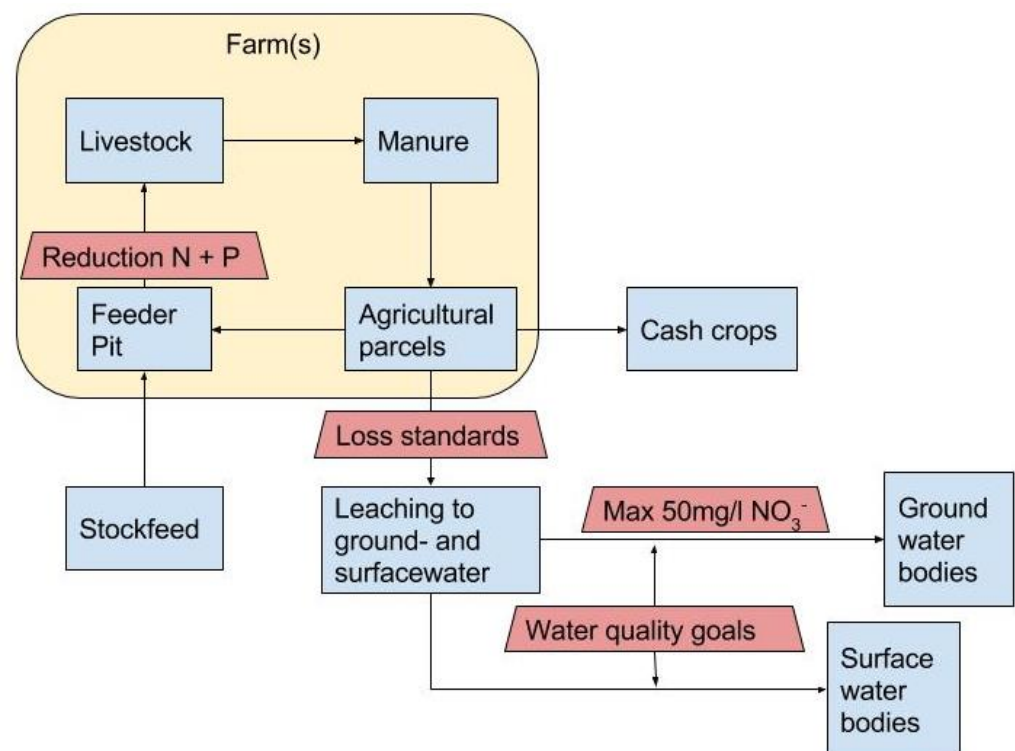


Figure 27: The introduction of water quality goals will clearly have an influence on the nutrient cycle on farms

This phase in the manure policy is closed on the 2nd of October 2003, when the Dutch government was convicted by the Court of Justice of the European Union for not fulfilling the commitments from the Nitrate Directive. (Court of Justice of the European Union 2003)

This ruling, and the reasons why the MINAS system failed have been extensively documented. (van Rijswijk 2004; Wright 2006; Hees Rougoor & Van der Schans 2012)

The main points of the ruling by the Court of Justice were:

- Regulation through charges after fertilizers have been applied to a parcel means that if a usage norm is violated, this violation cannot be undone.
- The MINAS system governed nutrient losses, while the nitrate directive explicitly calls for usage norms. (Hees Rougoor & Van der Schans 2012)
- The Dutch Action programme does not contain additional measures for soil types which are vulnerable to leaching.

Phase 5: 2004 – 2009 Implementing the ruling, and the Derogation

With the ruling of the Court firmly giving a direction to the Dutch government, interim legislation was devised to enable the government to devise a system which conforms fully with the ruling of the Court.

The 3rd Nitrate action programme consisted of a series of measures which fully complied with the Nitrate directive and was intended to cover a period of 2 years to enable the government to devise a new system of fertilizer and manure legislation.

The main focus in this action programme were:

- The implementation of the usage norms in conformity with the Nitrate directive.
- Closer attention to soil types which are more susceptible to runoff.

One of the main issues with the usage norms, was that on certain soil conditions with specific crops, it is possible for plants to uptake more nutrients from the soil than the usage norm from the directive allows to be supplied through fertilizers. Because of these conditions, the Dutch government negotiated with the European commission to obtain a derogation from the generic European usage norm. The main reason for this, was that the Netherlands was able to prove that with an usage norm of 250kg N per hectare per year for farms with at least 70% meadows the goals of the Nitrate directive could still be reached.

One of the conditions under which the European Commission granted the derogation, was that the Dutch government ensured that the manure production would not exceed the amount of nitrogen and phosphate that the cattle farming sector produced in 2002. (European Commission 2005)

Originally, the interim Nitrate Action Programme was devised for a period of 2 years, to provide time for the government to devise a new system which both complied with the ruling of the European Court. However this process took longer than expected, so that the 4th Nitrate Action Programme came into force in 2009.

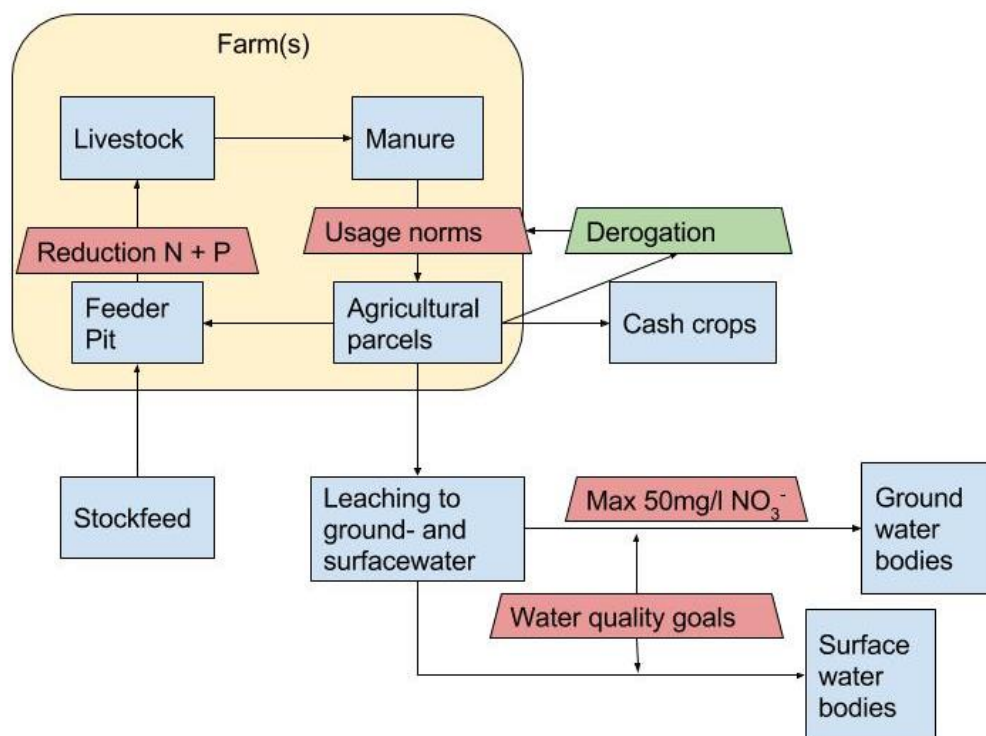


Figure 28: Reintroduction of usage norms, and introduction of the derogation

Appendix B: Overview of articles used for the text analysis

Titel	Author	Medium	Source	Appearance date
Verklaring van Amersfoort	All stakeholders	Conference note		27-5-2015
Kabinetsreactie op ex-ante beleidsevaluatie toekomstig mestbeleid	S. Dijkma	Kamerstukken		12-12-2013
LTO Visie op veranderend waterbeheer	J. Tobben	Policy influencing articles		2008
Deltaplan Agrarisch Waterbeheer in het kort	LTO	Agrimedia	agrarischwaterbeheer.nl	jan-13
De overheid heeft het laten gebeuren	J. W. Veldman	Agrimedia	Boerderij	15-12-2015
Emissiearm bemesten vergroot opbrengst	J. Oppewal	Agrimedia	Boerderij	8-9-2015
Er is geen eerlijke prijs	E. Van de Wolfshaar	Agrimedia	Boerderij	22-9-2015
Feiten vergaren is al lastig genoeg voor boer en burger	J. Braakman	Agrimedia	Boerderij	14-10-2015
Groei van bedrijven houdt een keer op	J.W. Veldman	Agrimedia	Boerderij	18-8-2015
Melkveehouderij niet uit de markt prijzen	H. Siemes	Agrimedia	Boerderij	5-11-2015
Opkrabbelen na stillegging bedrijf	K. Van der Horst	Agrimedia	Boerderij	15-9-2015
Revolutie in mestmeting	M. Verhagen	Agrimedia	Boerderij	11-8-2015
Strijd om fosfaatruimte	E. De Snoo	Agrimedia	Boerderij	27-10-2015
Wel de stal, niet de koeien	E. De Snoo	Agrimedia	Boerderij	4-8-2015
Kringloopwijzer levert altijd geld op	S. Van Raalte - Van de Kamp	Agrimedia	Melkveebedrijf.nl	dec-15
Boer droomt van marktmacht	J. Braakman, W. Esselink	Agrimedia	Boerderij	2-9-2014
Een drama achter de niendeuren	H. Talens, B. Janssen	Regional Newspaper	Twentsche Courant Tubantia	22-2-2012
NVWA heeft een hekel aan ons	M. Ploegmakers	Agrimedia	Boerderij	17-3-2015
Oerwoud aan regels	C. Hogeveen	Agrimedia	Boerderij	6-5-2014
Melkveehouders op weg naar faillissement	G. Hekker	Agrimedia	Boerderij	19-11-2015
Meer water is meer melk	R. Van Ginneken	Agrimedia	Melkveebedrijf.nl	1-10-2015
Fosfaat in de landbouw	K. Haanraads	Agrimedia	BNDR	sep-15
David van Tuijl over collectieve zuivering	A. Damen	Agrimedia	Glastuinbouw Waterproof	23-11-2015
Leon Duijvestijn: 'Het oppervlaktewater moet nog schoner'	H. Stijger	Agrimedia	Glastuinbouw Waterproof	23-12-2015
Waarom moet de toezichhouder dat allemaal handhaven?	L. Van Nierop	National Newspaper	NRC Handelsblad	9-12-2015
Ruim baan voor grote veestapel	R. Berends and J. Boonstra	Regional Newspaper	De Stentor / Gelders Dagblad	7-11-2015
De stront afdekken met een laagje BV's	D. Wittenberg	National Newspaper	NRC Next	26-9-2012
Nog even en de grutto is verleden tijd	C. Jansen	National Newspaper	Volkskrant	7-11-2015
Boer zoekt Protest	A. Van Dongen	Regional Newspaper	De Stentor/Apeldoornse Courant	13-8-2015
Boeren radeloos door mestregels; Steeds weer andere wetgeving	R. Bakthali	National Newspaper	Telegraaf	2-12-2015
Dolgedraaide varkensmarkt; Varkensboeren veroordeeld tot overproductie	H. Chin-A-Fo and L. Van Nierop	National Newspaper	NRC Handelsblad	5-9-2015
High Welfare Floor, de veehouder zorgt voor de stal, wij zorgen dat de vloer werkt		National Newspaper	Het Financieele Dagblad	14-11-2015
Kleine en grote boeren ruziën over fosfaatuitstoot	E. Hakkens	National Newspaper	Trouw	14-9-2015
Mest is het probleem en de oplossing	J. Trommelen	National Newspaper	Volkskrant	12-12-2015
Mesthandel Fraude is lucratief en redelijk simpel	T. Van Esch	Regional Newspaper	Eindhovens Dagblad	28-9-2012
Actie tegen lozen van afvalwater		Regional Newspaper	AD/Haagsche Courant	31-12-2015
Bij milieuzaken is er geen lijk	A. Van Dongen	Regional Newspaper	BN/De Stem	24-5-2014
Ruime derogatie onmisbaar	W. Esselink	Agrimedia	Boerderij	22-5-2013
Wonderkind in de verdachtenbank	M. Ter Horst	Agrimedia	Boerderij	3-9-2013
Beantwoording Kamervragen over het Hoofddijnenakkoord waterzuivering in de glastuinbouw	S. Dijkma	Kamerstukken		27-11-2015
Mestverwerking lijdt onder sojemelaars	G. Reijn	National Newspaper	Volkskrant	20-2-2014
Informatieve brief project Gebiedsgerichte Monitoring en Handhaving	B. van Egmond	Letter		23-4-2015
Bedreiging in zaak zwarte mest	M. Ter Horst	Agrimedia	Boerderij	23-3-2010
De overheid is verantwoordelijk voor de handhaving, wij niet	E. De Snoo	Agrimedia	Boerderij Vandaag	15-4-2014
Geen mestfraude, toch strenge regels	R. Stevens	Agrimedia	Pluimveehouderij	5-9-2014
Kwart mest illegaal verhandeld	E. De Snoo	Agrimedia	Boerderij	14-1-2014
Rabobank pakt voorzichtig de regie op		Agrimedia	Boerderij	30-12-2015
Ongekende vraag naar VVO's op de mestmarkt		Agrimedia	Boerenbusiness.nl	17-12-2015
Vermoedens van mestfraude		Agrimedia	Boerderij	16-10-2012
We willen de boer meer ontzorgen, een uitdaging	E. Beukema & E. De Snoo	Agrimedia	Boerderij	15-4-2014
Omvangrijke handel zwarte mest	M. Ter Horst	Agrimedia	Boerderij	16-3-2010
Mijd zwarte mest als de pest	R. Kingmans	Agrimedia	Boerderij	16-3-2010
Actieplan Mineralen	LTO	Policy influencing articles		2-10-2008
Koersvast richting 2020	LTO	Policy influencing articles		3-7-2013
Ingrediënten voor het collegeprogramma	LTO Noord	Policy influencing articles		30-3-2015
Mestverwerkingspercentages en status mineralenconcentraten	LTO	Policy influencing articles		16-10-2015
Leaflet GS Drenthe	LTO Noord	Policy influencing articles		9-4-2015
Leaflet GS Fryslan	LTO Noord	Policy influencing articles		9-4-2015
NVV MACE petitie	NVV	Policy influencing articles		3-7-2015
Extra Landbouw- en Visserijraad	NVV	Policy influencing articles		8-8-2015
Reactie ZLTO op Brabantse zorgvuldigheidsscore	ZLTO	Policy influencing articles		24-12-2013
Weer ten strijde tegen de ammoniak	A. Bosscher	Agrimedia	Boerderij	15-1-2016
Hoeveelheid fosfaat gaat door plafond	L. Van Nierop	National Newspaper	NRC Next	12-1-2016
Kwekerij en RUD hebben gezamenlijk belang	M. Ooms	Agrimedia	Bloembollenvisie	12-6-2015
Voorkom boetes met juist geregistreeerde contracten	E. De Snoo	Agrimedia	Boerderij	17-11-2015
Regering ziet alleen poep, denk eens aan de koe	H. Treur	National Newspaper	NRC Handelsblad	14-1-2016
Te veel mest van melkkoeien	M. Visser	National Newspaper	Trouw	12-1-2016

Appendix C: Overview of articles used for inter coder analysis

Titel	Author	Medium	Source	Appearance date
Feiten vergaren is al lastig genoeg voor boer en burger	J. Braakman	Agrimedia	Boerderij	14-10-2015
Opkrabbelen na stillegging bedrijf	K. Van der Horst	Agrimedia	Boerderij	15-9-2015
Een drama achter de niendeuren	H. Talens, B. Janssen	Regional Newspaper	Twentsche Courant Tubantia	22-2-2012
NVWA heeft een hekel aan ons	M. Ploegmakers	Agrimedia	Boerderij	17-3-2015
Oerwoud aan regels	C. Hogeveen	Agrimedia	Boerderij	6-5-2014
Meer water is meer melk	R. Van Ginneken	Agrimedia	Melkveebedrijf.nl	1-10-2015
Waarom moet de toezichhouder dat allemaal handhaven?	L. Van Nierop	National Newspaper	NRC Handelsblad	9-12-2015
Ruim baan voor grote veestapel	R. Berends and J. Boonstra	Regional Newspaper	De Stentor / Gelders Dagblad	7-11-2015
De stront afdekken met een laagje BV's	D. Wittenberg	National Newspaper	NRC Next	26-9-2012
Nog even en de grutto is verleden tijd	C. Jansen	National Newspaper	Volkskrant	7-11-2015
Wonderkind in de verdachtenbank	M. Ter Horst	Agrimedia	Boerderij	3-9-2013
Geen mestfraude, toch strenge regels	R. Stevens	Agrimedia	Pluimveehouderij	5-9-2014
Kwart mest illegaal verhandeld	E. De Snoo	Agrimedia	Boerderij	14-1-2014