

# Flexible Water Levels in the Loosdrecht Lakes – Good Practice or a Waste of Time?

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*Water Policy, Governance and Law (GE04-6002)*

*Group assignment*



Source: 1

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# 1. Introduction

## 1.1 Geographical area

The Loosdrecht Lakes in the polder Muyevelde, with an area of 26.7 km<sup>2</sup>, are located in the province of North Holland and is located within the municipality of Wijdemeren (Figure 1). In the 16<sup>th</sup> century, it was a swampland area, so it could not function as agricultural area. The valuable peat was excavated and dried to be used as fuel. Due to the excavation, the surface level receded below sea-level and groundwater began filling these gaps. The Loosdrecht Lakes arise in its current form, originating from the 1850s<sup>2</sup>. Nowadays, it is a heavily used recreational area for watersports, cyclists and walkers<sup>3</sup>. The responsibility of the lakes lies with the Amstel, Gooi and Vecht water authority (AGV)<sup>4</sup>.

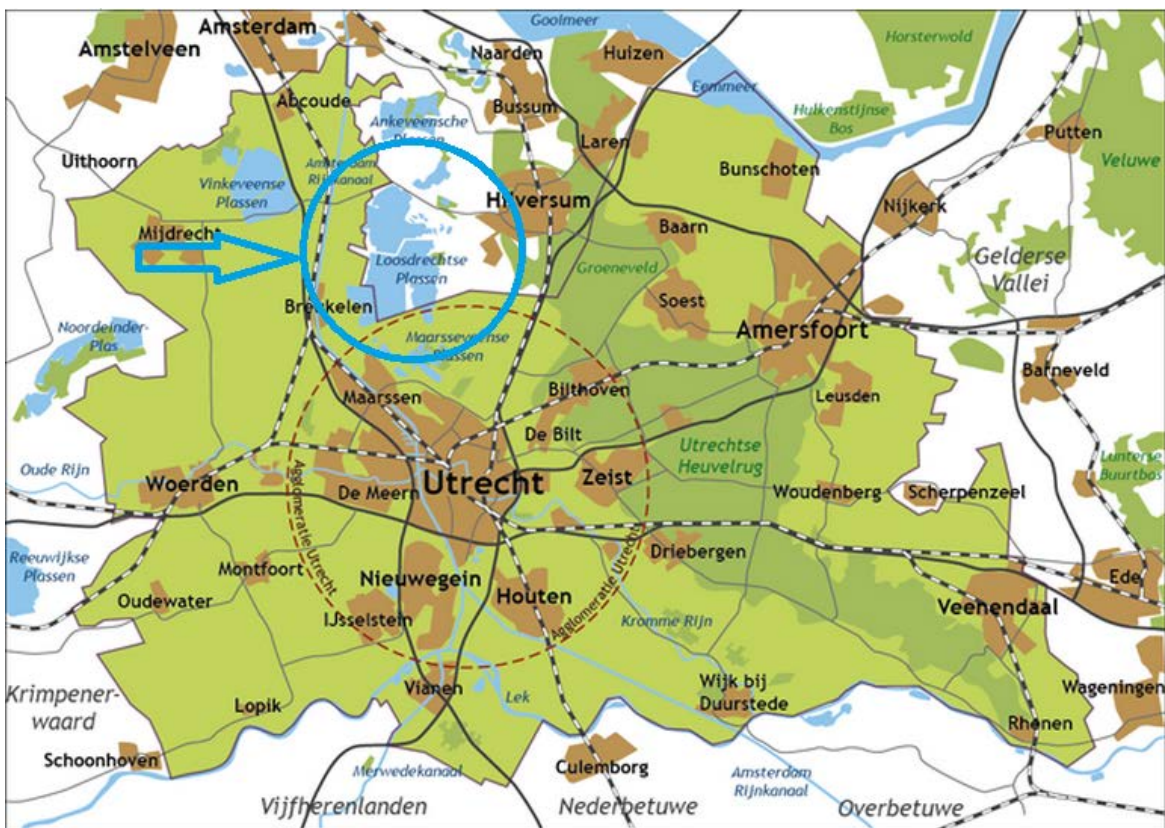


Figure 1: Utrecht Province with Loosdrecht Lakes (Source: 5 edited)

## 1.2 Flexpeil

The current water level in many lakes, ditches and groundwater is manageable up to centimeters. It gets determined by taking the usage requirements into account for houses, water transport, recreation and agriculture<sup>6</sup>. In many areas there is only a difference between winter- and summer water level, as it was before the *flexpeil* project in the Loosdrecht Lakes (Figure 2). To maintain a rather constant water level, water is allowed to flow into the lakes, containing high concentrations of pollutants, such as phosphate and sulfate<sup>4</sup>. Moreover, there is little opportunity for aquatic plants to grow near shores<sup>7</sup>. In general, it could be stated that more flexibility is required to improve the ecological status by reducing the inflow of foreign water, which will decrease odor, dead fish and

blue-green algae. In 2006, the chemical and ecological qualities were not sufficient for the targets that were set<sup>8</sup>, so the ecological development prior to *flexpeil* was poor<sup>3</sup>. Within the Water Framework Directive (WFD) it is stated that the water quality should be of sufficient quality by 2015. Moreover, the Muyevelde polder lies in the Eastern Vechtlakes (Oosterlijke Vechtplassen), a Natura 2000 area of 70 km<sup>2</sup>. It is also a Bird- and habitat directive area (habitatrichtlijngebied)<sup>7</sup>. For the Loosdrecht Lakes, but also for more cases, an improvement in water quality requires the restoration of natural water dynamics in ditches, rivers and lakes. However, due to the many usages of the Loosdrecht Lakes, a full recovery to the natural situation is not deemed favorable<sup>6</sup>.

*Flexpeil* was a pilot project to improve the ecological status of the Loosdrecht Lakes by improving the dynamics of the lake's water level.

This is not the same as a free- or a natural water level. The water level is still strictly managed between specified boundaries. In the Loosdrecht Lakes, the definition of flexible water level management is:

With a flexible water level management, the water level will vary with precipitation and evaporation with the intention to let none or much less foreign (external) water in the lakes. The range in which the water level varies is set to the wishes and/or requirements of its users(s), but not expected to such a way that it is detrimental to these user(s)<sup>6</sup>.

In short, the *flexpeil* project will have three main effects<sup>9</sup>:

- Firstly, it lowers the amount of water that the lakes need, which causes a lowering of the amount of low-quality water that is required to maintain the water level. For the Loosdrecht lakes this is about 1 million cubic meters annually. This leads to an improvement in water quality and ecological conditions in the lakes. Furthermore, this measure also reduces the costs of the dephosphorization plants, which was needed for the quality of the water that flows into the Loosdrecht Lakes.
- Secondly, the flexible water levels allow for a better development of bank vegetation. Temporary drying of the banks stimulates the growth of the vegetation and improves the water quality. Other flora and fauna in the lakes also benefit from improved bank vegetation.
- Thirdly, *flexpeil* contributes to a more effective working of other area adjustments, such as nature friendly banks. It can also make additional adjustments unnecessary.

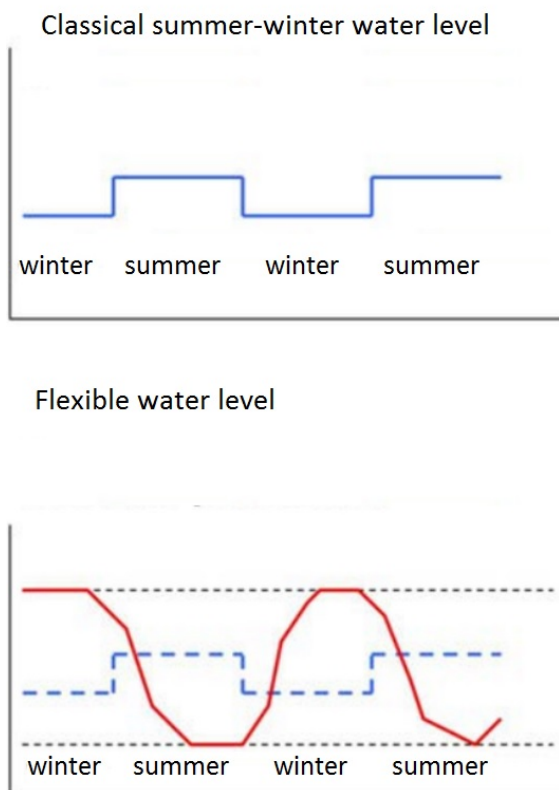


Figure 2: Water level distribution (top: initial, bottom: with *flexpeil*) (Illustration inspired/modified from Source: 6)



### 1.3 Problem definition

The margins of the flexible water level management are fixed by the water board AGV in its *peilbesluit 60-1* (water level decision)<sup>8</sup>. According to this *peilbesluit* or *plassencontract*, the water level should be maintained between -1,20 to -1,05 relative to sea level (Table 1). In practice however this was between -1,18 and -1,05 during the introduction of flexpeil, as the *peilbesluit* was introduced in gradual stages<sup>4</sup>. This new *peilbesluit*, executed by Waternet on behalf of AGV, led to resistance among the stakeholders, especially in the leisure sector, because they were concerned about the consequences of the flexible surface water level on the navigability of the lakes. The drinking water company Waternet is the joint organization of the AGV and the municipality of Amsterdam. In this report, AGV and Waternet are considered as one party and interchangeable, for Waternet is executing the *flexpeil* project on behalf of AGV. Furthermore, the navigability of the lakes has already a long history in the Loosdrecht Lakes. The dredging situation is extremely important for this, which will be elaborated further in this report. Although dredging is not part of the policy of the measure *flexpeil*, it will be mentioned and explained in this report, because it influences many aspects of the resistance to the project. It is attempted to keep *flexpeil* on the front as much as possible.

	<b>Plassencontract 1963</b>	<b>Plassencontract 1966</b>	<b>Practical values before flexpeil</b>	<b>Peilbesluit flexpeil</b>	<b>Practical values during flexpeil</b>
<i>Minimum depth</i>	-1,15	-1,20	-1,18	-1,20	-1,18
<i>Maximum depth</i>	-0,90	-0,95	-1,05	-1,05	-1,05

Table 1: Minimum and maximum water levels at the Loosdrecht Lake measures from sea level (NAP) (Source: 4)

Besides the navigability, there were several more concerns about possible negative side effects, these will be elaborated upon and discussed further in this paper. Due to the lack of communication between the AGV and the residents and businesses, there was little confidence in the AGV and a strong resistance against this *flexpeil* project<sup>4</sup>. This culminated in the suing of AGV in court, but all appeals were ultimately unfounded. The *flexpeil* pilot project started in 2011 and ended in 2012, after approximately 15 month<sup>10</sup>. After this period, the strategy of flexible water level with its maximum and minimum surface water level continued. The policy is implemented until today.

## 1.4 Research Aim

The aim of this paper is to assess the effectiveness and legitimacy quality of the policy of the *flexpeil* pilot project in the Loosdrecht Lakes and eventually to give recommendations on improvement of the policy design for other flexible water level projects. To achieve this, the ten building blocks for sustainable water governance are used, as shown in figure 3.

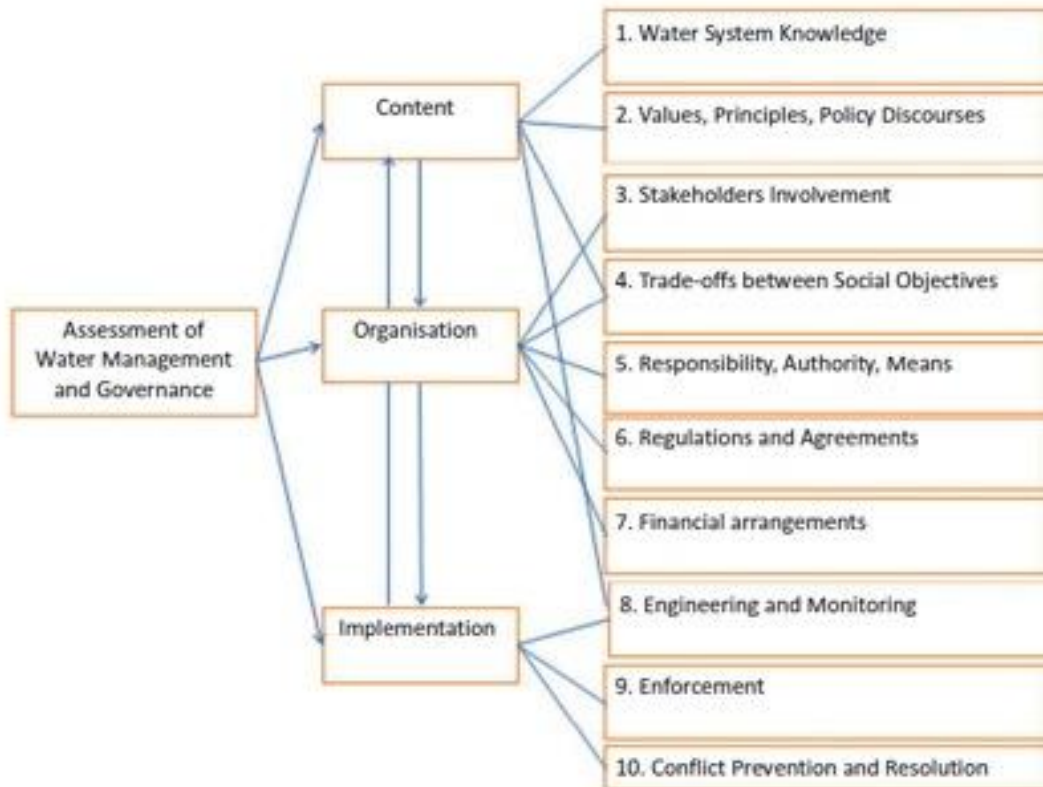


Figure 3: Ten building blocks for sustainable water governance (Source: 11)

This assessment is divided into three parts: content, organization and implementation. It is an interdisciplinary method, including multiple disciplines which will all be taken into account. Insights in knowledge from technical, legal, economic and public administration will help obtaining a clear overview of the problems<sup>11</sup>. Its target is “to assess the main gaps in the knowledge base, weaknesses in the organization process and problems that may arise when implementing the agreed service level”<sup>11pp3</sup>. These three parts consist of a total of ten building blocks, in which effectiveness, efficiency and legitimacy determine the successfulness of the governance process of *flexpeil*. Each block has its own criteria which will be evaluated. A value is given to the effectiveness of that specific building block, as shown in Table 2. The explanation of each block will be elaborated upon this paper. Note that during this report, the *flexpeil* pilot project will be further referenced as *flexpeil* or *flexpeil* project.


Value	Meaning
1	Criteria of the building block are not met at all, attention should be paid to this and improvements are highly necessary 
2	Criteria of the building block are barely met, improvement is highly necessary
3	Criteria of the building block are partly met, improvements should be made
4	Criteria of the building block are mostly met, but some points could be improved
5	Building block criteria are completely met

Table 2: Explanation of the values for assessment

## 2. The analysis of the building blocks

### 2.1 Water System Knowledge

In this section, the first block from the sustainable governance framework will be elaborated. It is important to understand the water system, in which also the societal functions are important. The assessment criteria are:

*“Is there sufficient knowledge of the existing water system in order to deliver the required service level of societal functions? If not, what are the gaps; is sufficient knowledge available to assess the impact on the water system because of changes in environment and societal functions?”<sup>11pp5</sup>*

It is critical to state that the *flexpeil* project was a pilot project. Therefore it is logical that there were knowledge gaps and not all knowledge about the consequences of the project were available beforehand. Nevertheless, the geophysical system in the Loosdrecht Lakes was sufficiently known by the Amstel, Gooi and Vecht water board (AGV). The soil types and soil layers are well known. Also the exact water level was tracked from 1988 and the chemical and biological compositions of the water were well known<sup>6</sup>. Moreover, as mentioned before, the AGV is able to manage the height of the water level very precisely. Their decision in the *peilbesluit* however was first to alter the water height between -1,05 and -1,20m below sea level (NAP), but due to resistance of many stakeholders in the area it was altered to -1,05 to -1,18m NAP (Table 1 (problem definition)). This resistance was caused by concerns that with a higher water level, large boats might not be able to navigate under bridges on the Loosdrecht Lakes<sup>4&10</sup>. This lack of stakeholder participation will be further elaborated in block three.

Nonetheless, not all consequences were known concerning the implementation of the flexible water levels. With the grant application AGV stated that flexible water levels could help to change the unnatural system<sup>9</sup>. *Flexpeil* could be a powerful and cost-efficient instrument to achieve the ecological targets of the Water Framework Directive (WFD). Furthermore, the *flexpeil* project could result in a better quality of the water with less phosphate and sulfate, resulting in clear water and better aquatic plant growth. Thus, it is a source-oriented and strong measure, which will also lead to a more long-term sustainable system<sup>9</sup>. In the grant application little detailed information about the Loosdrecht Lakes was included, but a whole list was designed where there were knowledge gaps.



Moreover, attention was on several possible consequences of the *flexpeil* project. The collection of this knowledge was part of the aim of the *flexpeil* project. Table 3 shows these aspects and Table 4 shows the measurements that are executed to achieve the research aims.



Research aim for gaining knowledge
Effect of flexible water levels on:
Phosphate and sulfate
Inflow of foreign water
Development of vegetation on shoreline
Upgrading and efficiency nature friendly shorelines
Ecological and chemical surface water quality
Contribution <i>flexpeil</i> to desired origin of surface water
Strategy for ecological calculations used for KRW-measures
Possible negative aspects
Foundation of houses
Cost efficiency of flexible water management
Understanding how to increase public support in flexible water level management

Measurements
Surface water level and –quality
Groundwater level and –quality
Bank morphology
Vegetation development
Development algae, macro invertebrates and fish
Soil composition and – moisture
Ground level decline
Calculation of reduction in phosphate treatment
Participatory monitoring

Table 3 (on the left): Aspects of the research (Source: 4,6,7,8)

Table 4 (on the right): Measurements to achieve research aims (Source: 4,6,7,8)

In addition to the measurements that were taken during the project, models were used as well<sup>6</sup>. Furthermore, examples from previous flexible water level projects were studied, although these projects were on smaller scale<sup>6</sup>.

It may be obvious now that there were several knowledge gaps, but this is logical because it was a pilot project. There was however a well-developed idea what measures should be taken into account to make sure this knowledge was gained during the project. The next step in this is that these results are tracked, published and evaluated. There is a complete report that describes the results of the *flexpeil* project and also several partial reports about its results, for example for the hydrology, geotechnical aspects, participatory monitoring and the social aspects of the project<sup>4&6&7</sup>. Everything is well documented. During the monitoring of the *flexpeil* project there was also some additional knowledge gained: The stakeholders in the area got a much better understanding of the Loosdrecht Lakes system and even the AGV understood the system better, especially regarding the effect of wind on monitoring results. For example, wind influence causes water in the lake to be “pushed up” to one side and causing differences in water level of up to 15cm<sup>8</sup>.

After the project was finished, it could be concluded that all the research aims were achieved and almost everything ended on a positive note. Without going into detail of each research goal, the results of the *flexpeil* project could be summarized as follows:

The flexible water level contributes to an improved water quality and gives an impulse in the quality of the aquatic vegetation at the shores. Less foreign water is imported in the Loosdrecht Lakes and this saves sufficient money (approximately € 65.000)<sup>6</sup>.

To conclude, there was sufficient knowledge of the existing water system if the fact that *flexpeil* was a pilot project is taken into account. There was sufficient awareness of the knowledge gaps and during the pilot project several measures and strategies were developed and executed to gain knowledge. These knowledge gaps might influence the societal function of the Loosdrecht Lakes, i.e. recreation, but the AGV was sufficiently aware of this and could change its policy rapidly and efficiently to it. As an example, the AGV changed, as stated before, the surface water level from -1,20 to -1,18 NAP to maintain the navigability of the Loosdrecht Lakes. The documentation of the knowledge gaps is publicly available and the impact of the measure *flexpeil* is known after the pilot. However due to the short length of the *flexpeil* project (15 months), the long-term consequences are not fully known<sup>8</sup>. However, due to the small influence on groundwater levels and *flexpeil* not being a dramatic change, it can be expected that the long-term consequences are minimal. Therefore, the criteria are met for this block, resulting in the value 5, the highest possible. Still there was a great resistance among inhabitants and the recreational sector, which will be further elaborated in the following blocks.

## 2.2 Values, Principles and Policy Discourses

This block measures the values, principles and policy discourse that were used in the *flexpeil* project. Shared values are important to find legitimate solutions for the problems that occurred in Loosdrecht Lakes, and also trust plays an important role in this for good water governance<sup>11</sup>. Together with principles, it has a guiding role to find and develop new alternatives in decision-making and policy development<sup>11</sup>. The assessment criteria for this block are:

“Is there sufficient knowledge of shared or conflicting values, viewpoints and principles (represented by different policy discourse coalitions) for water issues and their consequences for facing water management issues?”<sup>11pp7</sup>

The most obvious shared principle between the AGV and other stakeholders is the principle of public participation and subsidiarity. As showed in Table 3 and 4, one of the aims of *flexpeil* is to create better public support for flexible water level management, created by participatory monitoring. Stakeholders also prefer public participation, which is a wide accepted principle. The principle that pollution should be tackled at the source is fitting for the *flexpeil* project<sup>8</sup>.

However, different stakeholders have different values, some differ fundamentally. In Table 5 a simplified list with the stakeholders in the area is shown, and in Table 6 their values are shown. Note that the values of the AGV are many more than only those showed in Table 6, for example water safety, sustainable sewage and wastewater treatment<sup>12</sup>, but these are not relevant for the Loosdrecht Lakes.

As shown in table 6, the values of the governmental bodies are not shared, that is why they are subdivided. The municipality of Wijdermeren promotes tourism and recreation, for which the navigability of the Loosdrecht Lakes is very important<sup>13</sup>. Although for recreation and tourism the nature needs to be ‘beautiful’, the focus of the municipality Wijdermeren is not on the actual quality of nature, meaning the value of the ecosystem is less relevant than the value of tourism and recreation. For example, the municipality Wijdermeren was a strong opponent to the dredging plans the AGV had, while this plan was designed for a higher quality of the water in the Loosdrecht Lakes<sup>14</sup>.

These values were shared with other stakeholders, such as the marinas and inhabitants. The nature conservation organization (*Natuurbehoud*) prefers an improvement in natural value, and would therefore agree with the dredging plans or a more natural flexible surface water level to reach a higher quality of ecosystems.

The AGV vision is to contribute to a system which supports ‘living with water’<sup>12</sup>. This value is shared with other stakeholders, because also for tourism and recreation the water in the Loosdrecht Lakes is required. However, the interpretations are different, because the AGV also has clean water, improvement of water quality and safety on the water on its agenda, instead of only recreation and navigability. Moreover, in the water management plan of AGV, it is explicitly stated that the ‘nautical management’ in the Loosdrecht Lakes is not their responsibility, even though it is theirs in other areas. This means that for example dredging to improve the navigability is not their responsibility, mainly because of the many different private owners of Loosdrecht Lakes<sup>10&12&14</sup>. Thus, the value of the ecosystem quality is not shared by all stakeholders. This quality is imposed by the European Union (EU) regulation in the WFD<sup>4&16</sup>. This value follows the principle of subsidiarity: The EU regulates the quality standards, which requires the national government to implement rules and laws to make sure these standards are met. The Dutch government gives this responsibility to the (regional) water board AGV.

Nature organization	Recreation	Inhabitants	Agriculture	Government
Natuurmonumenten	Plassenschap Loosdrecht e.o.	House owners	Hobby farmers and horse farms	Waternet / AGV
	HISWA			Municipality Wijdermeren
	Hospitality industry (i.e. restaurants)	Vacation house owners		Municipality Stichtse Vecht
	Canoeists			
	Sport fishing			

Table 5: Simplified list of stakeholders of Loosdrecht Lakes ( Source: 4)

Stakeholder	Interests
<b>Nature organization</b>	<ul style="list-style-type: none"> <li>• Conservation, restoration and development of nature</li> </ul>
<b>Recreation</b>	<ul style="list-style-type: none"> <li>• Navigability</li> <li>• Tourism</li> </ul>
<b>Inhabitants</b>	<ul style="list-style-type: none"> <li>• Foundation</li> <li>• Nature</li> </ul>
<b>Agriculture</b>	<ul style="list-style-type: none"> <li>• Stable groundwater</li> </ul>
<b>Government: Waternet/AGV</b>	<ul style="list-style-type: none"> <li>• Live with water: Recreation, navigability, culture, scenery.</li> <li>• Other water aspects: Sufficient water, clean water, improvement water quality</li> </ul>
<b>Government: Municipality Wijdermeren</b>	<ul style="list-style-type: none"> <li>• Tourism</li> <li>• Recreation</li> </ul>

Table 5: Interests of stakeholders in Loosdrecht Lakes (Sources: 4, 8, 12, 13, 15)

The subsidy for all the *flexpeil* projects, including Loosdrecht Lakes, was € 8 million<sup>8</sup>. Different stakeholders stated that this amount of money is in no relationship with the aims of its targets, which led to skepticism. It diminishes the legitimacy to execute the *flexpeil* project<sup>8</sup>. Moreover, stakeholders claimed that risks were taken by AGV because there was a lack of knowledge of the consequences of the project.

As showed in the previous paragraphs, values and principles were not commonly shared by all relevant stakeholders. The executive organization of *flexpeil*, AGV, was aware of these different values. The research and attention points in the polder Muyevelde were already written in the grant application<sup>9</sup>. However, there was still a court case because many stakeholders did not agree with the *flexpeil* project<sup>17</sup>. In conclusion, formally there was some knowledge about the different values at AGV<sup>10</sup>, but still the resistance of stakeholders was large, which will be further elaborated in the third block. The criteria of this block are only partly fulfilled, resulting in value of 3.

## 2.3 Stakeholder Involvement

Within water management there are often opposing values, viewpoints and interests by all stakeholders. It is crucial to discuss and negotiate between stakeholders and policy makers so optimal solutions for water issues could be developed. There are many measures for stakeholder participation; in this report the depth and width of participation will be discussed. The width refers to the degree to “*which each member of a community is offered the chance to participate in each phase of the (water) policy process*”<sup>11</sup>. The depth refers to the degree to “*which stakeholders have the opportunity to determine the final outcome of the governance process*”<sup>11</sup>. The assessment criteria for this block are:

“Are all relevant stakeholders involved? Are their interests, concerns and values sufficiently balanced considered in the problem analysis, solution search process and decision-making?”<sup>11pp8</sup>

The definition of stakeholders is that they “*are people, groups, or institutions which are likely to be affected by a proposed intervention (either negatively or positively), or those which can affect the outcome of the intervention*”<sup>18pp66</sup>. Stakeholder participation is important for several reasons. (i) It can raise awareness about issues that may affect the public, (ii) it may provide more information for decision-making because inhabitants and the recreational sector know the area they live in (principle of subsidiarity) and (iii) it could lead to greater acceptance of the decisions that are taken<sup>19</sup>.

Before the new *peilbesluit* was developed, there was an extended plan to build deepening sinks in the Loosdrecht Lakes<sup>13</sup>. This was developed to reduce the dredging issues by catching the suspended sludge particles, but because the length of this project was approximately 10 years there was a big resistance by the recreational sector and the inhabitants<sup>20</sup>. The water should become clearer, which improves the aquatic water plant growth. This plan was not executed due to the large resistance of the municipality of Wijdemeren<sup>14</sup>. This will further elaborated in block four.

Although AGV announced their measures of flexible water level in the planning of the project and organized stakeholder meetings, many stakeholders had the feeling there was not enough involvement<sup>10</sup>. Thus, the lack of trust in the AGV already existed before the *peilbesluit* and there was also a considerable resistance against the *flexpeil* project<sup>8</sup>. In the grant application for all *flexpeil* projects, including the Loosdrecht Lakes, one of the aims was to develop communication strategies (see Table 3). Hence, the AGV could have known that the resistance would be large for this plan, because the interests of the recreational sector were obvious. Table 4 in chapter 2.2 shows a simplified list of stakeholders<sup>8</sup> and their values are shown in Table 5. Figure 4 shows their interests in the *flexpeil* project.

The organization Deltares executed the communication strategy on behalf of AGV called the participatory monitoring. The decision-making was experienced differently by stakeholders due to the differences in values (chapter 2.2).

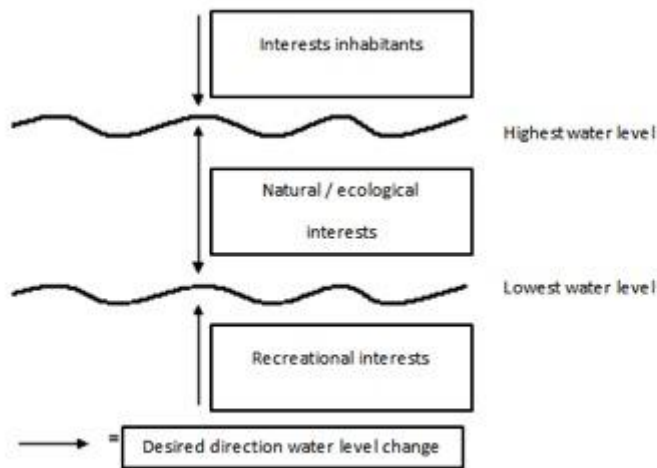


Figure 4: Interests of the stakeholders in flexpeil project (Source: 8)

The lack of recognition and influence in decision-making was a main issue. The AGV is reproached that they only highlight the benefits of the project and gave no attention to possible negative aspects of the project<sup>8</sup>. There was a strong feeling from the recreational sector and the inhabitants that they were not being taken seriously, which seems to be linked to the distrust and reliability in the government in general<sup>12</sup>. Authority plays an important role in this. According to some stakeholders, the many uncertain consequences of the *flexpeil* project and the view of the government in natural values change every one to two decades<sup>8</sup>. In conclusion, the poor communication by the AGV is central in the resistance and distrust against *flexpeil* project. Therefore, Plassenschap Loosdrecht e.o., Marina *Ruimzicht*, municipality Wijdermeren, HISWA and the Association Royal Dutch Sailing Federation (Vereniging Koninklijk Nederlands Watersportverbond) had a court case against the water board. According to the Dutch Water Act Article 149, the court could only judge whether the *peilbesluit* was against public interest. They concluded that it was not against it and stated that “it cannot be considered that the interests of the involved stakeholders are not sufficiently taken into account and that the (*flexpeil* project) decision is insufficiently reasoned”<sup>17</sup>. Thus, the *flexpeil* project was allowed to continue.

However, as stated before, one of the aims of the *flexpeil* project was to find strategies to communicate with stakeholders via participatory stakeholder measurements. Participatory monitoring means stakeholders are actively involved in the process of measuring and monitoring, which could result in better understanding for stakeholders and their ideas could be taken into account by management. This will also help to change the perceptions of stakeholders for water management. Participatory monitoring could be effectively encouraged and speed up decision-making<sup>21</sup>. This adaptive ability is increasingly important for water management in the Netherlands, so all relevant stakeholders have trust in each other and learn from each other<sup>21</sup>. So, the target of the participative monitoring in Muyevelde is to find a shared view by the water board and stakeholders about the development of the surface water level and groundwater level in the *flexpeil* project. Measurements were done by volunteers, often on their own property. These increasing and widespread measures are beneficial, because they will lead to more accurate results and conclusions of the *flexpeil* project.

It is also obvious that by this, stakeholders are participating in the project and develop a better understanding of *flexpeil* for themselves. In the first step, stakeholders were identified in 2011 and informal meetings (*keukentafelgesprekken*) were organized with key players<sup>4&10</sup>. After several meetings, the participants began measuring the actual impacts of the flexible water level. Their trust



and relation with the AGV were improved during the measuring period, as proved with several surveys<sup>4</sup>. Furthermore, the communication between the AGV and the stakeholders improved considerably<sup>4</sup>. As an example, one participant of the participatory monitoring stated that “*I have the impression that the participants have gained more understanding for the flexible water level management. People feel they are taken seriously into account*”<sup>4pp46</sup>. There was also understanding by the complains by the stakeholders, and thus the maximum lowest surface water level was changed from -1,20 to -1,18 NAP. So, in conclusion it could be stated that the stakeholders were more positive regarding the *flexpeil* project. However, it was concluded that the participation should continue after the project<sup>4</sup>. Nevertheless, the participatory monitoring was not continued, which was disappointing for the participatory volunteers and led to incomprehension.

Consequently, the width of the stakeholder participation during the pilot is considered excellent, because with the participatory monitoring, a, for Dutch standards, unique participation is conducted, and many stakeholders could participate in this project. The depth was also considerable, the outcome of the *flexpeil* strategy did change from -1,20 to -1,18 NAP, and the data were valuable for the AGV. Thus, relevant stakeholders are involved, their interests, concerns and values are sufficiently taken into account. However, it is important to state that prior to the project stakeholder participation is also important. Although the change in surface water level was very small compared with previous policy, stakeholders were still concerned and the lack of participation caused stakeholders to feel not included. For this reason, the value for meeting the criteria is 3.

## 2.4 Tradeoffs between social objectives

In this section, the fourth block from the framework will be assessed. An overview will be given on the different interests of stakeholders and how these were dealt with prior and during the *flexpeil* implementation. The assessment criterion is:

*“Are agreed service level decisions based on trade-offs of costs, benefits and distributional effects of various alternatives?”*<sup>11pp9</sup>

During the implementation process of *flexpeil*, there was a lawsuit against the implementation of *flexpeil*, initiated by several stakeholders concerning the Loosdrecht Lakes (see chapter 2.3). This case shows that there is an area of tension between several vested interests. The (social) objectives of *flexpeil* have been mentioned before: creating a higher ecological value in the Loosdrecht Lakes, improving the water storage and lowering the costs of decreasing the concentrations of pollutants in intake water. While both parties agreed that a water level between -1,10 and -1,15 is optimal for recreation purposes<sup>17</sup>, the AGV still decided to implement the *flexpeil* to improve the ecological state, as obliged by WFD.

One of the largest opposing interests of the *flexpeil* project was that of the watersport facilities. Due to the *flexpeil*, the owners of the facilities were concerned about the occurrence of a too low water level, jeopardizing the navigability of the lake. Another concern originated from the landowners. They were afraid that the *flexpeil* would cause lowered water levels. However AGV has shown that the effect of *flexpeil* only has influence on groundwater levels 0,5m from the ditches, changes in groundwater level further from the ditches are mainly caused by rainfall and evaporation dynamics. When this knowledge was explained and discussed with the stakeholders, this issue was more or less resolved<sup>1</sup>.

However, due to the concerns and resistance from stakeholders on the *flexpeil*, the waterboard introduced the participatory monitoring project. During this project the minimum water level was set on -1,18m NAP instead of -1,20m NAP, to alleviate some concerns by stakeholders and making the change more gradual. This was a direct result of negotiations with the stakeholder<sup>10</sup>.

Flexpeil will save approximately 65.000 euro per year, through cost savings for improving the water quality. However, the choice of *flexpeil* was not a purely financial consideration. It was also done for research purposes. The *flexpeil* project is considered to be an innovative water management measure to improve ecology. Furthermore, due to *flexpeil* being an innovative measure, it was able to receive subsidy through innovation fund (chapter 2.7).

Prior to the *flexpeil* plans, another option to improve the water quality and the ecology of the lakes was introduced by AGV. These plans involved the creation of several big sink wells in the lakes in order to collect sludge (Figure 5), reducing the amount of sludge that is carried by the water flows and improving the transparency of the water<sup>1</sup>. However, even though this plan was provided by the AGV, it was never carried out. Interviews and several news articles<sup>14&20&22</sup> also show that there were concerns among the Plassenschap Loosdrecht, who are concerned with recreation and nature, and other stakeholders that the sinkholes would cause an increasing wave activity and changes in stream currents. Also, the large infrastructure required (e.g. pipes) would cause severe hindrance for many years to (competitive) sailing tracks. Eventually, after many complaints, even by the municipality, the minister of Housing, Spatial Planning and the Environment (VROM), Jacqueline Cramer, decided to intervene and put an end to the project<sup>12</sup>.

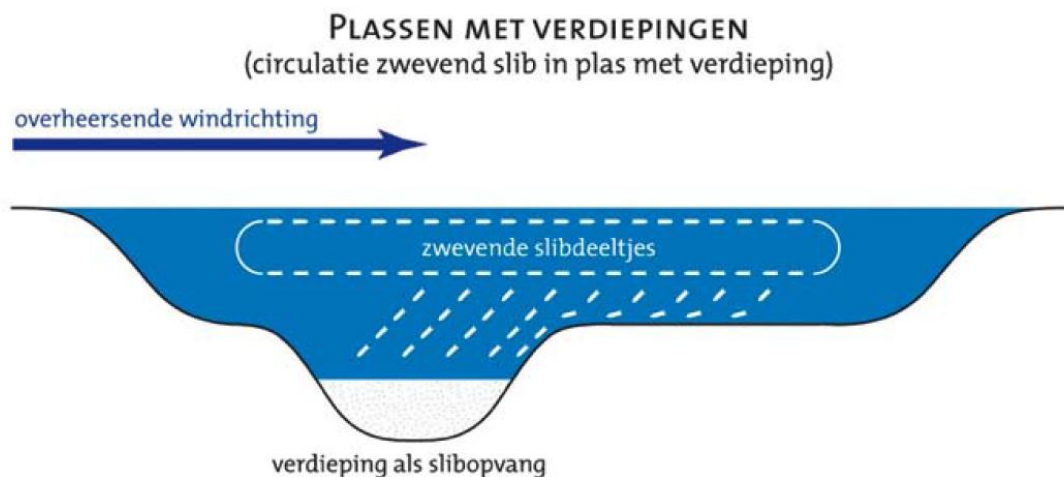


Figure 5: Sink well proposal by AVG. Translation top to bottom: Lakes with levels (circulation floating sludge in lake with levels), dominating wind direction, floating sludge, level for sludge collection' Source: 2

In an interview from 2010<sup>20</sup>, the communication advisor of AGV stated that they did not want to do any dredging, claiming that this responsibility lies with the owners of the lakes: the municipality, Plassenschap Loosdrecht and private owners. It is not explicitly stated in any report regarding the *flexpeil*, but the problematic dredging situation, combined with the targets by the WFD to improve water quality by 2015, probably led to the exploration of an alternative to the dredging (for ecology purposes), which is likely to have contributed to the *flexpeil* case study. Moreover, the dredging issue is having a major influence on the navigability of the Loosdrecht Lakes - the more sludge, the more inconvenience for boats.

In conclusion, *flexpeil* was an alternative to the dredging and sink holes proposal from the AGV, as this was expected to meet with less resistance from stakeholders, which was especially true after the participatory monitoring. It is also a cheaper measure compared to the original situation, because less water needs to be pumped in and dephosphorized. Furthermore, it was able to be properly financed through subsidies (chapter 2.7). The *flexpeil* project was a decision, based on the difference in costs and benefits to other alternative measures, such as dredging. Therefore, this block meets the assessment criteria and receives the highest score of 5.

## 2.5 Responsibility, authority and means

Sound and effective water management is hard to accomplish without having a clear division of the responsibilities and means of each authority within a project. To assess how this is done for the *flexpeil* project the following criteria will be used:

*“are authorities, responsibilities and means well-organized to deal with water issues at the appropriate administrative scale(s) in a participative and integrative way?”<sup>11pp10</sup>*

For this building block two issues need to be considered to have a relevant overview of the current water management issues.

**Dredging:** As shown in the previous chapters, the dredging issue in the Loosdrecht Lakes is highly complicated. The lakes have not been dredged in over 35 years<sup>20</sup> which is a huge issue for stakeholders who rely on the navigability of the lake. There is no party solely responsible for the dredging, and as a result no single party is willing to finance it. According to the Plassenschap Loosdrecht, the province of North-Holland is responsible for assigning a responsible manager, called a “bakbeheerder”. So far it is unclear if one has already been assigned. Responsibility is often related to property rights. The property rights regarding the Loosdrecht Lakes are highly divided. This is a legacy from a time when the lakes were still peatlands with many different owners. The receding of the soil below water did not necessarily imply a change in ownership<sup>10</sup>. Currently, the Plassenschap Loosdrecht owns about half of the Loosdrecht Lakes, around a third is owned by 200 to 300 private owners, some owning only a few square meters. The remaining area is owned by the municipality of Wijdemeren<sup>20</sup>.

**Flexpeil:** For *flexpeil* it is not as complicated. All the responsibilities, authorities and ways of financing are accounted for by the waterboard and the province. The responsibilities, authorities and finance for the *flexpeil* project lie primarily with the waterboard. The property rights of the Loosdrecht lakes are less relevant for *flexpeil*, because they do not necessarily influence a *pijlbesluit*.

The water level in the Loosdrecht Lakes is determined by the authority of AGV through the *peilbesluit*, which they had to establish by law in the Water Act Article 5.2<sup>23</sup>. The first *peilbesluit* in Loosdrecht Lakes was determined in the *plassencontract 1963*<sup>4</sup>. The AGV must keep the water level at or between the predetermined levels, as stated in the *peilbesluit*. Individual property owners are not responsible for this, nor do they have the authority to maintain or alter the water levels<sup>24</sup>. However, through water board governance and elections, the owners do have a means of influencing the waterboards. They can sway decisions, such as the *peilbesluit*, more in their favor.

The European Union is also an important (indirect) authority regarding the *flexpeil* project. The EU’s WFD and the accompanying 2015 water quality targets are the most important reason for the implementation of the *flexpeil* measure. Such directives are means that the EU has at its disposal. However, the responsibility of the actual water governance does not lie with the EU. According to the Water Act (water law), AGV is responsible for the water quality in the Loosdrecht Lakes, since the lakes are not defined as *rijkswateren* (waters managed on national level), otherwise the responsibility would have been with Rijkswaterstaat<sup>25</sup>.

Concluding, the authorities, responsibilities and means are all well-organized for the *flexpeil* project, much better and easier than for the dredging issue. The most important party in *flexpeil* is the AGV. They are the primary authority and hold the responsibility for the implementation and have the means to apply the project. Smaller parties are the other stakeholders in the area, primarily inhabitants, farmers and the leisure industry, who have a small role regarding responsibilities (participatory monitoring) and means (influence in AGV through (elected) seats). And finally the EU is

an important indirect authority through the WFD and Natura 2000. Therefore, the criteria for this building block are met and a value of 5 is given.

## 2.6 Regulations and agreements

An important aspect of assessing a water management project is investigating if there is a basis of legitimacy for the project and if there has been enough room for adaptive measures. This is done in order to improve the legitimacy, both legal and according to the values and principles of involved stakeholders<sup>11</sup>. This will be assessed using the following criterion:

*“Are regulations and agreements legitimate and adaptive; what are the main problems?”<sup>11pp11</sup>*

The WFD has been implemented to oblige water managers to achieve sustainable water management strategies<sup>26</sup> and improve the quality of their waters. Usually this implies the reintroduction of “more natural” dynamics<sup>6</sup>. Both the WFD and Natura 2000 have set targets for the Loosdrechts Lakes to be “an aquatic ecosystem with clear water and a well-developed underwater vegetation with accompanying animal life”<sup>27</sup>. The next evaluation for the WFD is in 2015<sup>28</sup>, so measures had to be taken by the AGV to improve the water quality, to allow for the accomplishment of these targets. After the discontinuation of the sink well approach (chapter 2.4), AGV switched to the *flexpeil* strategy. As AGV is the most dominant authority regarding responsibilities and means, their implementations are legitimate if the results contribute to achieving the WFD targets and fit the Water Act. After the court case against *flexpeil*, in which the judge ruled in favor of the waterboard<sup>17</sup>, the AGV had definite legitimacy from the court to implement *flexpeil*.

Agreements were not made with the stakeholders before the announcement of *flexpeil*<sup>9</sup>. So when AGV introduced it, the stakeholders were not very agreeing to the project. The local stakeholders also felt that the subsidy amount that AVG received for *flexpeil* was excessive, causing a very critical attitude, which lowered the legitimacy of the project<sup>8</sup>. After efforts by the waterboard to increase the knowledge of the lake system among stakeholders, they became much more agreeing to the *flexpeil* project<sup>10</sup>. So, as viewed by the surrounding stakeholders, the legitimacy of the project was low at first, and only increased once they understood the measure better and some of their concerns were addressed. The *flexpeil* was adaptive in the way that there was a small room for negotiations regarding the water level, hence the -1,18 NAP compromise. However, these negotiations were done in hindsight of the implementation. For a more legitimate and adaptive *flexpeil* project, it probably would have been more beneficial to do this beforehand. On the other hand, this could have led to a much slower implementation, jeopardizing the 2015 WFD targets.

In conclusion, the regulations of the *flexpeil* project definitely have legal legitimacy; however the basis of legitimacy for the surrounding stakeholders was low at first. Efforts to improve this were only made after the implementation. Therefore, the criteria for this building block are met, but there is room for improvement, resulting in a value of 4.

## 2.7 Financial means

Even if a project has sufficient support from stakeholders and is proven to be effective and legitimate, financing can prove to be a serious problem. Good water governance is not possible without a sustainable and equitable source of income<sup>11</sup>. For *flexpeil* this will be assessed using the following criteria:

*“Is the financial arrangement sustainable and equitable?”*<sup>11pp11</sup>

The financial arrangement for the *flexpeil* project is good. AGV is financially responsible and has two main sources of income: waterboard tax (waterschapsbelasting) and subsidy from an innovation fund<sup>9</sup>.

Waterboards impose taxation in order to fund their tasks<sup>29&30</sup>. Because the waterboards can impose their own tax, they do not have to compete with other governmental tasks for funding. This allows water management in the Netherlands to be more stable and safe, because the waterboards usually have enough funds available to properly fulfill their tasks<sup>30</sup>. AGV receives around 170 to 180 million euro annually through the taxation<sup>30</sup>. For the *peilbesluit* this means that the operational funding (e.g. pumping costs) is sustainable. This is especially true for the future, as it is expected that *flexpeil* will be a cost saving measure (chapter 2.1). In the 10 years prior to *flexpeil* the average annual costs related to pumping and dephosphorization were EUR 281.000,-. *Flexpeil* is expected to lower the amount of inlet by an average of 36%, which will lead to an annual cost reduction of approximately EUR 65.000,-<sup>6</sup>. The taxation is equitable, because it is determined in the Water Act that the waterboard is allowed to impose taxations and who is obliged to pay these taxes (e.g. companies, landowners)<sup>29</sup>.

The *flexpeil* project is seen as an innovative measure, therefore it can lay claim to the “*subsidieprogramma innovatieprogramma Kaderrichtlijn Water*”, which is a subsidy designed to stimulate innovative measures that aim to contribute to the targets set in the WFD<sup>31</sup>. This subsidy comes from the Dutch Ministry of Infrastructure and the Environment. The total amount of subsidy that this fund makes available is 76 million euro, which is used for 64 projects. The entire *flexpeil* project, of which *flexpeil* in the Loosdrecht Lakes is a part, received 8 million from this fund<sup>8</sup>. This way of financing the project is sustainable as it allows for the implementation of *flexpeil*, a cost saving measure, thus financially more sustainable than the old situation. It is equitable in that it was arranged by the Ministry of Infrastructure and the Environment, so it has a legitimate source. However, local stakeholders feel that 8 million is a rather excessive and non-proportional amount for the *flexpeil* measure. This caused feelings of skepticism and a critical attitude towards *flexpeil*, lowering the legitimacy of the project<sup>8</sup>.

In conclusion, *flexpeil* has a reliable source of income through the waterboard tax and it receives a high amount of subsidy. Combined with it being a cost saving measure, this causes it to be a financially sustainable measure. It is also equitable, because the money is received from sources that are legitimate by law and are used for the goals that are set in the WFD. Therefore the building block assessment criteria are met; resulting in a score of 5.



## 2.8 Engineering and monitoring

In this chapter, the expression “Service Level Agreements” is incorporated while studying the engineering aspects of the implementation of the Flexpeil and the solutions regarding monitoring. Service Level Agreement (SLA) is by definition “(...) used to determine whether infrastructure needs to be improved, and which improvements are needed.”<sup>11</sup> SLAs refer to the agreements between the provider and the users, in this case the Water Board and the stakeholders (mainly the residents) at the Loosdrecht Lakes.

The assessment criteria of this block are:

*“Are SLAs sufficient available (implicit or explicit) in order to redesign the existing infrastructure? Are design and consequences of different alternatives sufficient available? Is there sufficient monitoring of the system and are the data analysed?”*<sup>11pp12</sup>

SLAs were hard to reach because the *flexpeil* project was a pilot programme with limited information about its consequences among stakeholders (both the implementer and local stakeholders’ sides)<sup>6&9</sup>. During the preparation, SLAs were not kept in mind to a large extent. The problem with this project was, that the provider probably considered its aim and means overall good and beneficial without properly communicating with the stakeholders, therefore at the beginning there were no agreements in terms of the classic definition of SLA. No sufficient SLAs were available. This can be extrapolated from the fact that local stakeholders went to court with their problems and to express their disagreements. Even though the judge found the AGV’s proposal appropriate enough, meaning it was not against public interest, the SLAs were not clear before the lawsuit, and the stakeholders had to accept the AGV’s plan<sup>17</sup>.

On the other hand, the values of the water level were stated and then moved towards the point of agreement: from the initial height stated as between -1,05 and -1,20 m relative to sea level AGV changed the values to the boundaries of -1,05 and -1,18 m relative to sea level due to the serious resistance among stakeholders<sup>4</sup>. This can be referred as a service level agreement. Regarding the dredging there was no SLA, but this issue was not part of the *flexpeil* project’s perspective.

During the implementation, the participatory monitoring has begun<sup>21</sup>. This was a good means in order to monitor the water level and therefore to measure SLAs as well, especially due to the enhanced participation of local stakeholders. They could monitor the agreed water levels themselves. However, by the end of the participatory monitoring, when the flexible water level became normal practice, this opportunity was no longer provided, because the participatory monitoring ended by AVG.

In sum, the monitoring aspect of SLAs can be considered relatively sufficient in spite of the rough start. Therefore for this building block an overall value of 4 is given.

## 2.9 Enforcement

This chapter incorporates the enforcement part of the 10 building blocks. Its assessment criteria are the following:

*“Are regulations and agreements enforceable by public and/or private parties, and are there appropriate remedies available?”*<sup>11pp13</sup>


According to the previous sections, it is visible how rough the implementation of *flexpeil* was in terms of agreements. The enforcement of public and private parties did not occur very clearly. Because of the lawsuit, the water management of *flexpeil* according to the initial concept was not ideal in terms

of water governance, even though in terms of the ecological and the water system it was indeed effective and successful. The project ended up in court<sup>17</sup>, and a lawsuit can also increase transactional costs and block the implementation for the whole period of the procedure (or even longer). Even though the AGV won the case, therefore should be avoided by trying to enhance agreements before it ends up in court. On the other hand, legal procedures are apparently available, and after the complaints the range of the water level was changed, so one can argue that remedies are indeed available. Also, the local stakeholders were happy at the end with the participatory monitoring, however, after the monitoring was over, they were complaining again. Furthermore, it is an important aspect that the judge could only decide whether the project was against common interest. Common interest by definition means:

*“Common interest is often the guidance of government action; the interests of the majority, the generality; Community interest.”<sup>32</sup>*

or

*“Facts or circumstances that are deemed to extend to everyone’s interest and / or for anyone to be important. For example affairs environment, health, education or safety.”<sup>33</sup>*

This is a rather vague and maybe too general definition, since, according to this, common interest can be considered the welfare of the people as a whole. Furthermore, not the water level decision (*peilbesluit*) was evaluated, but the approval decision (*goedkeuringsbesluit*) of 30th of June 2009. This is an important aspect of the lawsuit, since the judge could only test whether the approval decision was against the common interest. The accusers argued, that by the implementation of the new water level project the area possible to use for sailing would be diminished by 10% due to the fluctuating water level because bridges could possibly be blocked. The argument of the judge was that according to the *peilbesluit*, which states that the water level should stay within the boundaries of maximum -0,95 m and minimum -1,20 m, the flexible water level with the boundaries of -1,05 m and -1,20 m is appropriate and satisfying, even though in the reality the range was between maximum -1,05 m and minimum -1,18 m. Also, the prosecution claimed that the *peilbesluit* was in violation with two environmental management plans: the Provincial Waterplan Noord-Holland 2006-2011 and the Natura 2000. Since no proper arguments or proofs were provided in the context of the lawsuit, this claim was rejected<sup>17</sup> 

However, if disproportionate damage for owners and inhabitants occurs, the option of damage compensation (*nadeelcompensatieregeling*) is available. The judge found the compensation opportunities by the AGV appropriate enough<sup>17</sup>.

As a conclusion of the court, there is no conflict with the law in this case. It cannot be said that the interests were not involved or taken into account to the required extent, or that the decision was not adequately reasoned<sup>17</sup>.

Therefore, probably it is appropriate to say that this block could be improved, since agreements could have been enhanced before the case ended up in court but it is generally satisfying, therefore a value of 4 is given to this building block.

## 2.10 Conflict Prevention and Resolution

This last building block is about conflict prevention and possible resolutions. The assessment criterion is:

*“Are there sufficient conflict prevention and resolution mechanisms in place?”<sup>11pp14</sup>*

In the case of the *flexpeil* project, conflict prevention measures were not carefully selected by the Water Board during the preparation. Besides the massive resistance it resulted in, it has led to a lawsuit against the AGV<sup>17</sup>. On the other hand, given the fact that the Dutch court system is accessible, in case of currently unsolvable conflicts between parties, legal resolution mechanisms do exist. Apparently, stakeholders could use this possibility also in the case of the Loosdrecht project. After the implementation, due to the participatory monitoring, where Deltares, as an independent research institute had the role of the mediator, dealing with conflicts became easier<sup>21</sup>. The rather high stakeholder participation level could resolve conflicts. A good example is the movement towards the point of agreement when changing the stated lowest water level from -1,20 to -1,18 m<sup>4</sup>.

As a conclusion, at the beginning conflict prevention was not realized to the necessary extent, people accused the AGV in court, but the participatory monitoring provided a well-functioning possibility for conflict prevention and resolution with accurate mediation by Deltares, therefore an overall score of 4 is given.

### 3. Conclusion & Recommendations

In the previous section the combined knowledge from several disciplines is used in an integrated way to evaluate the water governance of the *flexpeil* project<sup>11</sup>. To determine whether the *flexpeil* project at the Loosdrecht Lakes is an effective and legitimate policy, the performance of each building block is valued based on their criteria. In each block a value is given ranging from 1 to 5, of which the meaning is described in Table 2. The values of these indicators are added up which final number provides a concluding indication of the qualitative performance of the policy method *flexpeil* at Loosdrecht Lakes (Table 8). The criteria are summarized in Table 7.

Block #	Block name	Criteria
1	Water System Knowledge	Is there sufficient knowledge of the existing water system in order to deliver the required service level of societal functions? If not, what are the gaps; is sufficient knowledge available to assess the impact on the water system because of changes in environment and societal functions?
2	Values, Principles, Policy Discourse	Is there sufficient knowledge of shared or conflicting values, viewpoints and principles (represented by different policy discourse coalitions) for water issues and their consequences for facing water management issues?
3	Stakeholders Involvement	Are all relevant stakeholders involved? Are their interests, concerns and values sufficiently balanced considered in the problem analysis, solution search process and decision-making?
4	Trade-offs between Social Objectives	Are agreed service level decisions based on trade-offs of costs, benefits and distributional effects of various alternatives?
5	Responsibility, Authority, Means	Are authorities, responsibilities and means well-organized to deal with water issues at the appropriate administrative scale(s) in a participative and integrative way?
6	Regulations and Agreement	Are regulations and agreements legitimate and adaptive; what are the main problems?
7	Financial arrangements	Is the financial arrangement sustainable and equitable?
8	Engineering and Monitoring	Are SLAs sufficient available (implicit or explicit) in order to redesign the existing infrastructure? Are design and consequences of different alternatives sufficient available? Is there sufficient monitoring of the system and are the data analysed?
9	Enforcement	Are regulations and agreements enforceable by public and/or private parties, and are there appropriate remedies available?
10	Conflict Prevention and Resolution	Are there sufficient conflict prevention and resolution mechanisms in place?

Table 6: Building Block assessment criteria ( Source: 11)

Block #	Block name	Performance	Value
1	Water System Knowledge	There were several knowledge gaps, but this is logical, since it was a pilot project. It is a well-developed idea what measures should be taken into account to diminish knowledge gaps.	5
2	Values, Principles, Policy Discourse	Although values are not shared between AGV and stakeholders, there was sufficient awareness of this by AGV, even before the project started. Still it led to water management issues, with its climax at the court case.	3
3	Stakeholders Involvement	During the flexpeil project participatory monitoring was used, so both the width and depth of participation were considerably high. Beforehand there were opportunities for stakeholders to be heard, but still they felt ignored and remained concerned.	3
4	Trade-offs between Social Objectives	Removing phosphates is a relatively expensive alternative of flexpeil, so with flexpeil cost reduction occurred and the ecological status improved. The disadvantage for the navigability is the trade-off for this beneficial aspect, but is rather small, as proved at the end of the pilot.	5
5	Responsibility, Authority, Means	Authorities are well organized to deal with the WFD. AGV has responsibility directly. The EU is an important direct authority through the WFD and Natura 2000.	5
6	Regulations and Agreement	Strong legal legitimacy, although at start low. It was adaptive, i.e. water level policy changes 2 centimeters.	4
7	Financial arrangements	Very suitable and sustainable financial situation of project. Income through water tax and strongly subsidized project (8 million). On long term costs will decrease.	5
8	Engineering and Monitoring	In preparation of project SLAs were not taken into account. However, surface water level did change because of concerned stakeholders. Monitoring included local stakeholders, also is also positive.	4
9	Enforcement	Regulations and agreements are enforceable on both sides: legal evaluation of the approval decision (goedkeuringsbesluit). Remedies are available: decision of the judge, available damage compensation (nadeelcompensatieregeling) by AGV	4
10	Conflict Prevention and Resolution	Conflict prevention was not sufficient before the flexpeil project. Later Deltares could function as neutral mediator and resolutions were found.	4
<b>Total</b>	Combined blocks		<b>=SUM/10</b> <b>4.2</b>

Table 7: Evaluation of the building blocks according to the criteria

As seen in Table 8, all the indicators together have an average value of 4.2. Therefore, we can conclude that the *flexpeil* pilot project was an effective and legitimate policy strategy for the Loosdrecht Lakes. The excellent knowledge of the water system, the well-organized responsibilities and means by the Amstel Gooi and Vecht waterboard, the strong financial arrangements and cost-effectiveness that are met for *flexpeil* form the basis of this qualitative sound water management. There has been sufficient attention for the engineering and monitoring aspects, and regulations and agreements were clear.

However, it is advisable and recommended for future flexible water projects to include stakeholders while developing the project. Stakeholder monitoring is an exceptional strategy to include



stakeholders during the project. Nevertheless, it is advisable to use their collected information, also after the pilot project ended. Deltares has developed a report on how to include stakeholders in participatory monitoring, which is valuable for future projects on flexible water levels, because this information could be implemented on the already existing communication scripts for regional plans used by AGV. Not within all projects participatory monitoring is feasible, but with a short questionnaire it could be determined whether it is possible to effectively apply it. In addition, with including stakeholders, also all values, principles and policy discourses could be clear and taken into account.

#### 4. Discussion

It appears that there is a strong overlap between aspects within the ten buildings blocks. It could still provide as a valuable tool for assessing the effectiveness and legitimacy, in short the quality, of water governance, but double counting these overlapping criteria is challenging. However, we feel it is crucial to take contextual factors into account. For example, we assessed the governance of a pilot project, so the knowledge gaps are logical.

A main overlying issue for the Loosdrecht Lakes is the dredging issue. We excluded this as far as possible, but the opinion of stakeholders about the *flexpeil* project might be interwoven with the lack of dredging.

The *flexpeil* project appeared suddenly as strategy by the AGV. Although it appears to be proven that this strategy is a very low-cost effective measure, it might be a prestige project by AGV<sup>10</sup>. The limited financial risk due to the fact that the project was strongly subsidized might be the strong reason for the sudden and rapid implementation of the project. This may have influenced the lack of stakeholder implementation, but in our view, this should be not a fair reason for their opinion and interests are valuable too.

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## 6. Appendix A. Interview Bouke Ottow

03-06-2015

An information interview was held with Bouke Ottow from Deltares. He worked on the flexpeil project, in which his function is: "Flexpeil: Designing and implementing the participatory monitoring of hydrological, geotechnical and socio-economic effects of the establishment of a flexible water level management in polders in the central part of Holland". Our important findings are explained per topic in these minutes.

- Firstly, we ask what the values of people/stakeholders are that live in the area of Loosdrecht lakes. He tells us there is an article of this which we can use.
- Then we ask why the decision of initiating the *flexpeil* project was made fore there was any stakeholder participation. He asks us back why this is important. According to him, stakeholders should be involved in planning and monitoring. He explains us that the waterboard learnt the feelings with stakeholders. The waterboard announced the project, had meeting with stakeholders (also in planning stage of project), so formally they did not understand the complaints from the stakeholders. The waterboard disagrees with stakeholders, which ended up in a court case. It was against the province (the official body that was responsible for decision of flexpeil). Bouke tells us that the Judge said that nothing was done against the procedure. After the court case, Deltares could talk with stakeholders. Deltares spoke to municipalities, waterboard, HISWA, watersportverbond. Due to this conversations, Deltares learnt what the worries were. The key players were met on kitchentable meetings (*keukentafelgesprekken*) and it was determined what should be measured. The question was: how would it be measured that you could trust it? Stakeholders were concerned that due to flexible water level, groundwater level would change considerably.

The outcomes of the discussion with stakeholders are:

- Understanding of wind (influence of 15cm in extreme days)
- Understanding of how system works (especially for stakeholders, but also waterboard learnt things)
- Understanding in physical settings
- Understanding that groundwater level not further influenced that 0,5m from ditch.
- Stakeholders were happy because of better understanding

Bouke told that the results of the monitoring were good, also because of the weather conditions. The waterboard was able to manage between the set limits and they could show figures that demonstrated of possible effects on ecology. They could show the savings due to less cleaning (phosphate, pumping costs). The waterboard thought that the participatory monitoring costs too much time, so they wanted to reduce this. Then they stated that the participant's data was no longer used. Participants were a bit angry about this Bouke told. Data was not used anymore after this (some 2) years measurements. Bouke told us that in the end, trust and distrust is main important for stakeholders. Communication from waterboard to inhabitants should be better, because the inhabitants did not trust the waterboards. After the participatory monitoring they trusted each other more.

- We ask Bouke why flexpeil, and not another strategy / idea? He tells us this may be because it is very innovative and subsidized from innovative fund. We could find information about this if we take a look at the project proposal Bouke stated.
- We tell Bouke that we think that dredging is a big issue in the Loosdrecht Lakes. Bouke agrees: For recreation the watercolumn is important. We ask Bouke who is responsible for it. Is it the waterboard? Bouke stated that it is the responsibility of the owners. Each parcel has an owner; the bottom of the lake has still owners. Waterboard says that the private owners are responsible for dredging in the lake. All parts of the lake are privately owned by people. Nobody takes responsibility, also because it is expensive to dredge. There is no mediation necessary for the dredging, because nobody takes responsibility. Money should be collected collectively for dredging.
- We ask Bouke why the quality of the water is so important, is it because the Water Framework Directive? Bouke tells us that the Water Framework Directive is used as basis for flexpeil. The water quality should be improved, as the ecological status.

After five quarters the interview ended.