

# The Contextual Interaction Theory in the case of (ground)water table management in It Heidenskip



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*Colofon*

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## Abstract

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In the last few years, farmers in the Netherlands have been protesting against rules and regulations made by the government and water boards, collaboration can help in alleviating the discourse between the parties. This issue is also present in the township of It Heidenskip, which is a place in the southwestern municipality in Fryslân. This township has a unique distinction in that the water table of the whole area is all controlled with one pump house, which leads to problems in managing water levels. Against this background, this research question is: *“What are the resources, cognitions and motivations of the Frisian water board and Frisian farmers in It Heidenskip and how could these characteristics help increase collaboration between them regarding problems with the (ground)water tables?”* To answer this question, the Contextual Interaction Theory was used. Based on this theory, interview questions regarding the actors’ characteristics towards implementation of the water table policy were formulated and then later used in interviews with representatives of the water board and farmers in It Heidenskip. The water board is the implementing actor of the policy and has more resources, higher cognition and motivation than the farmers. To achieve improved collaboration, it would be beneficial to enhance the motivation of the farmers, which currently can be seen as negative. Their motivation could be changed by, changing the farmers’ objectives to align with the goals of the policy. By showing them why the policy is beneficial. Or changing the goals of the policy to be more aligned to the farmers’ goals. Subsidies to comply with the policy could also be used to change the motivation of the farmers. More resources could be given or shared with the farmers, but this might lead to easier opposition to the policy instead. Hence, *“Improving the motivation of the target group of the policy (farmers) can help increase collaboration between parties.”* Furthermore, this research is an addition to the existing empirical knowledge in collaboration in water management. Additional future research regarding this subject could include expanding the area to see if the characteristics are similar in different places. Future research could also look into experimenting with changing the power dynamics and/or motivation levels and researching the effects that it has on collaboration between these parties.

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*Lists of Abbreviations, Dutch terms, Tables and Figures*

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Wetterskip Fryslân (The Frisian water board)	WSF
Advocacy Coalition Framework	ACF
Environment and Planning Act	EPA
Contextual Interaction Theory	CIT
Normaal Amsterdams Peil	NAP
Water Framework Directive	WFD
(Water)Peil	Water table
Peilbeleid	This is the policy regarding the water table.
Peilbesluit	This is the actual final decision on the water table height.
Polderbelang	Polder interest or concerning a polder

*List of Figures*

Figure 1: Province of Fryslân, highlighted in red, (from Wikipedia) ----- 1

Figure 2: Difference in ditch water level (picture by: Y. Galema, used with permission) ----- 3

Figure 3: Peilbesluiten province of Fryslân (gotten from Wetterskipfryslan.nl) ----- 4

Figure 4: The Aent Lieuwes pumping station in It Heidenskip ----- 5

Figure 5: The difference in height that the pumping station has to overcome ----- 6

Figure 6: Contextual interaction model (Bressers, 2007)----- 12

*List of tables*

Table 1: Conceptualization of power (Owens, 2008) ..... 9

Table 2: Conceptualization of motivation (Owens, 2008) ..... 10

Table 3: Conceptualization of information (Owens, 2008)..... 11

Table 4: Overview interviewees..... 14

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## Table of contents

1	General introduction .....	1
1.1	Background and history of farmers and the water board in the province of Fryslân .....	1
1.1.1	Policies and implementation .....	3
1.1.2	Nota Peilbeleid policy.....	4
1.2	Research problem and objectives .....	5
2	Theoretical framework .....	8
3	Methodology .....	13
3.1	Data collection .....	13
3.2	Data analysis .....	15
4	Results/discussion.....	16
4.1	Wetterskip Fryslân.....	16
4.1.1	District representative.....	16
4.1.2	Office worker, planning and projects .....	18
4.2	Farmer 1 .....	19
4.3	Farmer 2 .....	20
4.4	Farmer 3 .....	21
4.5	Discussion .....	22
4.5.1	Power .....	22
4.5.2	Motivation .....	22
4.5.3	Information.....	23
4.5.4	Improvements for collaboration .....	24
4.5.5	Limitations .....	25
5	Conclusion .....	26
6	References .....	28
7	Appendix A transcribed interviews .....	31
7.1	Interviews WSF representatives.....	31
7.2	Interview farmer 1 .....	35
7.3	Interview farmer 2 .....	37
7.4	Interview farmer 3 .....	40

# 1 General introduction

The introduction will start with some background information about the farmers and water board in the province of Fryslân, thereafter, the history between these two is discussed as well. Going further, the current policies regarding water level management are discussed after which, it narrows down to the Nota Peilbeleid policy. This policy is focused on the province of Fryslân. Lastly, the research questions, problems and objectives are talked over.

## 1.1 Background and history of farmers and the water board in the province of Fryslân

Farmers in the Dutch province of Fryslân, highlighted in red in Figure 1, in recent years, have been protesting different policies regarding nitrogen emissions, (ground)water levels, alongside increased taxes to the water board, abolition of milk quota's and other policies that farmers believe are making it increasingly difficult to keep on farming (Fryslân, n.d.; Schulte et al., 2018; Stokstad, 2019). Around 53% of land area in the Netherlands is farmland, which includes all forms of agriculture, such as dairy farming, horticulture and livestock farming (Statistiek, 2023) and it accounts for 6,4% of the GDP in the Netherlands; it stands to reason that what policies affect farmland and what is done with it is important. Around 4200 agricultural companies are based in the province of Fryslân, with the majority (58%) being dairy farmers (Statistiek, 2020).



Figure 1: Province of Fryslân, highlighted in red, (from Wikipedia)

As previously mentioned, the province of Fryslân has some agricultural companies. The farmers used to form their own waterboards in polders that they owned. Slowly but surely, these small water boards came together to form the Wetterskip Fryslân (WSF) as it is known now, which was fully formed in 2004. Until 1960, 1200 water boards existed in the province of Fryslân alone. Their main goal was to eliminate the excess of water. In 1993 they also took up the task of sewage treatment (*Historie*, n.d.). The daily and main management of the Frisian water board gets indirectly elected by voting for parties every 4 years (*Stemmen*, n.d.). In the 2023 elections of the waterboard, the Farmers Party was the biggest party that came out of those elections, alongside the “*Water Natuurlijk*” party, which is the eco/social party. A coalition between multiple other parties was formed. This meant that farmers got a bigger say in the daily activities of the water board (*Wetterskips verkiezingen*, 2023). Still, the water board has an obligation of water protection and ensuring the quality of water in

Fryslân. So even though the collaboration between the farmers and the waterboard has improved since the turmoil in 2019, which was about the increasing water tariffs, there is still some difference in goals. In 2023 the tariffs also increased. However, the increase for farmers was less than for households, which they said had nothing to do with the farmer's party being the biggest but due to the farmers having paid too much before (Sijens, 2023).

The waterboard emphasizes collaboration between them and farmers because most land is owned by farmers (*Wetterskip loopt tegen grenzen aan*, 2024). Knowing this, in a best-case scenario, the goals would be mutual; in reality, goals such as the height of the (ground) water table are different, as also seen Figure 2, in which the higher water level (yellow circle) is maintained by a biological farmer who also has a license for nature protection, whilst the lower water level (red circle) is maintained by the water board. This ditch water level is indicative of the groundwater level as well since a lower level of ditch water is equal to high drainage levels (*Grondwater inzet waterschapsverkiezingen*, 2023). Problems regarding water tables have partly come from land consolidation that happened between 1940 and 1980. These consolidations meant that large amounts of natural waterways were straightened and made more efficient at getting rid of water. It is so efficient that it is now really noticeable that when it does not rain for a while, the area dries up fast. Land consolidation also meant scaling up farms, increasing their production, which went well until the (eco)system couldn't or didn't want to handle the production rates anymore. This leads to the problems that farmers experience now; as they are still dealing with how the system was made in 1980, with 2024 rules and regulations (*GLB 2023-2027 - Europese Commissie*, 2024; *Ruilverkaveling | Rijksdienst Voor Het Cultureel Erfgoed*, n.d.).





Figure 2: Difference in ditch water level (picture by: Y. Galema, used with permission)

### 1.1.1 Policies and implementation

The European Union/commission's Water Framework Directive (WFD) is a law/guideline that member states can use to make policies regarding the quantity and quality of ground/surface/drinking water and safety from water. It contains a list of substances that must be monitored and which levels of pollutants must be attained to ensure sufficient quality of water. (*Water Framework Directive - European Commission, 2024*). In the Netherlands this directive has translated itself into the "Omgevingswet" or Environment and Planning Act (EPA), this act came into force on January 1<sup>st</sup>, 2024. The WFD has been absorbed into the EPA and works by using the Common Implementation Strategy which provides guidance on how to implement the WFD, such as notes on planning, good practices on water planning and requirements of the directives for proper planning (*Guidance No 11 - Planning Process (WG 2.9).Pdf, n.d.*). So, the EU sets the standards for quality and quantity regarding water, the member state can give its own fulfilment on how those standards are achieved. In the Netherlands the implementation is divided into 4 sections of international fluvial districts: Meuse, Rhine-north/Eems, Rhine East, Rhine West, Schelde. For this research the Rhine-north/Eems district

is important. However, for all intents and purposes, the minister of infrastructure and water management is responsible for the system management and implementation of the WFD. This is done in consultation with provincial governments, water boards and municipalities. They set up policies such as the EPA which describe laws, incentives, regulations, measurements, etc. The EPA states that the water board is responsible for the management of the water system whilst the province is there to provide coordination of the exercise of the duties and powers of water boards (Rijkswaterstaat, n.d.). This also leads to the making of the "Nota Peilbeleid" which is explained in 1.1.2.

### 1.1.2 Nota Peilbeleid policy

This research focuses on the Nota Peilbeleid policy, which dictates how the (ground)water level should be achieved in polders and the Frisian waterways. A map of the “Peilbesluiten” can be seen in Figure 3. This map shows how high the water table has to be. Each colour represents a different (ground)water table, some areas, like in the top of the map, are uniform. This northern point is the Bildt polder, which was drained and flattened to the same elevation. This water table is measured in meters below or above Normaal Amsterdams Peil (NAP), which is a reference point for all water

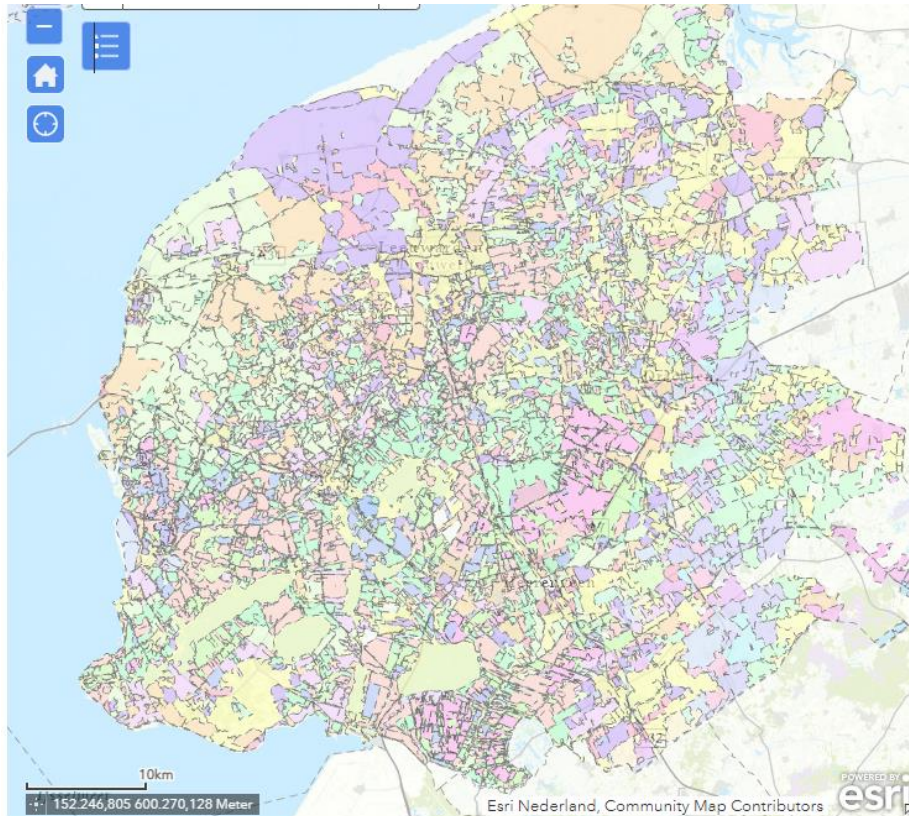


Figure 3: Peilbesluiten province of Fryslân (gotten from [Wetterskipfryslan.nl](http://Wetterskipfryslan.nl))

heights in the Netherlands. For reference, an NAP height of 0 meters is about equal to the average sea level of the North Sea (Waterstaat, 2024).

The water table is based upon the function of the land, which is either: “Agriculture, Nature, Buildings and infrastructure in rural areas and Buildings and infrastructure in urban areas.” (Fryslân, 2023).

Within a “peilgebied”, or in other words an area that has the same water table, the (ground)water level

in that area has to be maintained using pumping stations, dykes, and streams connected to the pumping station. The Nota Peilbeleid of the WSF states what the desired water table management should be for agriculture. It states that: “in the winter period, the difference between ground level (*Maaiveld*) and ditch water level should be at minimum 0.8 meters for peat or 0.9 meters for clay grounds to prevent the area from being too wet. In the summer period the difference should not be greater than what is required from agriculture, especially on peat soils to prevent oxidation and subsidence” (Fryslân, 2023, Bijlage 3 Factsheet Gewenst Peilbeheer). The difference between ground level and stream or creek level is not always indicative for the groundwater table because of impenetrable layers of soil, seepage or drainage; they do state that for grasslands, the optimal difference is between 0.5 m and 1.10 m, and that a location is a problem if 10% of that area falls out of that width. The WSF is directly responsible and in control of the water table in their water system “*Fryske Boezem*,” they are not directly responsible for groundwater table. However, in most cases the groundwater can be (indirectly) controlled by managing the water table in ditches; a lower ditch water level will usually mean a lower groundwater table as well. This means that the actions of the WSF regarding the water table will indirectly influence the groundwater table. (Fryslân, 2023)

## 1.2 Research problem and objectives

To test the realization of optimal conditions and whether they have been achieved, the WSF uses a calculation that puts the theoretical maximum attainable crop yield minus the wet- and dry damage done to the area. That damage is calculated using the average highest (ground)water level and average lowest (ground)water level. The result of the calculation must be 70% or higher, if it is lower, then there is room for improvement. Another factor in this calculation is the usage of practical experience gained from the district manager of the WSF, who talks to farmers and makes sure that the calculations are representative by checking them (Fryslân, 2023). This is where collaboration comes into play, as farmers are not in control of the (ground)water table, even going as far as to receive fines for having their (ground)water table too high or too low. This collaboration between the farmers and the WSF should make sure that optimization of this policy and the realisation of optimal conditions is possible. However, as mentioned in 1.1 the reality of the situation is that not all farmers agree with the situations they are confronted with.

In interviews with farmers in the township of It Heidenskip and looking at the “peilbesluit” on the interactive map of the WSF in Figure 3, it became clear that a large area of the township and its agricultural lands are using the same pumping station. For reference, the area that is all under one pumping station is about 19 km<sup>2</sup>, this pumping station can be seen in Figure 4 and Figure 5. The height difference that the pumping station must overcome is about 8 meters or more depending on the mechanism inside.



Figure 4: The Aent Lieuwes pumping station in It Heidenskip





*Figure 5: The difference in height that the pumping station has to overcome*

This has some implications; from interviews conducted in a previous research project, it was gathered that this layout with only one pump made it so that one farmer that has the ground level of their fields higher than the surrounding area could have too little groundwater whilst another could practically be too wet to cultivate anything. Not all farmers in the township experience the same troubles, but it is an interesting case. It is interesting because the majority of the township and its agricultural lands fall under the same pumping station which has its unique problems, as explained before. Furthermore, after some interviews with farmers in the area, it was found that the opinions on working together with- and on the WSF were quite varied, and this research project focuses on the township of It Heidenskip and the surrounding area.

Considering the difficulties in collaboration that were previously identified and my own motivations, the aim of the thesis became to identify how actors' motivation, resources and cognitions of the Frisian water board and farmers can increase the collaboration addressing water management regarding the (ground)water table. This research provides insight into collaboration in water management and actors' perspectives, motivations and goals.

The objectives to achieve this aim are:

1. To identify actors' characteristics (resources, motivation/goals and cognitions) to increase collaboration between Frisian farmers and the Frisian water board.
2. To propose how to improve collaboration regarding (ground)water table management.

Based on the previous objectives, the main research question answered in this thesis research is the following:

*“What are the resources, cognitions and motivations of the Frisian water board and Frisian farmers in It Heidenskip, and how could these characteristics help increase collaboration between them regarding problems with the (ground)water tables?”*

The following sub-questions aim to answer the main research question and to achieve the objectives:

1. What are the characteristics of the Frisian farmers and water board members have regarding implementing the Nota Peilbeleid?
  - a. What are the cognitions of the actors?
  - b. What are the resources of the actors?
  - c. What are the motivations of the actors?
2. How can collaboration be improved between both parties when considering their resources, cognitions and motivation?

## 2 Theoretical framework

A methodological review has taken place to find several types of theories and frameworks regarding actors and collaboration. A methodological review focuses on the methods used in articles/researches rather than the findings (Saunders et al., 2019). By asking the supervisors and peers during workshops if they knew of frameworks and theories regarding collaboration, multiple theories were found. Furthermore, the terms: 'collaboration, governance, water, management on Scopus were investigated. This also resulted in theories that could be used. The first theory/framework that was found was one of Ansell & Gash, (2008), they used Collaborative governance, shortly after that the collective leadership compass by (Kuenkel, 2015) was found alongside the advocacy coalition framework used in (Heinmiller, 2023). Lastly the Contextual Interaction Theory (CIT) was found by asking peers what theories they used in their articles. The CIT seemed promising. Then, I searched the term: 'Contextual Interaction Theory' on Scopus, sorting the 2500 documents by relevance. Then the words water and actors were added which already narrowed it down to four documents. Then after reviewing these documents, the theory was partly synthesised, using the 'cited by' feature on Scopus and looking at the references in the articles themselves; several other documents were backtracked, which expanded the knowledge of how the CIT could be used.

The theories such as the Advocacy Coalition Framework (ACF) (Heinmiller, 2023; Sievers & Jones, 2020), Collaborative governance (Ansell & Gash, 2008) and the collective leadership compass (Kuenkel, 2015) were used as support for the discussion and to connect back to the CIT. They are described as follows:

In short, the ACF states that there are coalitions of individuals within a policy, that share a set of goals, beliefs and values. They (usually) work together to influence policy decisions. The framework states that advocacy coalitions are driven by hierarchical belief systems. The systems are categorized as: Deep core beliefs, Policy core beliefs and secondary beliefs. The deep core beliefs are resistant to change and are broad. Policy core beliefs are more specific to the policy area and include how problems should be addressed alongside which instruments should be used. Lastly, the secondary beliefs are detailed beliefs about policy implementation and specifics, which are likely to be changed by external or internal events (Heinmiller, 2023).

In collaborative governance Ansell & Gash, (2008) define the term as: *'A governing arrangement where one or more public agencies directly engage non-state stakeholders in a collective decision-making process that is formal, consensus-oriented, and deliberative and that aims to make or implement public policy or manage public programs or assets.'* The process in which collaborative governance works is divided into face-to-face dialogue, trust building, commitment, shared understanding and intermediate outcomes (Ansell & Gash, 2008). This has some overlap with the CIT as well.

Lastly, the collective leadership compass used by Kuenkel, (2015), suggests that the following six dimensions can lead to more reliable and constructive collaboration effort: Future possibilities, Engagement, Innovation, Humanity, Collective intelligence and wholeness. The first dimension is the competence to take responsibility and to consciously try to make a sustainable future. Engagement in the form of engagement between stakeholders can create cohesion and trust, which might support collective action. Innovation refers to the competence to create intelligent and novel solutions. The dimension of humanity refers to the need for mutual respect between people and their intrinsic value. Collective intelligence refers to the ability and need to use the diversity of people (as groups) for progress and increasing knowledge. Wholeness is the ability of people and groups to distance

themselves from a situation to better understand the situation and its coherence as a whole (Kuenkel, 2015).

In this thesis, the topic is, a collaboration between public and private actors to solve a common problem; this fits in with CIT. The CIT, in general, examines characteristics of actors, which are power balance, motivation and information and helps to understand how actors make their decisions (Bromberg, 2016). These attributes are described by Katharin A. Owens in (Bromberg, 2016; Owens, 2008) and by (De Boer et al., 2013) as the following:

**Power:** this characteristic is about decision or non-decision making, it includes resources that an actor has towards tackling a problem. In other words, it is about capacity and control. These resources are dedicated to fighting or supporting implementation and include the ability to make actors stronger or weaker by way of time, personnel and finances. It also includes the reputation of an actor and how an actor can control a situation. The reputation of an actor is based upon how actors see each other and will stand until it is challenged and fails. Power to control a situation can be divided into formal or informal facets. Formal power comes from law, informal power comes through other ways, such as media, awareness raising, lobbying etc. There is also a distinction between power and reputation of power. Reputation of power is defined as the way actors perceive each other in the process or implementation of a policy. Therefore, it is also important to consider how an actor perceives their own power in comparison to other actors' power (Bromberg, 2016; De Boer et al., 2013; Owens, 2008).

The conceptualization of power can be seen in Table 1.

*Table 1: Conceptualization of power (Owens, 2008)*

<b>Control</b>	
Formal control	Legal power and responsibilities held
Informal control	Media, Awareness raising, lobbying
<b>Capacity</b>	
Resources	Time, personnel and finances towards a process
Lack of resources	Time, personnel and finances that are lacking in a process

**Motivation:** this characteristic considers an actor’s own motivation and external pressure. The motivation that they have themselves are about the compatibility with the goals that are implemented, along with social, economic, normative and political influences. Normative motivation could be seen as one’s duty to participate in a project or process. It also incorporates work-related goals and attitudes towards those goals or goals from other actors. It also addresses the actor’s ability to achieve their own goals if they are important to them and if outside influence thwarts an actors’ self motivation. It is also important to consider whether or not the implementers of a process take this process seriously as to prevent a symbolic purpose of it (Bressers, 2004; Bromberg, 2016; De Boer et al., 2013; Owens, 2008). Taking all this, the conceptualization of motivation can be seen in Table 2

Table 2: Conceptualization of motivation (Owens, 2008)

<b>External Pressure</b>	
Political	Political pressure or support influencing an actors’ perspective and pressure to comply
Economic	Actors’ financial reasons to comply or otherwise affected by implementation of the policy
Normative	The civic duty to comply with the implementation of the policy
Social	Actors’ social reasons to comply, such as pressure and social support or opposition towards an actors’ perspective
<b>Own motivation</b>	
Compatibility with goals	Alignment with goals of the process of implementation
Attitude towards other actors	Alignment with goals of other actors
Attitude towards goals	Personal beliefs about process’ goals
Work related	The motivation towards completing or opposing the process of implementation as one’s job
Self-effectiveness	Confidence about the estimated capacity to execute tasks in the process

**Information/cognitions:** this characteristic of actors is their accessibility to information and the process’ transparency, it becomes easier for collaboration to be implemented if information and communication that cause a reduction in uncertainty are present. Awareness of regulations and their specifics, are required to be able to comply to them. Furthermore, the reason for a lack of awareness could come from multiple ways, such as lack of publicity of the regulation or newness of it. There could also be a lack of understanding the requirements that a regulation brings. It also includes knowledge of the other actors and the availability, quantity and accessibility of documents and information. The information should be accessible to active and interested parties, which means that it should be useable and readable for a lay man (Bromberg, 2016; De Boer et al., 2013). Owens, (2008) also states that; it is almost impossible to measure the information level of an actor within the overwhelming amount of information out there. This is because it is also impossible to know or measure all available information. Which is why it is important to ask what information actors would like to have known, to understand what kinds of information might be absent from the entire process. Taking all this, the conceptualization of information can be seen in Table 3



Table 3: Conceptualization of information (Owens, 2008)

<b>Transparency</b>	
Accessibility of knowledge/information	How difficult or easy is it to find information regarding the process
Uncertainties	How sure or unsure are actors about their knowledge
Documentation	What types of information and how much information is out there and of what quality is this information
<b>General knowledge/information</b>	
Benefits	Actors' awareness of the benefits of a process
Awareness	Actors' awareness of the process in general
Requirements	Actors' knowledge of the requirements of them in a process
Actors and qualifications	Actors' knowledge of other participants and what their roles are in a process

These characteristics can also be seen in Figure 6. Alongside the characteristic, connections between them exist. Having high power as a characteristic makes the actor more capable of using those resources to increase their information by increasing their data search and processing capacity. Furthermore, more power allows for a higher availability of resources for the action an actor is motivated for.

Increasing information allows the actor to know what strategic value a policy has, which increases the capacity and power of an actor. Furthermore, increasing information can let an actor see the opportunities and threats of a policy better.

Lastly, an increase in motivation leads to a more focussed attention, which helps in gathering information more efficiently. Furthermore, the relevance of resources for intended action will increase, which helps allocate the power that an actor can use effectively.

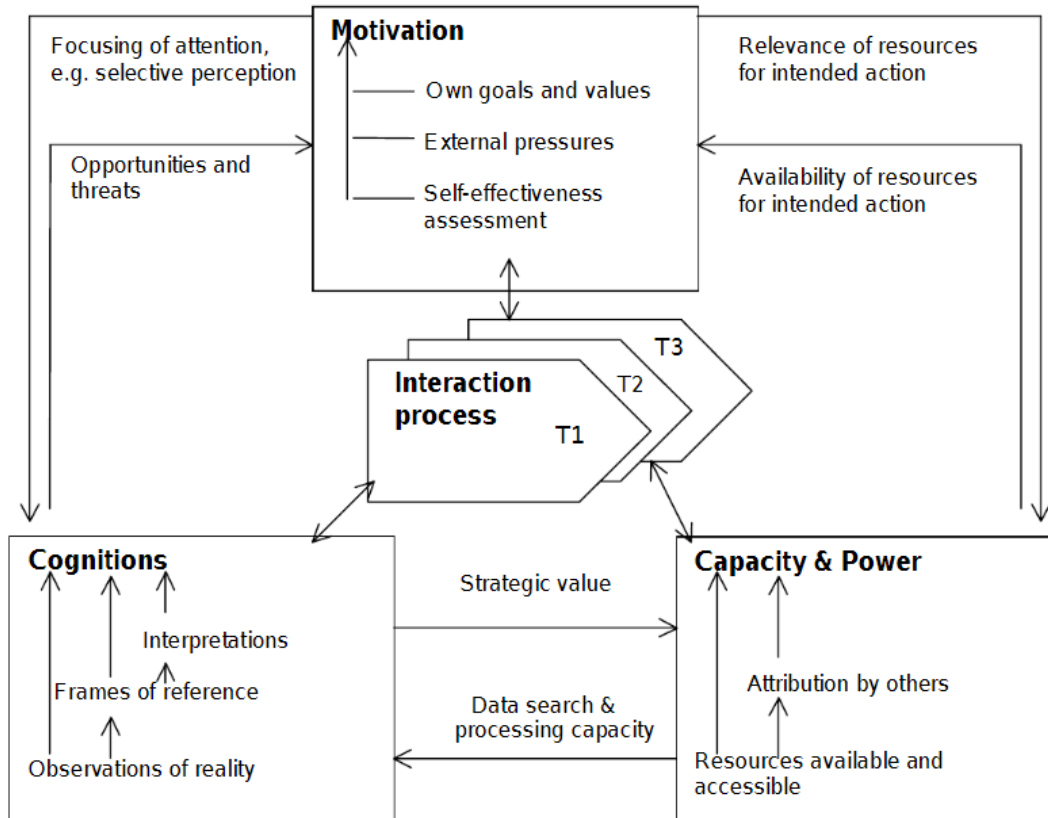


Figure 6: Contextual interaction model (Bressers, 2007)

### 3 Methodology

The CIT is used to understand the interaction process between different stakeholders. This is done by interviewing the actors. The interviews were semi-structured with questions regarding motivation, (perceived) power and cognitions about the water management in tackling water table issues. Using the interpretation of the collected data, it is discussed if collaboration can take place between the actors and what that would look like. This discussion can be seen in chapter 4. Interviewing allowed for a detailed description of the actor and their attributes (Bromberg, 2016). The research unit was selected using a purposive sampling technique focused on Frisian farmers and representatives of the Frisian water board. The characteristics of these interviewees are described in chapter 3.1 and in Table 4.

#### 3.1 Data collection

The interviews were conducted face to face using a list of predetermined questions with room and expectations to be probing beyond given answer to get more insight into the thoughts and feelings of actors. The interview questions were derived from literature and aim to ask and give insight into the cognitions, motivations and power, firstly the conceptualization of the attributes had taken place, after which, interview questions were derived.

These questions are based upon the works of Bromberg, 2016; De Boer et al., 2013; Owens, (2008) in which they describe the elements of power, cognitions and motivation alongside interview questions that can be asked to interviewees to gather data on these elements. In these interviews, the working language was either Dutch or Frisian.

Based upon the conceptualization of power in chapter 2, the following interview questions have been made:

- Are your responsibilities clear?
- Do you think the legislation is appropriate for your functions?
- What financial commitment is needed from your organization/you?
- Do you have enough personnel to handle the implementation and maintenance of the Nota Peilbeleid?
- How much time do you invest in implementing and maintaining the ?
- Does the nota peilbeleid require resources that you or your organization not have access to?
- How involved in the decision-making process are you or your organization?
- Are you or your organization responsible for fulfilling the requirements of the policy?
- Are you or your organization responsible for monitoring the effects of the policy?
- are you or your organization responsible for reporting on the effects of the policy?
- How do decisions are made in the nota peilbeleid?
- Do you work together in the nota peilbeleid?
- Do you have appropriate access to the media and is your perspective properly represented there?
- Do you think that your position can be jeopardised by lobbying groups?

Based upon the conceptualization of information in chapter 2 the following interview questions have been made:

- Do you know what is required of you or your organisation in this policy and are you responsible for meeting those requirements?
- Does the Nota peilbeleid benefit you or your organisation?
- How would you put into words the information you receive about the policy (from the opposing party?)
- Do you find yourself to be dependent on information given to you by other parties?
- And what do you think of the quality and quantity of this information?
- Do you think that there is a lack of information somewhere?
- Are there other things you are uncertain about when it comes to the nota peilbeleid?

Based upon the conceptualization of motivation in chapter 2 the following interview questions have been made:

- What is the goal of the nota peilbeleid and do you think this is compatible with the goals of other actors?
- What are the benefits of the nota peilbeleid to your organisation?
- Do you think that farmers are negatively affected by this policy?
- Do you feel that it is important that all parties are content/treated equally?
- Do you feel like it is your civic duty to adhere to this policy?

5 interviews were conducted with each lasting about 30 to 50 minutes. These interviews were recorded and then later transcribed and translated. The interview began with a general introduction to this thesis, what the research is about. After the introduction, the questions as seen above were asked in the same order that can be found in the appendix chapter 7. The transcription of the interview was done using the interview questionnaire. A question was asked, thereafter the answer was recorded and then transcribed to essential parts. In Table 4 the overview of the interviewees can be seen with a description of each of them.

Table 4: Overview interviewees

Code	
Wetterskip Fryslân District representative	The Waterboard which, the township of It Heidenskip falls under. They are responsible for maintaining the waterworks, ensuring safe water and safety from water. Their goal is to work together with other actors to make sure that all parties are treated as fairly as possible. Laws and regulations from the European Union and Dutch government mostly dictate what the policies of the WSF are. The district representative talks to inhabitants of their district and converses with them about the problems and policies that are present.
Wetterskip Fryslân, Office worker in planning and policy	A second spokesperson of the WSF that was interviewed for this research. This person works

	in the office of the WSF in planning and policy, They were interviewed to see if the views and opinions within the WSF are similar or if there is a difference between them.
Farmer 1	This farmer is a conventional (so non-eco or biological) dairy farmer and owns plots of land some distance from the pumphouse, they have had some negative experiences with the WSF before. These experiences were not related to the Nota Peilbeleid and the following <i>“Peilbesluiten,”</i> but they did have an impact on the farmers’ perspective on the WSF.
Farmer 2	This farmer is also a conventional farmer and owns land a bit closer to the pumphouse. They do not have any noticeable positive or negative experiences with the WSF or other actors.
Farmer 3	Ecological/biological farmer, this farmer has been known to do things in their own way to ensure ecosystems can be restored and maintained. They are pro-local, which means that they would like to arrange policies and regulations using local knowledge and actors instead of governments that do not know what is happening on a smaller scale.

### 3.2 Data analysis

The data that is gathered from the interviews will provide a basis for answering the question of where collaboration can be improved upon regarding motivation, cognitions and power. Furthermore, to answer sub-question 3: *“How can collaboration be improved for both parties?”* an interview question was made that asked what the interviewees would like to see happen to improve collaboration in general. This question was also asked in relation to the characteristics, so if the interviewees would like to see their or another actors’ power, information or motivation be different to improve collaboration. The characteristics of power, motivation and cognitions are determined by the general positive or negative answers that the interviewees gave. These levels are given details and context using the interview questions themselves.

After contextualization/understanding of the process has taken place, a discussion is opened. In this discussion the current situation of each actor is described regarding their current collaboration, the characteristics and experiences that they have had, alongside a description of the situation in general. Using the answers given in the interview, the sub-questions are answered which leads back to the main question: *“What are the resources, cognitions and motivations of the Frisian water board and Frisian farmers in It Heidenskip and how could these aspects help in increasing collaboration between them regarding water management and problems with water tables?”*

## 4 Results/discussion

In this chapter the results from the interviews are presented and discussed. It is split into the results for each actor individually before converging. Five interviews with special regards to the CIT were conducted. These interviews used the appropriate questions found in chapter 3.1 and the processed transcript of the interviews, which takes only the essential parts, can be found in chapter 7. More interviews were held with multiple farmers from the township of It Heidenskip for previous research, in this research some questions regarding collaboration with the WSF were asked as well.

### 4.1 Wetterskip Fryslân

Two representatives of the WSF were interviewed. One of these representatives also represents the WSF to farmers and communicates with them. The representative can be called up if there is a problem or if information is needed. The other representative is an office worker who manages plans and projects.

#### 4.1.1 District representative

The power of the WSF lies in the fact that they get to decide on the (ground)water table. This does come with the caveat that they must do this in collaboration or at least agreement with the farmers. The district representative mentions that the WSF has more money to spend on the implementation, maintenance, reporting and improving of the Nota peilbeleid than the farmers do. The WSF and district representative know their responsibilities, although they still think that the legislation that the WSF must deal with, is outdated, due to the presence of nature and businesses becoming bigger than originally accounted for when the old laws were made. The finances and time going into implementation of the Nota Peilbeleid are substantial. The time needed to change a peilbesluit is about a year at minimum to do the administration work. However, the maintenance of water works and maintaining groundwater tables is continuous work. Therefore, the district representative also mentions that the WSF has too little personnel to work as efficiently as possible. The WSF says that they are working together when implementing the Nota Peilbeleid with the interests of all parties at heart. The WSF are also the jurisdiction of the Dutch law and the European Union, which means that the WSF has to make compromises when it comes to making sure all parties are content. Lastly power-wise, the district representative of the WSF does not think that they are properly represented in the media and mentions that it really depends on what becomes big news and therefore seen by the people, it may seem sometimes that they are the bad party. Their position can be quite easily jeopardized by lobbying groups since they rely on a political party system. The changes in the parties that control the WSF do not affect the "Peilbesluiten" as much, since they are made in collaboration with the affected actors anyway. The formal control of the WSF is high whilst their informal control is low; they have money and time as resources but lack sufficient manpower.

The district representative thinks that WSF knows what they will gain from the implementation of the Nota Peilbeleid, which is having a clear reference point that they can come back to if anything needs to change or if people start arguing. The district representative thinks that the WSF are still largely dependent on other parties for information due to a new monitoring system for more accurate ways of measuring, monitoring and gaining information being deployed. This, however, is still in its infancy. The information that the WSF gains from other parties is of good quality and quantity, since there is also not much to gain for the farmers if they withhold information. Although the WSF has the resources to gain information, there is still a lack of information in some departments. The effects of particular groundwater tables are not always known, and to precisely measure the (ground)water table is time and money-consuming. Therefore, they also use cheaper more inaccurate methods to measure groundwater tables, like the growth of plants. Furthermore, there are some uncertainties as well, like global warming, acidification, salination and extreme weather patterns. The WSF knows

what the benefits are, what the actors do and what is required of them. However, they lack some information about the effects of the policy and are uncertain of the future.

The district representative thinks that the goals of the WSF are compatible with the goals of the farmers as well. They are not exactly the same because most farmers would like their groundwater table to be a bit lower, whilst nature preservationists and biological farmers would like their water tables to be a bit higher. The water table for farmers cannot be lowered more than the amount set in the Nota Peilbeleid due to the problems of subsidence of the ground, salination, flooding and the release of GHG's. The higher water table for farmers does affect them negatively in the short term. With the working period in which farmers can work their field being shortened. However, in the long term, it is better for the land that water table is somewhat higher. The WSF feels that it is important that all parties are content and tries to make sure that this happens and feels that it is their civic duty to do that. The WSF has pressure coming from the 4 categories mentioned in the motivation part of chapter 3.1. The political and economic pressures seem to be the biggest, due to the possible economic consequences of malmanagement of groundwater tables. Which can lead to civil unrest as well.

One thing that the interviewee put up for thought was a "Polderbelang" meeting. People living in the same polder and interested parties can converse, share their thoughts, opinions, concerns and solutions. The WSF thinks that collaboration can be better, and they are eager even to improve it. But improvement must come from the other side as well. They are open to facilitating meetings and bringing forth speakers if it means collaboration improves. They also benefit greatly from improved collaboration, due to lower costs for gathering information, less manpower needing to be used and less time needing to be spent.

#### 4.1.2 Office worker, planning and projects

For power, the office worker thinks that legislation is appropriate for their job in the Nota Peilbeleid policy. The office worker agreed with the district representative that millions in financial commitment is needed by for the proper execution of the policy. They also added that for office workers, they have enough personnel, but the WSF can always use more field workers. This limitation in budget, time and personnel was confirmed by the office worker. The office worker mentioned that the involvement of the WSF in the decision making process consists of acting and deciding on water levels on a smaller scale. The WSF sets the rules and regulation, which say that there must not be any damage done to the water system when planning and executing projects. The office worker confirmed that the WSF is responsible for fulfilling the requirements, monitoring and reporting on the effects of the policy. The office worker says that; whilst new parties can have different motivations which can jeopardise the position of the WSF, the fundamental visions and workings can (almost) not be altered suddenly.

For information, the office worker mentions the same benefit of having a set reference point and guide to use, when asked about the benefits of the Nota Peilbeleid policy. The office worker say that information from other parties is usually specifically tied to a project, but is of utmost importance nonetheless. The office worker was also unsure about the effects of implementation of the Nota Peilbeleid policy and the effects that certain water tables have. They did not have more to add on information.

For motivation, the office worker thinks that the WSF should remain responsible for maintaining and being in charge of the Nota Peilbeleid policy and the water levels in polders. The office worker mentions that the WSF is more knowledgeable than the farmers in these regards and that it would not be advisable to let the farmers be in charge of their own water levels. The office worker says that they think that the best way to ensure that all parties are treated equally; is to use the district representative, because these people have closer connections to the other parties. The office worker is motivated to fulfil and execute the Nota Peilbeleid policy properly and as efficiently as possible.

The office workers mentions, that for improvement of collaboration, the WSF now engages with affected parties in the design phase of projects. This used to happen after more concrete plans were made, which led to frustration from the other parties. The “new” approach allows for improved involvement of other parties and a more streamlined approach to projects.



## 4.2 Farmer 1

Farmer 1 is a conventional (so non-eco or biological) dairy farmer and owns plots of land some distance from the pumphouse, they have had some negative experiences with the WSF before. These experiences were not related to the Nota Peilbeleid and the following *“Peilbesluiten,”* but they did have an impact on the farmers’ perspective on the WSF. The groundwater table is further controlled with a “smart” dam, which can be remotely controlled to regulate the groundwater table in case of high precipitation. This smart dam can be seen as the exit point of the “ground” water in this farmers’ plots of land. The farmer said that the water height is also measured there, at which the farmer wondered: *“Why is the whole groundwater table for all my plots of land measured at the end point, of which one can already calculate the height that the dam is set. So not only is it redundant, but the accuracy is also low.”* This was right from the start of the interview, so the precedent was set quite early.

For power, farmer 1 does not feel that they have much power in the policy. The responsibilities are clear for the farmer, although they do not have many to begin with. Therefore, almost no time, money or personnel is needed to fulfil the requirements of the policy. The experience of farmer 1 in working together is not great, the work relationship with the WSF is difficult and tedious. If one wants to work together with someone from the office of the WSF it will take a lot of time. The amount of paperwork and bureaucracy is often not worth dealing with. Which leads this farmer to take action into their own hands if something needs to be done regarding the (ground)water table. The representative and field workers are, in the opinion of farmer 1, *“Quite okay,”* they are easier to work with, and it takes less time to start and complete the work. Farmer 1 expresses that their position in the policy can be jeopardised by other lobbying groups, but states that if farmer 1 wants to, they can access the media to properly represent themselves.

Farmer 1 is quite knowledgeable in general. Farmer 1 knows a lot about his land and is not reliant on information coming from the WSF. That does not mean that farmer 1 does not use the information given to them by the WSF, if farmer 1 wishes to know more about the groundwater tables or the upkeep of waterworks in their lands, they contact the WSF. Farmer 1 is not sure about what is going to happen in the future. They would like to keep going as is but adds that changes are probably coming. Farmer 1 does not really see the benefit of the Nota Peilbeleid, they believe that they are better off if they were allowed to manage the groundwater table themselves.

Farmer 1 is not noticeably motivated either positively or negatively towards the implementation and execution of the Nota Peilbeleid. Notably the main reasons for farmer 1 to be motivated are that they find it important that all parties are content, which includes nature, businesses and the WSF as well. Farmer 1 stated that: *“the importance of the WSF is being the connection for these parties in regard to water”*. Furthermore, farmer 1 has political and economic reasons to comply and otherwise be affected by the implementation of the policy. If farmer 1 does not comply, they will have to pay fines and if they want to regulate the (ground)water table, they would have to invest in waterworks such as pumphouses and dams as well. This being said, the act of defiance to the policy can be seen as negative motivation as well.

When talking about the current collaboration between the WSF and the farmer and how it could be improved, farmer 1 stated that they would like to see an assembly of some kind with the WSF, other farmers and interested parties in It Heidenskip. This assembly can be used to create a lively discussion between the actors, about what has been going on in regard to (ground)water management and what can be done better or differently. Farmer 1 did say that this would probably not be a pleasant discussion due to the farmers being upset with the current collaboration and laws.

### 4.3 Farmer 2

This farmer is also a conventional dairy farmer who owns land closer to the pumphouse than farmer 1. Farmer 2 does not have any prior negative nor positive history with the WSF.

For power, farmer 2 does not know their responsibilities or does not feel that they have responsibilities in the policy. They do look at the groundwater table and the waterworks that are on their land to see if they need maintenance and if the water table is good. This is done out of own interest. This leads farmer 2 to have enough personnel, time and resources to implement the policy. Farmer 2 commits time to checking the (ground)water tables after heavy rainfall and only has financial commitment if they are fined. Farmer 2 did and does not actively work together with the WSF in the policy, farmer 2 can call the WSF if something is not right with the (ground)water table or the waterworks. When it comes to appropriate access to the media and if farmer 2 is properly presented, farmer 2 states that they do not use the media. They also think that not all farmers get represented equally, *"Which is really difficult"* farmer 2 adds. This is probably due to the fact that all farmers and farms are unique as well. Farmer 2 notes that their position can be hurt by media outlets.

For information, farmer 2 thinks that the policy benefits them in having at least a reference point. However, they would like to see that they can change the groundwater table to be higher in the summer and lower in the winter. Farmer 2 is well informed on what is happening on their own land. Furthermore, the information received from the WSF is limited, however, the information that farmer 2 gets from the WSF is of good quality and quantity when they ask for it. They do not think that there is a lack of information anywhere, but that might be because farmer 2 does not know that there is a lack of information. Farmer 2 is uncertain about what actions are allowed and what is not allowed. For example, is it allowed to change the water table at will and by how much?

For motivation, farmer 2 does not think they are negatively affected by the policy, nor positively for that matter. Farmer 2 adds that they do not feel motivated to implement the policy or to work together in that matter.

Farmer 2 would like to gain more information, regarding what is in his rights to do and not do. Furthermore, when prompted with the question what their thoughts about regular meetings with other farmers in the polder and the WSF where; they said that they think it would be a good idea to have such a meeting, seeing as the frequent contact that the farmer has with their neighbouring farmers also benefits them already.

#### 4.4 Farmer 3

This farmer is a biological farmer and a nature preservationist. Farmer 3 has higher (ground)water tables in their plots of land to improve the habitat of meadow birds and to improve the biodiversity of the land. The farming that they do is extensive biofarming, which means fewer cows on more land and no artificial fertilizer or (unnatural) power food/supplements are used. The higher (ground)water table is only allowed due to the farmers' permits to protect meadow birds.

When it comes to power, farmer 3 answered generally negatively; they do not hold much power over other actors. Farmer 3 is informed of the responsibilities that they have and thinks that the legislation is all right. Farmer 3 says that they are not involved much or at all in the policy, since the agreements on the groundwater table were made by the previous generation of farmers in the 1980's. The WSF shows that the peilbesluiten in the area that farmer 3 operates in, have been made definitive in 2017, so farmer 3 was not in talks with the WSF when this decision happened. Farmer 3 only pays the waterboard tax, and they put time and effort into the protection of meadow birds, which is linked to the (ground)water table. So, farmer 3 makes sure that the (ground)water table is at good heights, which does not require too much time and personnel on their side. Farmer 3 also says that they are not responsible for fulfilling the requirements of, monitoring and reporting on this policy. They also do not work together with the WSF in the policy either and mentions that they think, that the WSF makes itself look better in the media than what is actually the case.

For information, farmer 3 is well informed of what is happening on their land and with the (ground)water table. Farmer 3 uses the plants and animals (the environment) to adjust the (ground)water table, farmer 3 believes that the natural order has been changed too much and that the current situation in regard to (ground)water tables is damaging the ecosystem. Therefore, farmer 3 thinks that they are better off if they manage it themselves and also does not rely on information given to them by the WSF. Farmer 3 is uncertain about the extent to which the government (WSF included) is capable of making regulations that fit locally. Farmer 3 misses the WSF checking what is actually needed in the field.

For motivation, farmer 3 is highly motivated by their own environmental cause; their civic duty lies not in adhering to the policy, but rather, to the environment itself. For implementing and executing the Nota Peilbeleid farmer 3 is less motivated. Farmer 3 expresses that they are negatively impacted by the policy, because the low (ground)water table means that they experience frequent droughts. Farmer 3 feels that to them, the WSF works well for intensive farms, which rely on low groundwater and irrigation to function efficiently; and not for farmer 3 themselves, so they think they are being treated unequally. Farmer 3 finds the field workers of the WSF to be fine people to work with but says that the office workers and civil servants are "*nitpicky*".

Lastly, farmer 3 thinks that the collaboration can be improved by checking in with the farmers locally more frequently by the WSF. Because in the last 25 years, farmer 3 has worked with other farmers in It Heidenskip as well. In that working together, farmer 3 found out that the other farmers were not contacted by the WSF at all to check what they need/want.

## 4.5 Discussion

### 4.5.1 Power

From the interviews it seems that the WSF has higher formal control than the farmers do, whilst the farmers, although not actively pursuing, have somewhat higher informal control. The resources of the WSF are more plentiful than the resources of the farmers individually. The WSF does have a lack of resources at the same time, this is due to the amount of resources used for the implementation of the policy. Whilst farmers do not have as much time, personnel and money to spend on the implementation of the policy as the WSF does, concurrently, the farmers are not required to spend as much either. The farmers are usually capable of doing the tasks that they are required to do with minimal time and financial investment and doing it on their own. The WSF has a lot more resources, but uses them all as well, hence the note that they think that they do not have enough personnel to execute the policy as well as they would like. External events which are mentioned in the ACF described in chapter 2. Such as changes in power due to changes in law, might change the current coalitions that exist which can influence the policy as a whole. Furthermore, whilst the status quo is maintained, due to the farmers having less power to change that, they believe systems will most likely stay the same as well (Heinmiller, 2023).

### 4.5.2 Motivation

Proceeding with the motivation, the WSF has high political pressure and support simultaneously influencing them. There is pressure from the EU and national government to adhere to their rules and regulations. Furthermore, the WSF has high normative and economic pressure to comply. The WSF uses taxpayer money to ensure the proper implementation of the policy, if they fail to do so there will be negative consequences, like lay-offs, re-elections and fines for the organization. Therefore, it is also their civic duty to properly execute the policy that they made. Additionally, the WSF wants to have the support of the people as well, which acts as a motivator too. The farmers have less pressure on them based on the interviews. The pressure to comply with the policy is mainly economic, since if they do not comply, they will get fined or prosecuted.

The WSF's own motivation is higher than that of the farmers that were interviewed. The WSF believes that their goals are compatible with the farmers' goals, this idea is not reciprocated. The farmers' goals when it comes to groundwater management is different than what is noted in the Nota Peilbeleid. They would like a more flexible groundwater table rather than a fixed one that can not deviate as much. The WSF sees the implementation of the policy as their civic duty, whilst the farmers that were interviewed are impartial or against the (current) implementation. The farmers are more confident in their own capacity to execute tasks, especially since most of them would like to manage the groundwater themselves instead of the WSF. Overall, the WSF has higher motivation than the farmers that were interviewed.

Motivation also coincides with the commitment to the process or policy and shared understanding, as described by Ansell & Gash, (2008) in the collaborative governance framework mentioned in chapter 2. Shared ownership of the problem would most likely increase motivation of the farmers. Whilst having a clear mission, identification of common values and defining common problems, would lead the farmers to have a better understanding of what the WSF wants and vice versa (Ansell & Gash, 2008). The better understanding of one another and commitment to the policy can help increase the motivation of both parties.

#### 4.5.3 Information

Lastly, for information, the WSF know most of the benefits and drawbacks of the implementation of the policy. It comes with a lot of compromises for all parties, since different functions like nature, housing and agriculture require different (ground)water tables (Fryslân, 2023). But there are still unknowns for the WSF in that, they are not sure about the future regarding climate change and its consequences and the exact effects that the policy has on crop growth, for example. Their general knowledge is good, and the transparency is sufficient for their job. The farmers have the expertise and details in gathering information regarding their lands and what the effects are of the (ground)water table. They are the first to notice changes and report to the WSF if something happens or needs to happen to the (ground)water table. They relay the information to the WSF and in return they can also ask the WSF for information if they want to. However, they are less aware of the benefits that the policy gives them and what is required of them or what their role is. Collective intelligence should be used to get more reliable collaboration, the WSF and farmers rely on each other for information about water tables and potential risks. However, they could increase this information by also engaging more with each other, to discuss possible futures, what the needs of each party are and what the opinion of each actor is. Some actors might hold valuable information that can be used to innovate, but those actors have to be engaged with to access that information (Kuenkel, 2015).

#### 4.5.4 Improvements for collaboration

Seemingly, the current situation based on the characteristics can be classified as forced cooperation. The motivation of the implementer (WSF) is high, the motivation of the farmers is low, the highest information level of a positive actor is quite high (in this case the WSF) and the WSF has more power over the farmers. These characteristics, following the interaction process and flowchart found in table 3.2 in chapter 3.7.6 and Appendix A in the research article of Owens, (2008, p54 and p263), lead towards the implementing actor forcing cooperation with the target group. This hypothesis is described as follows: *“If adequate application of the instrument would contribute positively to the objectives of one actor and negatively to the other actor, and the positive actor has sufficient information, then the character of the interaction process will be dependent on the balance of power between the actors. Dominance of the positive actor will lead to (forced) constructive cooperation.”*(Owens, 2008).

To get to a situation where active instead of forced collaboration is achieved, the motivation of the target group (farmers) needs to be either neutral or positive. The interviewed farmers tended to be indifferent towards achieving the goals of the policy, even though the policy does affect them. To change this, the policy could be changed to fit the objective of the farmers better. This would entail making changes to make the groundwater table more dynamic and better suited towards the farmers needs/wants. Another option would be to take away the pressure to comply and replace it with support for complying instead. So, for example, farmer 3 had the opinion that they need to pay the WSF taxes which are (partly) used to set the (ground)water table on a height that the farmer does not want. If they change the taxing system to one of subsidies for complying instead, it might motivate the farmers better to adhere to the original goals of the policy. One could also try to change the attitude of the farmers by increasing the information they have on the effects of the policy and showing them why it is important that it is implemented and executed properly. Another option would be to increase the capacity of the farmers; this could increase the motivation because the farmers would be more capable of performing their intended actions. However, increasing the capacity/power of farmers might lead to obstruction or opposition due to the farmers not being overpowered by the WSF anymore.

Power could be given to the farmers by letting them (partly) manage their groundwater table themselves, this would also alleviate the restraints on the WSF regarding their personnel. Since the farmers are knowledgeable the WSF could use them as colleagues and delegate the field work to them if the farmers have the capacity for that as well. This would increase the public participation, which is also a goal in the WFD (Ruiz-Villaverde & García-Rubio, 2017). The power imbalance is also prohibiting the recognition of mutual interdependence, since the can form the opinion WSF that they are self-reliant whilst the reality says that they are still dependent on the farmers for vital information for the policy and its consequences (Ansell & Gash, 2008). The use of collective intelligence should be paramount to improve collaboration and the effectiveness of the policy. Farmers generally know what their land needs and what the consequences of bad water table management are, so they can help the WSF make the policy more effective by using the knowledge that the farmers have in conjunction with the knowledge of the WSF (Kuenkel, 2015).

Lastly, the WSF and farmers mentioned that they would like and benefit from more interaction with each other and between farmers themselves as well. This interaction can take place in the form of a *“Polderbelang vergadering.”* Wherein people that live in the same polder and interested parties can meet, converse, share their thoughts, opinions, concerns and solutions to topics regarding the polder wide watershed. This would not only increase information for all parties involved, but also likely

increase the motivation of involved parties because there would be more social and normative support.

#### 4.5.5 Limitations

This research has its limitations however, the results and discussion are likely not generalisable due to the amount of interviews held, parties involved and the unique situation that each farmer in It Heidenskip and in the province of Fryslân in general has. They are more likely to be able to be generalized for the area of It Heidenskip or the southwestern municipality since the area and water management is similar to the situations that were researched. Each farmer has different needs and wants, when compared to each other and the WSF. However, it is time consuming to interview or question each one of them in detail about their characteristics, which is why the focus was to do in depth interviews to get the most detailed information one could get. It presents a challenge to the WSF to figure out what solutions are best suited in regard to the unrest and conflicts caused by the policies in (ground)water table management.

Furthermore, the uncertainty that the future holds in regard to climate change and political change further challenges the established collaboration between parties. Power shifts could happen, these might take form as: farmers taking matters in their own hands if they feel that the WSF is incapable of dealing with the consequences of climate change regarding (ground)water management. Droughts, floods and extreme and unpredictable weather events have to be accounted for, if the WSF wants to make sure that all inhabitants of their jurisdiction are treated equally and optimally. The drastic external events can change the advocacy coalitions that are currently in place. Which would mean a different viewpoint and belief system when it comes to water table policy (Heinmiller, 2023).

The sampling method was purposive, which makes the results less generalisable but improves the detail of those results. Another point of limitation is the use of the CIT method, whilst it encompasses many aspects of what makes collaboration work and what does not. It has its limits as well, the context in which the research has taken place influences the results of the CIT heavily. It is important to understand the evolution of the actors and their interactions as well, this was not the aim of this research but can be taken into consideration for additional research. This requires methods/frameworks that are longitudinal and bring insight into what happens with collaboration between actors over a longer timeframe. Furthermore, the interviewees might have biases and might not have given accurate or valid information to the researcher, but since data was triangulated, this is a lesser point of concern.

In addition, time constraints, difficulties to schedule and arrange interviews and limited access to data and other research also played a role in the limitations of this research.

## 5 Conclusion

*“What are the resources, cognitions and motivations of the Frisian water board and Frisian farmers in It Heidenskip, and how could these characteristics help increase collaboration between them regarding problems with the (ground)water tables?”*

Based on the interviews, the current relation between farmers and the WSF regarding the Nota Peilbeleid and “Peilbesluiten” is neutral. It seems that the interviewees of the WSF think that; although there are differences in objectives and opinions about (ground)water management, the relation and collaboration between the parties are working. The interviewed farmers were either neutral/indifferent towards or were against the current collaboration, as they think they are capable of doing the management themselves or they do not notice the collaboration with the WSF in the first place.

The resources of the WSF are high, their formal control is their strength and have more capacity in time, money and personnel to use in the implementation and execution of the policy. The WSF holds the legal power and responsibilities for proper execution of the policy. The farmers have less capacity to work with, but are not required to put in much capacity either. They have less pressure on them and like the WSF, they are also affected by (bad) media representation and lobbying. Therefore, the WSF has more power over the farmers.

The information of the WSF and the farmers is intertwined, since the WSF relies on information coming from the farmers about the state of their fields and the ditches and waterworks. The farmers do not seem to need the WSF as much to perform their jobs. They are well informed on what is happening in their fields, but are less informed on their rights, opportunities and responsibilities in the Nota Peilbeleid and the decisions made in that and what benefits the policy has for them.

For motivation, adequate implementation will contribute positively towards the objectives of the WSF, less so for the interviewed farmers. Furthermore, the WSF also has more pressure from politics, economics, normative and social standpoints. If the WSF fails to do their job properly, the repercussions will be felt in all these standpoints. Their intrinsic motivation is also higher than the interviewed farmers, since the WSF’s self effectiveness and compatibility with the goals of the policy is better than that of the farmers. The interviewed farmers, however, experience less pressure to comply and they felt that the policy negatively contributes to the objectives of the farmers. The intrinsic motivation of the farmers is low when related to the objectives of the policy and higher towards their own objectives.



Collaboration could be improved by improving the motivation of farmers, to make the policy contribute positively towards the objectives of the farmers. This could be done by changing the policy itself, to make it more suited towards farmers, all interviewed farmers and the WSF acknowledge that for agriculture, a dynamic water table is preferred. Additionally, the farmers could be supported via subsidies, which might motivate them to adhere to the goals of the policy. Additional information can be given to the farmers about why the policy is beneficial to them, which would come from the WSF. If the power of farmers becomes higher, it is likely that opposition to the policy and the WSF will take place; although the WSF could use the farmers to take up some of the management work, which would give the farmers more power but alleviate the strain on resources that the WSF has.

One improvement for collaboration that all parties seemed to be interested in was a “polderbelang” meeting, which lets inhabitants of the same polder interact with each other and share their concerns and ideas regarding water management in polders.

For further research, it is recommended to expand the amount of research units to make the results more generalisable. Furthermore, the collected data is subjective in nature, as are the “best” options to improve collaboration. Because the reality is that the effects of changing motivation, information and power are unique and contextualized. Future research could also look into experimenting with changing the power dynamics and/or motivation levels and researching the effects that it has on collaboration between these parties. Furthermore, future research could also focus on using different frameworks/theories to gain a deeper understanding of the collaboration between the parties in It Heidenskip and to gain more knowledge about how to possibly improve collaboration.

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## 7 Appendix A transcribed interviews

### 7.1 Interviews WSF representatives

<b>POWER</b>	
Are your responsibilities clear?	Yes, there are uncertainties of course, but the responsibilities are clear.
Do you think the legislation is appropriate for your functions?	No, The first interviewee found it to be a bit outdated. Since it was once designed in a time where the water board was more or less a farmer thing. Nowadays, you have nature, other people, business etc. to deal with. The second interviewee, an office worker, said that for their part it was alright.
What financial commitment is needed from your organization/you?	Millions have been and shall be invested in manpower, waterworks, monitoring equipment and administration. This was agreed upon with the second interviewee.
Do you have enough personnel to handle the implementation and maintenance of the Nota Peilbeleid?	No, because they are really long projects and procedures. It really depends on the project itself and how it is organised. Some projects can take up a lot of personnel and time, some can be done more efficiently. The second interviewee mentioned that field workers (district controllers) are always in short supply.
What time commitment is needed from your organization?	To change a peilbesluit at least one year is needed to get everything in order administratively. However, continuous work is done to maintain current water tables so almost a never-ending time commitment.
Does the nota peilbeleid require resources that you or your organization not have access to?	Of course there are some resources that the WSF does not have access to, either due to limited budget, personnel, time and interest in some cases. This was agreed upon with the second interviewee.
How involved in the decision making process are you or your organization?	Less then someone from outside the organisation might think. The WSF has to adhere to national and international laws and policies. However, on a smaller scale the WSF do get to decide. Furthermore, when a groundwater level is chosen, the owner of the land is involved in making a decision in that level, and they can change it afterwards

	(after some procedures). The WSF does set the regulations of which projects big and small have to adhere to. There must not be any damage or degradation of the watersystem when planning these projects.
Are you or your organization responsible for fulfilling the requirements of the policy?	Yes, they are to make sure that the water tables do not go over or under the set amount, the acceptable wiggle room is about 10 cm over or under. (Confirmed)
Are you or your organization responsible for monitoring the effects of the policy?	Yes (Confirmed)
are you or your organization responsible for reporting on the effects of the policy?	Yes (Confirmed)
How do decisions get made in the nota peilbeleid?	If all is right, everyone has equal say. So the province, the water board, the farmers and all interested parties. Compromises of course play a big part but everyone can share their opinion. (Confirmed)
Do you work together in the nota peilbeleid?	Yes (Confirmed)
Do you have appropriate access to the media and is your perspective properly represented there?	No, the farmers tend to think (in the eyes of the WSF) that the WSF are the boogiemans so to speak. Whilst in actuality the WSF wants to help the farmers. it depends on what people see, sometimes it is good, sometimes it is bad.
Do you think that your position can be jeopardised by lobbying groups?	Yes, because the WSF relies on a political party system and because the media and people do not always understand the decision correctly. The political system also means that every 4 years new party and management is chosen which delays progress on projects and procedures. However, the new parties are not able and allowed to suddenly change the fundamental visions and workings the WSF.
<b>INFORMATION</b>	
How does the Nota peilbeleid benefit you or your organisation?	It benefits them greatly, due to them having something to hold on/ fall back on when it comes to the peilbesluiten. (Confirmed)
How would you put into words the information you receive about the policy (from the opposing party?)	Because the farmers know what goes on with their land, the WSF often finds themselves asking for information or

	<p>receiving information from farmers. Often farmers will say; “oh, my water table is too low, or too high. Or this is happening to my crops etc.” The caveat is that the WSF can almost never lower the water table anymore than what it is decided upon in the Nota Peilbeleid because of the damage it will do over a longer period of time. Usually the information they get is directly related to the project at hand, they mention that they can not go without that information.</p>
<p>Do you find yourself to be dependent on information given to you by other parties?</p>	<p>Yes, they are still somewhat dependent on information from farmers. However, new procedures, ways of measuring and monitoring and getting more accurate information on the water tables and the effects are being put in place. But they are still in their infancy. (Confirmed)</p>
<p>And what do you think of the quality and quantity of this information?</p>	<p>This information is good however, because the farmers want to prevent mismanagement as well. Because that can lead to damages and fines.</p>
<p>Do you think that there is a lack of information somewhere?</p>	<p>The effects of certain groundwater levels are not always known, and differ per area and scale. Furthermore, there is somewhat of a lack in precise readings of groundwater levels due to that being expensive and time consuming to monitor. So the WSF also uses other indicators, such as plant growth. (Confirmed)</p>
<p>Are there other things you are uncertain about when it comes to the nota peilbeleid?</p>	<p>Yes, it is difficult to predict what is going to happen in the future with climate change, global warming and more extreme weather.</p>
<p><b>MOTIVATION</b></p>	
<p>What is the (end)goal of the nota peilbeleid and do you think this is compatible with the goals of other actors?</p>	<p>The end goal is to provide safety and ensure that there is enough water for everyone. This means that our goals are tailored as best as they can to the goals of specific parties. For farmers this is generally a lower water level, unless they are doing meadow bird protection or other nature reservation projects. This water level has to be set at a certain point, because decreasing it, as was</p>

	done in recent history, has been proven to be problematic. So the goals are compatible but not exactly the same.
What are the benefits of the nota peilbeleid to your organisation?	Adherence to the law and to set the groundwater levels to a certain point. This point can be used as a reference that the WSF can adhere to and fall back on. It is somewhat of a tool that can be referred back to.
Do you think that farmers are negatively affected by this policy?	Yes and No, because not all farmers are the same or have the same vision. If the WSF would lower the water table in favour of agriculture (a lower groundwater table means that the plot of land is easier to practice agriculture on) would benefit the farmers in the short term. However, in the long term these plots of land will become unsuitable to practice agriculture on due to salination, subsidence and drought or flooding. So in the short term, yes the farmer might experience some negatives, but these are compromises that have to be made. That being said, the second interviewee mentioned that the WSF knows better what to do with the water tables and thinks that farmers should not be responsible for maintaining or being in charge of that.
Do you feel that it is important that all parties are content?	Yes, the different parties like nature, the government, the urban people and the farmers all come together when deciding on the groundwater table in the plots of land that they own. It is of course impossible to make everyone content, but the WSF strives to serve all parties. This is confirmed by the second interviewee, they said that best way to do that for them is via the district manager, which has closer ties to most parties.
Do you feel like it is your civic duty to adhere to this policy?	Yes, it is written in the law that WSF has to adhere to the policy and serve the public.
What do you think of the current collaboration between you and the other actors, and could/should this be improved?	One thing that the interviewee put up for thought was a “Polderbelang” meeting. Wherein, people that live in the polder and interested parties can



	<p>converse, share their thoughts, opinions, concerns and solutions. The WSF thinks that collaboration can be better, they are eager even to improve it. But improvement has to come from the other side as well. They are open to facilitate meetings and bring forth speakers if it means collaboration improves. They also benefit greatly from improved collaboration, due to lower costs for gathering information, less manpower needing to be used and less time needing to be spend. What the WSF also tends to do more currently is to discuss plans for new projects and decisions with farmers before anything concrete is put down. Instead of the other way round like they used to do, which was to make a plan and than go to the farmers with that plan to tell them what is going to happen.</p>
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## 7.2 Interview farmer 1

<b>POWER</b>	
Are your responsibilities clear?	Yes, in fact, this farmer says that they do not have many responsibilities for implementing the nota peilbeleid. However, they did tell that they have some dams that they can control themselves to regulate the water table, in allowance from the WSF.
Do you think the legislation is appropriate for your functions?	Yes, it is not always easy to change water tables or do anything related to that. However, with some perseverance and knowing what is in your rights it is doable.
What financial commitment is needed from your organization/you?	In principle, nothing. Unless you are actively investing in a technology that the WSF does not provide or work with and if you are using subsidies, in which you are bound to the rules that apply there.
Do you have enough personnel to handle the implementation and maintenance of the Nota Peilbeleid?	Yes/ Non-applicable
What time commitment is needed from your organization?	If there is a problem or meeting then there is time investment, otherwise none.

Does the nota peilbeleid require resources that you or your organization not have access to?	No or not applicable, since the farmer does not have to maintain or implement much. Furthermore, the resources that are required to implement, if need be, can be acquired from the WSF.
How involved in the decision making process are you or your organization?	Not a whole lot, they do come from time to time for opinions however, but the main influence the farmer has is via the elections.
Are you or your organization responsible for fulfilling the requirements of the policy?	No
Are you or your organization responsible for monitoring the effects of the policy?	No
are you or your organization responsible for reporting on the effects of the policy?	No
Do you work together in the nota peilbeleid?	This farmer said that he does not really work together with the WSF and adds on to that, that they are quite difficult or strenuous to work with. With his experience being that its quite bureaucratic in the office.
Do you have appropriate access to the media and is your perspective properly represented there?	The farmer thinks that they have enough representation or access to the media if the farmer wants to have their voice heard. However, the farmer adds that they do not actively pursue that.
Do you think that your position can be jeopardised by lobbying groups?	Yes
<b>INFORMATION</b>	
How would you put into words the information you receive about the policy (from the opposing party?)	The information is provided within a newsletter and if drastic changes are made the WSF makes contact with the farmer.
Do you find yourself to be dependent on information given to you by other parties?	No
And what do you think of the quality and quantity of this information?	The information that is provided is satisfactory for the farmer. They did not have any remarks for the quality and quantity.
Do you think that there is a lack of information somewhere?	No, if the farmer wants to have some information about the groundwater tables or waterworks they can make contact with the WSF and get the information from them.
Are there other things you are uncertain about when it comes to the nota peilbeleid?	The farmer said that the future is uncertain, about what is going to happen with more extreme weather.
<b>MOTIVATION</b>	

What are the benefits of the nota peilbeleid to your organisation?	Not many, other than having one agreed upon water table that they can hold and fall back on.
Do you think that farmers are negatively affected by this policy?	The farmer states that they negatively affected in the sense that. They would be better off having a pumphouse on their own land being in control of that themselves. Because the amount of time that it takes to lower the groundwater table is slow (days). The farmer does add that they are not damaged by the policy either.
Do you feel that it is important that all parties are content?	Yes, if only the farmers, nature or individuals would get preferential treatment, it would lead to enormous upheaval within the community of It Heidenskip. But also elsewhere, one has to make compromises along the way. Which the farmer says: "the importance of the WSF is being the connection for water between all these parties."
What do you think of the current collaboration between you and the other actors, and could/should this be improved?	The farmer said that he would like to see an assembly with the water board, other farmers and interested parties in the township of It Heidenskip. To discuss what has been going on, what can be done better or differently. The farmer did add that it would probably not be a pleasant conversation due to the farmers being upset at the way collaboration and laws have been going on.

### 7.3 Interview farmer 2

<b>POWER</b>	
Are your responsibilities clear?	No, the farmer said that it could be found somewhere maybe, but the groundwater table is what it is and that he does not know what he is responsible for.
Do you think the legislation is appropriate for your functions?	Yes, so far this farmer has not had any issues with legislation.
What financial commitment is needed from your organization/you?	Unless there are fines, no financial commitment is needed.

Do you have enough personnel to handle the implementation and maintenance of the Nota Peilbeleid?	Yes
What time commitment is needed from your organization?	No time needed, maybe a couple of hours per month checking/monitoring the water table in ditches if it has rained a lot, to notify the WSF.
Does the nota peilbeleid require resources that you or your organization not have access to?	No
How involved in the decision making process are you or your organization?	When the groundwater table levels were set, there were no big changes. So the farmer did not have any issues and decided not to actively work together, they thought it was fine when the came with the information on this policy.
Are you or your organization responsible for fulfilling the requirements of the policy?	No
Are you or your organization responsible for monitoring the effects of the policy?	Not necessarily responsible but they do monitor the ditches and dams on their property.
are you or your organization responsible for reporting on the effects of the policy?	No, again this farmer does not feel that they are responsible for reporting the effects of the policy, but out of own interest they still report.
Do you work together in the nota peilbeleid?	As far as this farmer was concerned. They could call the WSF if something is not right with the groundwater table or the waterworks, otherwise there is little collaboration that takes place.
Do you have appropriate access to the media and is your perspective properly represented there?	As an individual this farmer does not use the media at all. They think that when farmers get represented in the media not all sides are represented equally. 'Which is really difficult', they added due to the fact that all farmers and farms are unique as well. They do state that if they wanted to, they could use the media.
Do you think that your position can be jeopardised by lobbying groups?	Yes, 'the media itself, like news outlets can really hurt the position that one has as a farmer', the farmer said.
<b>INFORMATION</b>	
How does the Nota peilbeleid benefit you or your organisation?	In the sense that it is good to have a set point. However, the farmer would like to see that they can change the groundwater table to be a bit higher in the summer and a bit lower in the winter.

How would you put into words the information you receive about the policy (from the opposing party?)	It is not much, if the farmer would ask he can get information. However, the information that is given to them without asking beforehand is limited.
Do you find yourself to be dependent on information given to you by other parties?	No
And what do you think of the quality and quantity of this information?	When asked for the quality and quantity is good.
Do you think that there is a lack of information somewhere?	Not necessarily, however, one must know what to ask for.
Are there other things you are uncertain about when it comes to the nota peilbeleid?	Yes, what is allowed for certain actions and what is not allowed. Changeable groundwater tables for example.
<b>MOTIVATION</b>	
Do you think that farmers are negatively affected by this policy?	The farmer does not think they are negatively affected.
Do you feel that it is important that all parties are content?	n/a
Do you feel like it is your civic duty to adhere to this policy?	n/a
What do you think of the current collaboration between you and the other actors, and could/should this be improved?	The farmer would like to know better what is in his rights to do and what not to do. If changeable groundwater tables are allowed for example. The farmer was also asked what their thoughts about a “polderbelang” meeting were. The farmer said that it indeed would be a good idea to have a meeting of some kind with other farmers and the WSF in same polder. The farmer did add that they have frequent contact with their neighbour farms about what is going on in their plots of land.

#### 7.4 Interview farmer 3

<b>Power</b>	
Are your responsibilities clear?	The farmer is not informed on the details, but knows the common thread of the policy.
Do you think the legislation is appropriate for your functions?	Yes, the farmer thinks it is appropriate and that there might be opportunity to do more management of groundwater table and waterworks themselves.
What financial commitment is needed from you if any for the implementation of the Nota Peilbeleid?	Other than the waterboard tax of €200.- per hectare and fines if they come up, no financial commitment is needed.
Do you have enough personnel to handle the implementation and maintenance of the Nota Peilbeleid?	The farmer does not employ personnel, they can handle the implementation themselves.
What time commitment is needed from you?	Not much time is needed, just the time to keep the ditches open and running.
Does the nota peilbeleid require resources that you do not have access to?	Not that the farmer is aware of.
How involved in the decision making process of this policy are you?	None at all, the farmer thinks the peilbesluit was taken by a previous generation and kept the same throughout the years. They think it is outdated and based on a situation that is not achievable/realistic anymore.
Are you responsible for fulfilling the requirements of the policy?	The farmer does not think they are responsible, they did not sign any contract or obligation that they are aware off.
Are you responsible for monitoring the effects of the policy?	No
Are you responsible for reporting on the effects of the policy?	No
Do you work together in the nota Peilbeleid, or implementation thereof?	No
Do you have appropriate access to the media and is your perspective properly represented there?	The farmer gets a WSF info bulletin. On which the farmer adds: <i>"I always think its self-propaganda, like look at how good we are doing"</i> .
Do you think that your position can be jeopardised by lobbying groups?	The farmer thinks that his position can be jeopardised.
<b>Information</b>	
What are the benefits, if any, of the Nota Peilbeleid and the execution thereof to you?	The farmer thinks that currently it does not benefit them at all, they would like it to be much more flexible in the way that the policy works and is implemented.

How would you put into words the information you receive about the policy (from the opposing party?)	The farmer does not receive much information about the policy at all.
Do you find yourself to be dependent on information given to you by other parties?	No, this farmer arranges their groundwater tables themselves. So they do not need information from the WSF.
And what do you think of the quality and quantity of this information?	n/a
Do you think that there is a lack of information somewhere?	n/a
Are there other things you are uncertain about when it comes to the nota peilbeleid and the implementation and execution thereof?	The farmer thinks it should be area driven processes, they would like to skip all regulations from Leeuwarden and check what is really necessary in the field.
<b>Motivation</b>	
Do you think that farmers are negatively affected by the nota peilbeleid?	This farmer is sure that they suffer unnecessary droughts because of too much pumping.
Do you think it is important that all parties are treated equally or do you think that one is more important?	They have the feeling that the WSF works for intensive farms, low levels of water, fit for irrigated meadows. So they feel like they are being treated unfairly.
Do you feel like it is your civic duty to adhere to the policy?	No, the farmer thinks that they have an environmental duty, to protect and nourish it.
What do you think of the current collaboration between you and the other actors?	The WSF workers in the field are fine, the rest are mostly "nitpickers".
How do you think this collaboration can be improved in general and in regards to your own power, motivation or information?	This farmer wants the WSF to check in more in what farmers need in an area and want. This has not been asked by anyone but this farmer in this area for over 25 years. So the farmer would like to see the local information being brought to the WSF.