P60 – Time-sensitive governance and timescapes

IPA conference Lille, 8-10 July 2015

The Dutch way of Adaptive Governance

Aligning different time horizons in a complex water governance process

Author information:
Both authors work at Erasmus University Rotterdam, Department of Public Administration, Research Group: Governance of Complex Systems, PO Box 1738, 3000 DR Rotterdam, The Netherlands.

Corniel van Leeuwen* is Ph.D. Candidate at the Department of Public Administration at the Erasmus University Rotterdam, The Netherlands, e-mail: leeuwen@fsw.eur.nl.
Arwin van Buuren is Associate Professor at the Department of Public Administration at the Erasmus University Rotterdam, The Netherlands, e-mail: vanbuuren@fsw.eur.nl

*Corresponding author
Erasmus University Rotterdam / Deltares
Department of Public Administration
P.O. Box 1738, room T17-23
3000 DR Rotterdam, The Netherlands
Tel: +31629066608

Abstract

The implementation of water management measures is embedded in complex governance processes in which many actors are involved. They all have their own agenda, resources and strategies. But they also do have their own time horizons. Their time horizons differ for example when it comes to the rhythm (when is the next opportunity for decision-making), the quantity (how much time do we have) and the horizons of time (do we need to realize our agenda on the short or on the long term). Actors realizing water measures do normally have long-term horizons, while private actors stick to short-term agendas. Furthermore, these socially constructed time dimensions (Adam, 2004) are not static but fluctuate over time, for example when financial resources for the short term dry up and ambitions have to be postponed.

In Dutch water governance practices, policy makers recently have start making use of the concept of adaptive governance to cope with the fundamental uncertainty of physical and social systems. An important element of adaptive governance is the notion of flexibility of long-term policy strategies and stepwise implementation. Secondly, the concept of adaptive governance stresses the importance of constant monitoring. Subsequently, the results of this monitoring are used for reflection (learning).

At last, the concept emphasizes broad participation of stakeholders for a long time span. Actor involvement is crucial for collective learning.

The key principles of adaptive governance all (more or less) deal with different aspects of the concept time. For example the element of flexibility is used to change a strategy that runs for a relative long time span. However until now, relatively little research has been done on the empirical application of this concept in relation to the aspect of time. In this paper we aim to fill in this gap and analyze how actors give meaning to the concept of adaptive governance and to what extent the application of the concept helps to align different time horizons of actors.

We answer these questions by analyzing one major water management project in the Netherlands, the case Grevelingen Volkerak-Zoommeer. Based on longitudinal embedded research, we reconstruct the use of the concept and the way it helped policy makers to deal with temporal variety. From this case study we can conclude that the use of the concept helps actors to deal with the temporal variety. Though this worked out different than expected. We see this for example when actors are using the concept of adaptive governance to buy time through postponing important decisions in order to align with the temporal horizon of other actors. At the same time we also discovered that it is very difficult to come to alignment between time horizons. There are strong drivers not to come to temporal alignment. We conclude our paper with a couple of insights, based upon our case study about the potential value of using adaptive approaches to deal with temporal variety and the various conditions which enable or hinder this.

Key words: time horizons, temporal variety, adaptive governance, implementation, principles, hampering mechanisms, water governance

1. Introduction

More and more the impact of climate change is experienced all over the world. As weather conditions are getting extremer, storms, droughts, high river water discharges and floods seem to become more common (ICPP, 2014). As a reaction, governments all over the world have agreed to mitigate to climate change by reducing CO2 and other gas house emissions. Next to this, but more recently, governments have started to adapt to climate change. Governments, enterprises and societal actors, although sometimes rather cautious and hesitant, are making and implementing plans to deal with the consequences of the new weather extremes.

This is especially true for a country like the Netherlands where 60 percent of the land surface is beneath sea level. This makes the country vulnerable for sea level rise. The impact of sea level rise (parallel to soil drop) is enormous in terms of the potential consequences of a flood and the investment costs to adapt. For this reason the Dutch government has started in 2008 to develop a national strategy to adapt its water management system to the consequences of climate change, by developing an overarching and long-term Delta Program. As opposed to most plans, which are mostly responsive to former disasters, the Dutch adaptation plan is aimed to be anticipative in order to prevent for future floods.

In the Netherlands, climate change adaptation is mostly focused on developing and implementing flood-related measures (Van Buuren et al. 2014). These water management measures are mainly meant to reinforce dykes, improving waterways or giving more room for river (Warner et al. 2014). The decision making on and implementation of these measures is embedded in complex governance processes in which many actors are involved. They all have their own agenda, resources and strategies (Van Popering & Van Buuren, 2014). But all these actors also do have their own *time horizons*, the way they perceive the time available and the way they prefer to use it. These time horizons differ for example when it comes to the rhythm (when is the next opportunity for decision-making about dike enforcement), the quantity (how much time do we have before plans have to be implemented) and the horizons of time (is the agenda focused upon the short or on the long term: what has to be the 'expiration date' of measures). For example, public actors in the water domain are normally supposed to have long-term horizons, while private actors are suspected to stick to short-term agendas when it comes to return on investments. Furthermore, these socially constructed time dimensions (Adam, 2004) are not static but fluctuate over time, for example when financial resources for the short term dry up and ambitions have to be postponed.

Climate change adaptation is normally considered a long-term issue. Therefore, the urgency to take measures is often perceived as low. Therefore, in contemporary literature on adaptive governance, the need for adaptive capacity is stressed (e.g. Folke et al, 2005; Pahl-Wostl, 2007, de Bruin et al., 2009). It is argued that adaptive capacity is necessary to deal with both the uncertainty of ecosystem dynamics as with the interdependencies resulting from social system's complexity (Pahl-Wostl, 2007). Due to this perceived inherent uncertainty in social and ecological systems, the governance of water systems, confronted with the consequences of climate change, more and more has to respond and adapt (Huitema et al., 2009). This uncertainty is related to both changes in the ecological system (more droughts, flooding, severe fresh water shortages) and the social system (new wishes, other priorities, other policy agendas).

Realizing climate change adaptation is essentially a long term challenge surrounded with huge uncertainty (Underdal, 2010). Adaptive governance is aimed to combine stability to ensure long-term governance solutions with flexibility to react quickly to new developments, insights and ambitions.

The key principles of adaptive governance all (more or less) deal with different aspects of the concept time. For example the element of flexibility is used to implement a strategy that runs for a relative long time span by making small steps, which can be adjusted to the short-term ambitions of involved actors. Such a strategy is aimed to realize a goal that is robust when it comes to long-term challenges, but flexible when it comes to short-term ambitions of stakeholders. However until now, relatively little research has been done on the empirical application of this concept in relation to how actors involved in processes of adaptive governance deal with different time horizons. In this paper we aim to fill in this gap and analyze how actors give meaning to the concept of adaptive governance and to what extent the application of the concept helps them to align different time horizons of actors.

In this article we present an in depth case study of a water governance practice in the Netherlands (the case National Planning document lake Volkerak-Zoom and lake Grevelingen) in which the core actors actively developed an adaptive approach to implement a long-term and compounded program of measures in a large-scale water system.

This paper is structured as follows. In the second paragraph we present our theoretical framework and discuss the concept of adaptive governance in relation to the aspect time. In the third paragraph we explain our methodological approach. The fourth paragraph provides a case description. Paragraph 5 provides the case analysis. Paragraph 6 is devoted to conclusions and discussion.

2. Theoretical framework

Adaptive governance

Adaptive governance is a reaction on the uncertainty more and more organizations responsible for managing complex socio-ecological systems have to deal with. These uncertainties are related to changes in the physical system (for example climate change) and social system (new wishes of and developments in society). These uncertainties are causing major challenges for institutions in the public domain (Cooney & Lang 2007). For this reason, more and more the need for adaptive governance is stressed. Organizations should be capable of dealing with these uncertainties by being adaptive. According to Walker et al. (2004) adaptability is about the capacity of actors in a system to influence ecological resilience. Adaptive governance emphasizes the capacity to deal with surprise, to learn, and to support flexible institutions.

The need and benefits for adaptive water management has been elaborated by Lee (1999) and Tippet et al. (2005). Lee suggests that the key solution is to increase adaptive capacity by strengthening the ability to adequately respond to change, rather than reaction to the adverse impacts of that change. Lee (1999) builds forth on Holling (1973) which studied the structural change of ecosystem functioning. Holling initiated a shift in thinking into the complex, adaptive and unpredictable behavior of ecosystems (Van der Brugge & Van Raak 2007). In sum, adaptive governance accepts and responds to uncertainty by (Cooney & Lang 2007):

- Promoting learning
- Avoiding irreversible interventions and impacts
- Encouraging constant monitoring of outcomes
- Facilitating broad participation in policy-making processes
- Encouraging transparency
- Reflexively highlighting the limitations of the knowledge

Adaptive governance at its heart, accepts and responds to uncertainty by promoting learning throughout the policy-making process (Van Buuren et al. in press).

Adaptive implementation

The above mentioned core values of adaptive governance have been extensively discussed in literature. On the other hand, the challenges regarding implementation in the same adaptive mode are somewhat underexposed. In the following part we will theoretically elaborate on this. The literature on the governance of adaptation sketches several main principles how to implement long-term adaptation strategies (Innes & Booher 2003; Cooney & Lang 2007):

1. Stepwise/incremental implementation and experimentation with different strategies;
2. Learning by doing (by the use of monitoring);
3. Sustained collaboration between stakeholders;
4. Flexibility of arrangements and instruments;
5. Avoiding irreversible harm.

In the first place the literature stresses the importance of stepwise implementation with room for experimentation (Pahl-Wostl, 2005). Because of the fundamental uncertainty it is not possible to fully know the future. Stepwise implementation and experimentations are necessary to adjust in an early phase.

Secondly the literature stresses the importance of learning by doing or policy learning (Huntjes et al. 2011). Hall (1993) defines policy learning as a deliberate attempt to adjust the goals or techniques of policy in the light of the consequences of past policy and new information so as to better attain the ultimate objects of governance. Continuous feedback loops are necessary to adjust the adaptation strategy (Pahl-Wostl, 2007). Adaptive management requires a process of active learning by all stakeholders. It requires the continuous improvement of management strategies by learning from the outcomes of implemented policies.

Thirdly, adaptation literature advocates for sustained collaboration (Innes and Booher, 2003). Fourthly, flexibility is deemed necessary to realize adaptive implementation. Despite of the strengths of these arguments, they limitedly have been empirically tested.

Cosens and Williams (2012) note the difficulty in achieving practical implementation of adaptive management. Current governance systems and institutional structures are not compatible with the demands adaptive implementation pose. There seems to be a tendency to opt for inflexible and solid arrangements when it comes to implementation of adaptation measures (Van Buuren et al. *forthcoming*).

Adaptive implementation and dealing with different time horizons

As we stated in the introduction, actors in complex governance processes use different time horizons (Eshuis & Van Buuren, 2013). Stakeholders all have their own agenda and ambitions. These ambitions differ in many respects, but also with regard to the moment actors want to take action. At the other hand, opponents of certain actions can be pleased by adjusting the timing of these actions, and making them more fitting into their own time-path of investments.

To say it with the words of Lasswell: "politics is about who gets what, when and how" but also when. A crucial aspect of governance thus has to do with dealing with different time-horizons. Realizing consensus can depend upon finding a suitable timing of the implementation of policy interventions, or consensus about the sequence of measures.

From that perspective, the concept of adaptive governance is quite interesting as it enables a way of policy-making and implementation that is sensitive for different time horizons. There are at least two ways in which applying the principles of adaptive implementation helps to synchronize or connect different time horizons.

1. By facilitating actors who want to have the guarantee of action in the short term and actors who want to have some freedom of choice in the long term. Adaptive governance is about taking action amidst much uncertainty. Therefore adaptive implementation is based upon notions like step-wise learning and experimentation. Such an approach secure actors who want to take action tomorrow that something is really done. At the same time it gives actors who hesitate to decide what is necessary in the long run the room to learn more about suitable strategies and the ultimate way of how to realize the desired long-term perspective.

2. By facilitating that actors with different time horizons can choose their moment at which they join the implementation process. As we saw above, actors do have different time horizons. By organizing adaptive implementation processes it becomes possible for actors to enter the implementation trajectory at the moment that suits them best. Actors can collaboratively plan their different actions and can design an implementation trajectory that connects these different actions in a meaningful way.

3. **The Dutch interpretation of adaptive governance: adaptive delta management**

The concept of adaptive governance can be seen as a way to organize flexibility within processes of planning and implementation. It enables decision-makers to adjust their strategies when new insights become available or new opportunities are discovered. By organizing the implementation of measures with help of small steps, the implementation becomes reversible and room for learning and adjustment is guaranteed. This flexibility also potentially enables to accommodate ambitions of actors on different time horizons.

In this sense the Dutch water domain embraced the concept of adaptive governance and translated it into the concept of Adaptive Delta Management (REFS). This concept is one of main guiding principles of the Dutch Delta Program, a comprehensive long-term strategic program to prepare the Dutch delta

for the next decades, facing the consequences of climate change et cetera. With the words of Zevenbergen et al. (2013):

> A key element of the [Delta] programme is its so-called *adaptive delta management* (Delta Committee *2011*). This refers to the Committee's ambition to deal with an uncertain future in a rational way by connecting long-term challenges, such as sea level rise (Katsman et al. *2011*), with short-term outcomes. Adaptive delta management is a cyclical process that utilizes new knowledge to improve longer-term planning *and* shorter-term adaptation. Thus, longer-term plans are never complete, but are continuously adapted to changing circumstances, including those circumstances brought about by the Delta Programme's own interventions (Kabat et al. *2009*). In this way, shorter-term responses that have proven successful should, where possible, be included in subsequent interventions. The approach promotes *'opportunistic adaptation'* (incorporation of adaptation into urban renewal, regeneration or development and other shorter-term responses (Veerbeek et al. *2012*) and *'mainstreaming adaptation'* (uptake of knowledge into longer-term planning and policy processes (Gersonius et al. *2012*).

An important element of ADM is the principle to connect long-term planning decisions with short-term actions. Or – to put it the other way around – to connect short-term decisions to long-term challenges with regard to water issues. Long-term uncertainties should not hamper short-term investments, but these investments have to be compatible with long-term strategies.

A second element has to do with the flexibility of policy strategies: they have to be adjustable when new insights are generated or circumstances change. It has to be possible to adjust policy strategies when new insights in climatologic conditions, hydrological parameters or available technical solutions arise.

A third element focuses upon the availability of different strategies and to ensure that it is possible to switch between strategies when circumstances change and a tipping-point approaches. So, instead of developing the one most effective strategy, policy-makers have to develop a portfolio of strategies which can be exchanged when circumstances change.

A fourth element has to do with using momentum to invest. Adaptive delta management is also meant to make use of "windows of opportunity" When interesting opportunities emerge, which can be used to implement measures earlier than formally planned, the possibilities have to be created to take those opportunities.

4. **Methodology**

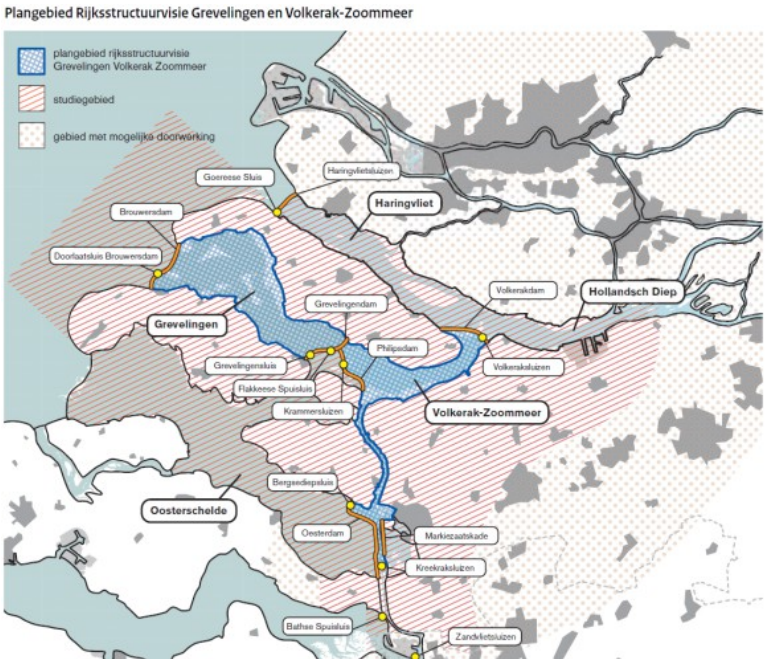
In this article we analyze how the concept of adaptive implementation (labelled as adaptive delta management) is used in an actual water governance process in the Netherlands. Our research ambition is thus mainly explorative (empirical-descriptive). We are interested in the question how actors give meaning to the concept of adaptive governance, with which underlying intentions and which results the approach sorts out. We are especially interested to what extent the application of the concept helps to deal with different time horizons of actors. We reconstruct the use of the concept and the way it helped policy makers to deal with temporal variety. An in-depth exploratory case study fits best this ambition.

More specifically we have chosen for a theory-driven case selection and looked for an extreme case, a case study in which the concept of ADM explicitly was applied. Such a way of case selection is helpful

in order to further develop a theoretical line of argument. We answer the research questions by analyzing the case Grevelingen Volkerak-Zoommeer, a major water management project in the Netherlands. This case concerns a long during decision-making process about a program of measures to restore (partly) the tidal dynamics in two closed-off sea arms in the Dutch Southwest Delta. This program of measures was formulated in the Planning Document Grevelingen Volkerak Zoommeer but the process history is much longer. We studied the case in the period mid. 2012-spring 2015 (the period of construction of the Planning Document).

One of the researchers was longitudinal involved in the policy process (2011-2015). He was member of the project team constructing the Planning Document. For this reason our research strategy is longitudinal embedded research. During this period, numerous meetings were observed and documents and discussions were analyzed. In addition, interviews were done with 15 respondents. This method made practitioners less hesitant to provide delicate research material. They considered the researcher 'as one of them'. To stimulate reflexivity results were regularly shared en discussed with the project team (member check). Next to this, the other author of this article functioned as reflector on the research results on several moments. In sum, in several ways we applied the principles of triangulation.

Map X presents this area.



5. Case description

a. Deteriorating water quality in lake Grevelingen and lake Volkerak Zoom

Lake Grevelingen

As a reaction on the major flooding disasters in 1906 and 1953 in the Southwest part of the Netherlands, the national government executed some major interventions in the water defense system (De Schipper, 2008; Slager, 2010). As a result of these interventions, which are known as the 'Delta works', the Southwest Delta with its characterizing estuarine dynamics was transformed in a series of lakes losing its dynamics and connection with the North Sea and the rivers. As a result of this, several ecological problems arose. One of the lakes in which the ecological problems are prevalent is the lake Grevelingen (see Map 2).

The lake Grevelingen is a salt water basin, because of a little culvert in the Brouwersdam (created in 1978), connecting it with the North Sea. However, this culvert proved not to be enough for providing the lake Grevelingen with enough oxygen. This led to deterioration of the water quality of the lake which caused negative effects for nature, recreation, fisheries and thus the regional economy. Because continuing water quality problems the national water authority, onwards from 2006 started explorations on the consequences of reintroducing estuarine dynamic in the lake Grevelingen.

Because of the expected positive outcomes (in terms of the potential of restoring the former quality) further explorations (via a formal procedure, a so-called MIRT-exploration) of reintroducing estuarine dynamics were carried out. In May 2012 the results of this further exploration were presented. The main conclusion was that the measures were possible with a positive cost-benefit balance.

Lake Volkerak Zoom

The lake Volkerak Zoom is also a result of the earlier mentioned Delta works. Since these works, finished in 1986, the lake is a fresh water lake. From mid 90s farmers on the adjacent islands started to use the water of the lake for irrigation. But also this lake has to do with deteriorating water quality. Because of the absence of enough refreshment in the summer the blue green algae is present. Because of this, farmers no longer can use the water in dry periods. Next to this, nature values in the lake are under pressure. The presence of the blue green algae brings the ecosystem in imbalance. This is for example showed by the presence of less breeding for threatened bird species.

Because of the water quality problems, from 2002 onwards to 2012, the national water authority executed several explorations on how to improve the water quality. Also these explorations resulted in positive outcomes (in terms of the possibility to restore the former water quality by salination of the lake (Zegwaard & Wester, 2014).

b. **Towards a National Planning Document for both lakes**

5.3.1. Process history

Because of the lack enough policy urgency for the national government, the MIRT-exploration (Grevelingen) and MER-exploration (Volkerak Zoom) were not transformed in a MIRT-plan development phase in 2012. However, the projects did not stop. Because of interventions of the Steering Committee Southwest Delta, the results of the MIRT-exploration and MER-exploration were included in the development of a so-called implementation strategy (policy study) Grevelingen lake Volkerak Zoom. This strategy combines the plans to restore the estuarine dynamic for both the lakes Grevelingen and lake Volkerak Zoom. This implementation strategy was entrusted by the secretary of state before the end of the MIRT-exploration (mid. 2011).

The exploration which took place for the implementation strategy resulted also in positive outcomes in terms of the possibilities to restore the estuarine dynamic in a synergetic and cost-efficient way. Because of this conclusion the Secretary of State commissioned in 2012 to set up a National Planning Document in which the lake Grevelingen and lake Volkerak Zoom were considered in its entirety. This route had to lead to strategic decisions (Grevelingen may have estuarine dynamics or not, lake Grevelingen will be used for water retention or not, lake Volkerak Zoom may become salt or not) in 2014 for both lakes. After two years of study and negotiations with regional governments and stakeholders, in October 2014 the minister of Infrastructure presented a draft of the National Planning Document. In this draft the minister proposes to bring back estuarine dynamics for both lakes (ultimo in 2028) on the condition that all financial resources have to be realized. Until now, both national government and regional governments are working on the financial paragraph of the proposed measures.

Table X Brief timeline policy history

Year	Policy period
2003-2012	MER exploration lake Volkerak Zoom
2006-2009	SNIP exploration lake Grevelingen
2009-2012	MIRT exploration lake Grevelingen
2011-2012	Implementation strategy lake Grevelingen Volkerak

	Zoom
2012-2015	National Planning Document Lake Volkerak Zoom

5.3.2. Involved actors and their time horizon

Because of the fact that both lake Grevelingen and lake Volkerak-Zoom are waters under national responsibility, the national government is responsible for the planning document (policy responsibility). After a long history of regional lobby, the national government in 2012 decided to work on a national planning document. From the beginning the ministry of Infrastructure proposed a long term horizon for the ambitions mentioned in the planning document. The former MIRT and MER-explorations had shown that money to effectuate measures was not available on the short term. Therefore the national government from the beginning on mentioned 2035 as vision term. The ministry acknowledges the water quality problems for both lakes but has no urge to solve them immediately. This is felt different by the national water authority, Rijkswaterstaat. The national water authority is responsible for the management of both water systems. The national water authority states that the management of both water systems is not maintainable anymore. Therefore within 5-10 years measures have to be taken to facilitate local stakeholders. This is recorded in an official management judgement for both lakes.

Regional governments from the beginning are active in this case. This is because the consequences of bad water quality are mainly felt at the regional level. A good fresh water supply for farmers is for example important for regional employment. This is also true for nature values where Dutch provinces are merely responsible for. The two lakes are surrounded by the provinces of Zeeland, South Holland and Brabant. The provinces can be seen as initiators of the problem definition phase. In 2003 they articulated a joint vision on the improvement of the water quality of the lakes in the Southwest Delta which was confirmed in later policy document. They lobbied for several years to continue the explorations and come to implementation of measures. The three provinces all have different stakes to defend but have a joint ambition for the two lakes. The provinces dissent which measures first have to be realized. Their time horizon is merely short to midterm. At the one hand, because of the urgency of their problems (regional economy, recreation), they want to take action as soon as possible. At the other hand, they need time to realize the conditions that enable the salinization of the waters and to create the conditions for a transition towards an alternative fresh water provision in the region.

In the case three water boards are active. The water boards have the ambition to improve the water quality of their inland waters. They are strong defenders of the fresh water stocks. With realization of the proposed measures for an alternative fresh water supply they hope to improve the irrigation possibilities for farmers. Next to this, a good water quality is necessary for them to manage the goals in the European Water Framework Directive. Without strong guarantees about a good alternative fresh water supply, the water boards are against the proposed measures to salinate the lakes.

The lake Volkerak-Zoom and Grevelingen are surrounded by 7 municipalities. These municipalities all have different stakes to defend. Around the lake Grevelingen, the municipalities hope that the water

quality quickly improves in order to further develop touristic developments. Around the lake Volkerak-Zoom stakes are rather divers. The municipality of Tholen pursues a good water supply (for farmers). Municipalities in Brabant hope that with the proposed measures, touristic possibilities augment. The municipalities have a short term horizon. According to them, all explorations have lasted far too long. They ask for clearness on the short term.

Provinces, water boards and municipalities have united themselves in the steering committee Southwest Delta (founded in 2008). In this steering committee issues are deliberated and a joint vision on the area is guarded. Next tot that the steering committee functions as guardian when the policy process menace to surcease.

Tabel X, Actors and their time horizons

Actor	**Time horizon**	**Driver behind time horizon**
Ministry of Infrastructure	Long	Lack of policy urgency
National Water authority	Mid term	Actual water management challenges (e.g. sluice maintenance).
Provinces	Short/medium term	Nature and employment ambitions
Water boards	Medium term	Robustness of fresh water supply
Municipalities	Short term	Clarity for inhabitants and enterprises (investment climate)
Interest groups	Short term	Nature and recreation ambitions

5.3.2 Chosen Approach

At the beginning of the development phase of the National Planning Document, these various actors – all with their different time horizons – had the mission to come to an agreement about the main choices and the accompanying implementation strategy. In this section we describe the way they tried to synchronize their time horizons.

Because of the national responsibility of the two lakes, the ministry of Infrastructure arranged a project team and budget to work on the planning document. Hence, the project team was not a team with only national officers. Also officers from the water boards and provinces were member of the project team. This was because the national government already before the beginning declared that the measures to be taken to resolve the water quality problems were both a national and regional responsibility. Because of this, the united regional government started at the same time a program of area development with the ambition to search for contributors of the proposed measures.

In the first phase (mid. 2012-end. 2013) the project team spent much time on the re-interpretation of all the research that had been done in former years (in the MIRT and MER exploration). Because of the fact that both lakes for the first time were officially studied integrally, the project team discovered that many research questions were not answered yet (mainly on the physical consequences of

measures). Based on these findings the project team in the first year was mainly active in setting up and executing a research program. The research questions were jointly formulated by the national and regional governments. Also a newly founded advisory group of societal stakeholders gave advice on several moments in the process.

Results of the research program were openly discussed in the project team. Once in the two months the results were discussed in the Steering committee Southwest Delta. At this table, also the results of the program area development were discussed. With this approach the national government aimed to provide maximum openness in the process.

Next to this research program, the project team organized a series of deliberation meetings to discuss the progress of the project. In these deliberation meetings not only governments but also a broad range of societal stakeholders was present. In these meetings an assessment framework was jointly designed to assess the effects of the various alternatives of measures. Later on in the process - when the research results were available - the deliberation meetings were used to build up a joint vision on the area.

Because of the fact that the finance of the measures was not covered at the beginning of the process, the national government was not willing to make a National Planning Document with a short term horizon. The time horizon for the national planning document was set on 2035. This meant that the National Planning Document had to provide a long term strategy for the whole area.

This scope in the beginning was not accepted by the regional governments, which had the ambition to realize the measures in a period of 5-10 years. But after a few weeks of grumbles they realized that this was the only possibility to gain improvement in the policy process. Regional governments were not able to realize the proposed measures on their own. Given these ingredients, national and regional governments started to negotiate how concrete as possible the national planning document could become.

In order to facilitate this process, the project team implemented the principles of adaptive governance. In interactive sessions the involved stakeholders developed an adaptive implementation pathway. In this adaptive implementation pathway the main direction for both lakes is stated (bring back estuarine dynamics. In 2020 for lake Grevelingen and 2028 for Lake Volkerak Zoom).These main choices stay fixed for the whole period. At the same time the pathway is flexible. The pathway offers many opportunities to reach the directions. Estuarine dynamics for example can be realized by making a simple breach or making a tidal energy plant. Another choice to be made is whether the two lakes will be connected or will be supplied by estuarine dynamics separately. Also the effectiveness of technical measures that have to mitigate the consequences of salinization has to be proven. Techniques to separate fresh water from salt water are very innovative and have to be tested before they can be implemented on large scale. The pathway provides moments on which choices have to be made and moments on which the implementation has to be done. In short, the pathway is fixed on the outcome (estuarine dynamics in both lakes ultimo 2028) and flexible on the way how (simple breaches, kind of salt/fresh water separations)and the moment when this is realized.

In October 2014 the national government published a draft of the National Planning document. Because of the fact that the National Planning document is only binding for the national government - and the financing of the measures was still not fully covered – the national government was not

willing to publish a final version of the planning document until regional governments had made further agreements about the execution of the proposed measures. This was because the national government was not willing to take all financial risks of the proposed measures. They were afraid the publication of the final version would lead to juridical claims of stakeholders.

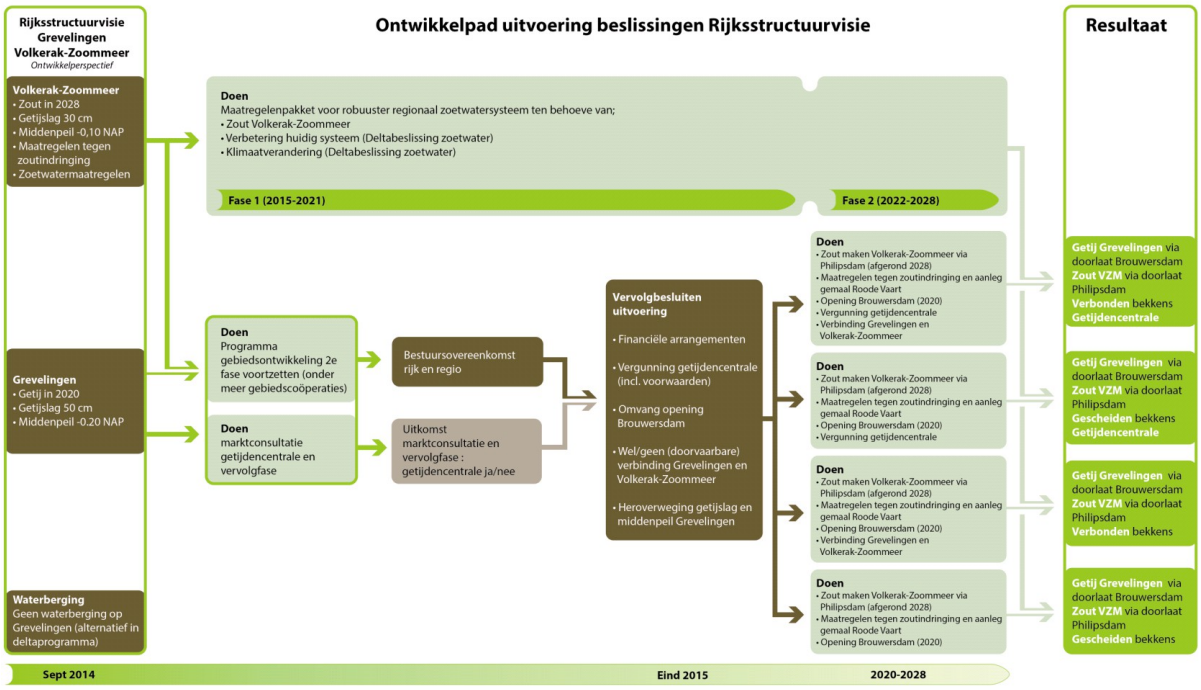
In order to fulfil this requirement all governments at the same time worked on an intergovernmental agreement. In this agreement the main choices of the implementation pathway are articulated:

- Providing the lake Volkerak Zoom ultimo 2028 of tidal dynamics (30 centimetre)
- Making an alternative fresh water supply for the adjacent islands of lake Volkerak Zoom (period 2015-2028)
- Providing the lake Grevelingen ultimo 2020 of tidal dynamics (50 centimetre)
- Starting a renewed program area development to search for financial resources
- Work on financial arrangements
- Making a choice between a simple breach or tidal energy plant for lake Grevelingen
- Making a choice for a connection between lake Volkerak-Zoom and lake Grevelingen
- Carry out a market consultation for a tidal energy plant
- Reconsider water levels for both lakes after market consultation

Next to this, in this agreement regional governments state their contributions and efforts for the next period (e.g. starting a renewed area development program). Regional governments thereby had strong motives to ratify this agreement before March 2015 (just before elections). After the ratification, both national and regional governments started to work on an elaborated area development program (further detailed) with the ambition to find additional financial contributions for the proposed measures.

In both the adaptive implementation pathway and the intergovernmental agreement, actors were able to integrate their own time horizons.

Figure X Adaptive implementation pathway



6. **Adaptive delta management – results**

In our case we can recognize a couple of characteristics of adaptive delta management. First of all, we can see that the involved actors try to make a combination of a long-term ambition (restoring water quality and estuarine dynamics in 2035) with short-term measures regarding an alternative freshwater supply, investments in small projects that can function as stepping stones towards the long-term ambition (Van Leeuwen & Van Buuren, 2014). The National Planning Document therefore contains an implementation pathway: a series of small steps that together enables incremental realization of the ultimate end goal. So, this principle is adopted in the chosen approach.

Secondly, the principle of monitoring is adopted in the approach. The developed adaptive policy pathway provides moments on which choices have to be made. These choices will be based on assessments of the feasibility of measures (technical and financial). It is important to note that this kind of monitoring is mainly based on the agendas of actors. No monitoring plan for the physical system has been developed (in order to fundamentally discuss the course of the pathway. The monitoring is linked to the actualization of the intergovernmental agreements and consultations of the market. This means that that the nature is rather pragmatic and strategic. Switching the fundamental strategy is impossible in the pathway. The pathway only provides possibilities to change the way to reach the end goal.

Thirdly, building on the former condition we can witness that the principle of leaning by doing is implemented. In the adaptive policy pathway the national government mentions to further continue the area development program. The outcomes of this program are used for further decision making about the propose measures (e.g. simple breach or tidal energy plant) and can change the course of the adaptive implementation path. With other words, there are fixed moments planned to discuss

the progress and the next steps. It could be that some measures will be implemented earlier than other. In this sense the path provides a lot of flexibility.

This also has to do with the fourth principle of adaptive governance - making use of windows of opportunity. Because of the long term horizon, it is possible to postpone the realization of certain measures. The pathway provides possibilities to implement measures earlier (e.g. fresh water supply measures). This is done because the actors – in case of the availability of financial resources – would like to start earlier with the execution of measures. By doing this, the pathway is able to respond to changed actor agendas.

In the fifth place, there is a strong emphasis upon sustained collaboration with a broad range of stakeholders during the implementation of the measures. This is secured in the ratified intergovernmental agreement which is actualized yearly. Both national government, the provinces and water boards have liabilities in executing process steps. All these steps interact with each other. Thus, sustained collaborations is necessary to coordinate the various actions and therefore secured in the first years. Collaboration for the long run is not fully secured.

Unless all these adaptive elements of the pathway, at the same time it is questionable to what extent this implementation pathway is really adaptive. One of the elements of the adaptive approach is avoiding irreversible interventions and impacts. In the case studied we observe a research program which is executed at front. Within the pathway there are no moments included to reassess the proposed fundamental choices. This could lead to irreversible interventions and impacts in the physical system. Only the monitoring of the agendas of stakeholders is arranged. The stakeholders only very limited reflexive to the limitations of the knowledge. Actors state that after years of research measures now have to be executed. Despite the fact that the physical systems in both lakes in recent years have changed. For example the blue green Algae in the lake Volkerak Zoom is less present in recent years. An adaptive approach as mentioned in an earlier draft of the national planning document (monitoring the presence of the blue green Algae) was erased because of political reasons. After all the years of explorations regional actors not further wanted to postpone the proposed measures.

7. **Analysis**

It is interesting to see that there are both pragmatic and more principal considerations to opt for an adaptive approach. The more principal reasons – which are in line with the principles of adaptive governance- have to do with uncertainty (e.g. the effectiveness of proposed measures). This uncertainty has to do with the effectiveness of technical measures that have to mitigate the consequences of salinization. Techniques to separate fresh water from salt water are very innovative and have to be tested before they can be implemented on large scale. Therefore, still no choices can be made how to execute exactly the way to reach the end goals of the pathway. Depending on the moment the effectivity is proven, executing decisions will be made.

At the same time, there are more pragmatic reasons why actors opt for an adaptive approach. First of all, the adaptive pathway is a way to mask a lack of money to implement the planned measures all at once. At the other hand it enables actors to make a start with the implementation. So, adaptive delta

management in this case is used to postpone large investments until the necessary money is available, but at the same time to make a start with implementing measures which are currently possible. By doing so, the national government can deal with the expectations of regional authorities that the former takes its formal responsibility for the issue of water quality.

In addition, the principle of adaptiveness is used to make use of windows of opportunity. The regional actors want to use every moment that enables them to realize their agenda with regard to the delta waters. An adaptive approach offers much more opportunities to keep the issue on the national and regional agenda.

It is striking that the adaptive approach is not chosen to enable flexibility and room for adjustments due to uncertainty about the physical system, the evolution of the problem or the effectiveness of the measures (shown by the blue green algae example in the former paragraph). There are different strategies or pathways available which do result in four different ultimate destinations. These different pathways are not primarily based upon the idea of dealing with changing physical circumstances, but upon the recognition that some pathways can become less favorable for involved actors or stakeholders. Then the implementation can take a switch towards another path, without losing track. This flexibility is thus build in to deal with resistance and changing preferences and not based on physical motives.

Adaptive implementation and aligning time horizons

The conclusion when it comes to the extent to which an adaptive approach was used, is thus rather nuanced. However, what to say about the extent to which this adaptive approach successfully helps to deal with asynchronous time horizons?

At the one hand, the adaptive approach used was very helpful in aligning different time horizons. By translating a large long-term decision into a couple of smaller measures to be taken at different moments, it was a useful device to make a feasible combination of measures with a different time horizon. It enables policy-makers to improvise a pathway of stepping stones that fits into the different agendas of the involved actors.

However, when we take a more critical view, it is rather questionable whether the adaptive approach was effective in realizing alignment between time horizons. It is better to say that it helps actors to connect their different time horizons. An adaptive approach makes it possible to keep the differences intact, but to accommodate these into a well-coordinated pathway. This also reveals a fundamental weakness: actors having a far from urgent ambition, only on the long-term, can use an adaptive approach as a way to procrastinate fundamental decisions (powering). Then, an adaptive approach mask more fundamental controversies and gives actors a false expectation that all actors agree upon a shared agenda and roadmap. In that situation only little progress in the policy process is to be expected.

8. **Conclusions and discussion**

The case of the National Planning Document shows us that the reasons for using an adaptive approach are far from only substantial. They are much more strategically inspired. In the case of the

RGV the choice for an adaptive approach can be explained as a way to get enough support for the first small steps in implementing the measures as desired by the regional stakeholders. The adaptive approach was certainly effective in negotiating between different time horizons as it subdivided the overarching ambition into smaller steps. In this way, adaptivity is used as an instrument to make progress.

The choice for an adaptive approach is thus seen by the regional actors as a second-best option: it enables to take the first steps, but it is no guarantee that the final steps will also be made. They only become more probable. Therefore they emphasize the importance that the various steps (now and in the future) of the implementation pathway are sufficiently anchored. Adaptivity in this sense functions as cement in a decision making process. It gives grip for regional parties which for a longer period try to bind the national government to fundamental choices. The way around, helps it the national government to deal with the high expectations of regional acters.

Furthermore, applying the principles of adaptive governance is as much an issue of powering as it is a result of puzzling. Where the literature seems to have a preoccupation with a rational world view in which actors – faced by huge uncertainties – rationally opt for a flexible approach with room for learning and experimentation (Folke et al, 2005; Pahl-Wostl, 2007), our case shows that the choice for adaptiveness is far from neutral. Some actors do have the conviction that a flexible, learning approach is the only viable way to implement large-scale measures with a long timescale. But many others try to fixate these measures and are not willing to leave room for adjustments which probably do not fit into their own agenda.

The concept of adaptive governance as analyzed in this paper thus seems to have two faces: a rational face to deal with the consequences of uncertainty, and a pragmatic face to deal with a complex governance context. From a rational perspective the concept is used to enable ongoing learning and step-wise implementation. It is used to facilitate implementation in a highly volatile and uncertain context.

From a pragmatic point of view the concept is used to go forward with implementation as such. It is a strategy to get support from stakeholders to start with implementing a large-scale program of measures by taking the first steps. Proponents of the program hope that this also will ease the implementation of later, more significant steps. Opponents keep their hands free to impede these steps because of changing insights or circumstances.

To conclude, an adaptive approach is a very helpful device to negotiate between asynchronous time horizons, by enabling a suitable planning that fits them all. At the same time, from our case we can learn that – although an adaptive approach facilitates flexibility – actors can stick to their own time horizons, and try to overcome their mutual distrust by fixating the resulting pathway. Giving an implementation approach the label of adaptiveness, is thus much more a rhetorical act, than a principal decision for learning, reflexivity and improvisation.

9. References

De Bruin, K., Dellink, R. B., Ruijs, A., Bolwidt, L., van Buuren, A., Graveland, J., ... & Van Ierland, E. C. (2009). Adapting to climate change in The Netherlands: an inventory of climate adaptation options and ranking of alternatives. *Climatic change*, *95*(1-2), 23-45.

Van der Brugge, R & R. van Raak (2007) Facing the adaptive management challenge: Insights from transition management. *Ecology and Society* 12(2):33

Cooney, R. & T.F. Lang (2007). Taking uncertainty seriously: adaptive governance and international trade. *The European Journal of International Law* 18 (3) 523-551

Folke, C., Hahn, T., Olsson, P., & Norberg, J. (2005). Adaptive governance of social-ecological systems. *Annu. Rev. Environ. Resour.*, *30*, 441-473.

Hall, Peter A. "Policy paradigms, social learning, and the state: the case of economic policymaking in Britain." *Comparative politics* (1993): 275-296.

Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual review of ecology and systematics*, 1-23.

Huitema, D., E. Mostert, W. Egas, S. Moellenkamp, C. Pahl-Wostl, and R. Yalcin. 2009. Adaptive water governance: assessing the institutional prescriptions of adaptive (co-)management from a governance perspective and defining a research agenda. *Ecology and Society* 14(1): 26.

Huntjes, P., Pahl-Wostl C., Rihoux, B., Schlutler, M.. Flachner, S., Neto, S., Koskova, R., Dickens, C. & I. Kiti 2011. Adaptive water management and policy learning in a changing climate: a formal comparative analysis of eight water management regimes in Europe, Africa and Asia. *Environmental Policy and Governance.* 21, 145-163.

Innes, J.E. & Booher, D.E. 2003. Collaborative policymaking: governance through dialogue. In: Hajer, M.A. and H. Wagenaar. Deliberative policy analysis. Understanding governance in the network society. 31-60.

Lee, C. H., & Lee, Y. K. (1999). An adaptive digital image watermarking technique for copyright protection. *Consumer Electronics, IEEE Transactions on*, *45*(4), 1005-1015.

Leeuwen, C.W.G.J. van der & Buuren, M.W. van (2013). Connecting time spans in regional water governance: managing projects as stepping-stones to a climate proof delta region. In J. Edelenbos, N. Bressers & P. Scholten (Eds.), *Water governance as connective capacity* (pp. 191-210). Surrey: Ashgate.

Pahl-Wostl, C. (2007). Transitions towards adaptive management of water facing climate and global change. *Water resources management*, *21*(1), 49-62.

Pahl-Wostl, C., G. Holtz, B. Kastens and C. Knieper, 2010. Analyzing complex water governance regimes: the management and transition framework. *Environmental Science & Policy* 13 (7) 571-581.

Van Popering-Verkerk, J., van Buuren, A., & Teisman, G. 2015. Synchronizing single level government's processes into multilevel governance capacity.

Tippett, J., Searle, B., Pahl-Wostl, C., & Rees, Y. (2005). Social learning in public participation in river basin management—early findings from HarmoniCOP European case studies. *Environmental Science & Policy*, *8*(3), 287-299.

Underdal, A. 2010. Complexity and challenges of long-term environmental governance. *Global environmental change* 20 386-393

Weele, F. 2014. Adaptiviteit. Erasmus Universiteit Rotterdam

Zegwaard, A., & Wester, P. (2014). Inside Matters of Facts: Reopening Dams and Debates in the Netherlands. *Water Alternatives*, *7*(3), 464-479.