

Towards integrated water and energy works in the Netherlands

Four asset management strategies for public value creation with public water works

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Abstract

Increasingly Dutch water authorities are considering to make their public (water) assets available for private initiatives to create more public value. However, developing multifunctional public water works asks for other ways of asset management. In this article we present a fourfold typology of styles of public asset management. We analyse – with help of an in-depth qualitative case comparison - four attempts to create public value, by using public water works for the production of sustainable energy. In particular we analyse which asset management strategy is used in these four cases and its effectiveness: how does this strategy evolve, to what extent does this strategy support private initiatives for multifunctional use of public water works and how does this ultimately result in value creation through such a broadened, multifunctional use? We conclude our paper with a couple of insights about the conditions under which the various asset management styles are both suitable and effective.

Keywords: public value, asset management, public water works, strategy

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1. Introduction

Traditionally, public assets in the domain of water management are approached from a rather strict functional perspective: they are aimed to provide a certain function for a certain period of time at the lowest costs as possible and with minimal risks (Volker, Altamirano, Herder, & van der Lei, 2014). Management and maintenance are aimed at securing this functionality and guaranteeing efficient operation of the asset. But increasingly, water authorities are considering to make their public assets available for more encompassing ways of public value creation for the community that makes use of them (McShane, 2006; Zhang, Crawley, & Kane, 2015). This development is initiated by a growing demand for multi-functionality and more value for money, due to scarcity of space and shrinking budgets for public investments (Van Stokkom, Smits, & Leuven, 2005). An interesting example of this way of thinking about public assets are the so-called integrated Water and Energy Works in the Netherlands: dams or dikes used by a private actor for the production of (tidal or ‘blue’¹) energy (Grotenbreg & Van Buuren, 2018).

Realizing such integrated water and energy works require new styles of public asset management. The literature on (public) asset management is strongly dominated by a focus on reliability and cost-efficiency. Less attention is there for other styles of asset management that are aimed at public value creation. To fill this gap this paper presents a typology of ideal-typical styles of asset management. We combine insights from public value management, asset management and innovation to develop a typology of styles. These styles differ on two dimensions: the extent to which the primary task of the asset manager is leading and restrictive or not, and the extent to which there is room for a more exploring and innovating asset management strategy or not.

Creating more public value with public water works – and thus developing other ways of asset management – brings about new dilemmas for public asset managers. Public asset managers in the Dutch water domain normally use a quite restrictive, mono-functional and complexity-reducing asset management strategy (Roovers & Van Buuren, 2016). Moreover, the institutional context in which they operate forces them to use this strategy (Busscher, Tillema, & Arts, 2015; Lach et al., 2005). Thus, engaging with private actors to develop multi-functional assets in the Netherlands, reveals institutional barriers and necessitates adaptation of the ‘common’ asset management strategy in use (Van Herk, Rijke, Zevenbergen, & Ashley, 2012; Van Buuren & Roovers, 2015).

In this article we analyse four attempts to create additional forms of public value, all of which are initiatives to realize integrated water and energy works in the Netherlands. These four cases (the Afsluitdijk which was realized in the thirties of the 20th century and three delta works, the Brouwersdam, the Oosterscheldekering and the Grevelingendam) deal with using dams for the production of sustainable energy: tidal and/or blue energy. We particularly analyse which asset management style is used in every case and its impact: *which styles are applied, to what extent do these styles support private initiatives to come to integrated water works, to what extent and under which conditions does different styles ultimately result in public-private value creation by means of a broadened, multifunctional use of public water works?*

¹ Tidal: sustainable energy production by using the currents of the tide. ‘Blue’: Sustainable energy production by using the difference in salinity between fresh and salt water.

In this article we first explore theoretical insights on asset management in the public domain (chapter 2) and present our own typology of public asset management (chapter 3). Then we describe our methodology (chapter 4), after which the description of the four cases follows (chapter 4). In chapter five we present our analysis and discussion. We conclude our paper with a couple of observations about how to enable more public value creation in the field of asset management for water governance.

2. Asset management and public value creation

Implementing water management is becoming more and more complex, due to the increasing complexity of the issues to be dealt with, like climate change, high societal demands and public budget cuts (Teisman, Van Buuren, Edelenbos, & Warner, 2013). Furthermore, there is a growing pressure to look at water issues from a more integrated perspective to take spatial planning, nature preservation, recreation, fisheries and other economic issues into account in implementing water management (Verkerk & Van Buuren, 2013).

Investments in water management are high, and will become higher due to climate change, growing technological opportunities and higher demands by society (Dewulf, Hartmann, & Schraven, 2010). This is why design of infrastructure has to be right for a very long time (Herder & Wijnia, 2012). Within this increasingly complex context two important developments require new approaches. First, there is a tendency to more efficiency and a stronger end-user orientation. Secondly, there is the urge to create more public value with public investments (Benington & Moore, 2010). These trends call for optimizing and exploiting the functioning of current assets and thus for professional asset management in the public domain.

2.1. Professional asset management

Decrease of public budgets and societal pleas for more efficiency, more transparency and a more user-orientated way of working have led to the development and application of professional asset management strategies within water management (Herder & Wijnia, 2012; Dewulf et al., 2010; Michele & Daniela, 2011; Moon, Aktan, Furuta, & Dogaki, 2009). This trend is strengthened by a changed focus from investing in new infrastructure to managing the use, replacement and maintenance of existing infrastructures (Herder & Wijnia, 2012), based upon a life-cycle approach of assets (Falls, Haas, McNeill, & Tighe, 2001). There are many different definitions of asset management. Baskarada, Gao, and Koronios (2006) define assets as ‘everything which has economic value and is owned by an organization.’ The British Standard Specification PAS 55 defines asset management as ‘the systematic and coordinated activities to manage assets and their performance, risks and costs during their life cycle optimally, considering the strategic goals of the organisation’ (BS EN ISO 9001:2008, 2008). The numerous definitions of asset management share common ground with regard to two aspects: (1) assets are used to achieve organizational goals and (2) managing assets means considering the complete asset life cycle (Schraven, Hartmann, & Dewulf, 2013). Wijnia and Herder (2010) refer to the strategic use of asset management as ‘an integral approach in which asset management is used to contribute to organisational

goals'. Asset management is thus about a life-cycle approach, linked to strategic organizational goals, and mainly focused on efficiency and risk control while operating assets.

2.2. Public Value Creation

Management of public assets thus not only has to deal with a more demanding context for realizing its primary function. It also has to deal with the growing need to explore additional values and functions of assets. This need fits in a broader trend to put the issue of public value back on the agenda (Benington & Moore, 2010; Moore, 1995). Governments are expected to facilitate public value creation, and to stimulate private and societal actors to create public value as shareholder in networks and partnerships. Stoker (2006) argues that public value management offers a new framework and narrative for networked governance, building on the ideas and achievements of traditional public administration and new public management.

From a public value perspective the ultimate goal is not to provide public goods and services as efficient as possible, but to find ways to create added value in cooperation with other actors (O'Flynn, 2007). Alford and O'Flynn (2009, p. 176) state that "public value focuses on a wider range of value than public goods; more than outputs; and what has meaning for people, rather than what a public-sector decision-maker might presume is best for them". More significantly, it connotes an active sense of adding value, rather than a passive sense of safeguarding interests. In the domain of public asset management, the notion of public value creation for example equals with adding private functionalities to public assets, combining functions, strengthening the recreational function or attractiveness of public assets.

The way in which this value is created is not seen as very relevant, therefore Alford and Hughes (2008) call this approach public value pragmatism. In their words: "*Pragmatism* refers simply to an approach in which the organization is open to the utilization of any of a variety of means to achieve program purposes, with the choice of these means focused on what is most appropriate to the circumstances, consistent with the important values at stake" (p. 131). In addition, but equally important a pragmatic approach takes the context in which 'a means' is developed and deployed as a vital building block. What has value for and in a certain (societal) context, might prove to be valueless in another.

Based on Kelly and Muers (2002) Stoker (2006, p. 44) distinguishes six characteristics that are operationalized for public value management, next to traditional public administration and new public management. We only present the operationalization for public value management.

The search for public value is becoming more prominent in the domain of water asset management too as private and societal actors actively approach public asset managers with ideas for adding value to existing functionalities. An example of this is the Dutch Water Boards' contribution to the Dutch national energy transition, by employing their assets - such as water sewages and pumping stations - for the production of sustainable energy (Bil, 2016; Roovers & Van Buuren, 2016). Making publicly owned and operated water management assets accessible to other (private or societal) stakeholders for creating more public value, requires new ways of developing, operating and managing these assets.

	Key objectives	Role of managers	Definition of public interest	Approach to public service ethos	Preferred system for service delivery	Contribution of the democratic process
Operational-ization	Overarching goal is achieving public value that in turn involves greater effectiveness in tackling the problems that the public most cares about; stretches from service delivery to system maintenance.	To play an active role in steering networks of deliberation and delivery and maintain the overall capacity of the system.	Individual and public preferences produced through a complex process of interaction that involves deliberative reflection over inputs and opportunity costs.	No one sector has a monopoly on public service ethos; maintaining relationships through shared values is seen as essential.	Menu of alternatives selected pragmatically and a reflexive approach to intervention mechanisms to achieve outputs.	Delivers dialogue: Integral to all that is undertaken, a rolling and continuous process of democratic exchange is essential.

3. Asset management and the creation of public value

As shown above, professional asset management is mainly focused on efficiency and risk control while operating assets. Such an approach can be acknowledged as a suitable strategy for traditional public administration. As such, professional asset management is a reaction to the call for optimizing and exploiting the functioning of current assets. The call for more efficiency in exploiting public assets is captured through the new public management approach. However this approach raises tensions when effectiveness and efficiency must be combined with societal demands for creating more public value. Thus, another approach is needed. An approach that is capable of dealing with large uncertainties with regard to external circumstances, An approach that serves as foundation for more anticipating and learning strategies (see for example Hoppe & Hisschemöller, 1995) with regard to developing, operating and managing public assets. El-Akruti and Dwight (2010) state that, due to the complexity of infrastructure networks, a holistic approach of asset management is needed, but that it often fails. Herder and Wijnia (2012) consider asset management as ‘getting the best value out of assets’. Asset management should fulfil a strategic role for society at large. For publicly owned infrastructure this role is often derived from accommodating the public interest Wijnia & Herder, 2010; Too, 2010). And thus often to create as much public value as possible too.

The question is to what extent, and in what way, public asset managers meet this new focus through a more multifunctional use of their assets. They might try to sustain their exploitative focus on achieving the assets’ primary functions as efficient as possible, and neglect the call for added value. Or they can try to include new societal demands in their

management strategies, e.g. by facilitating other actors to create added value with their publicly owned assets. To analyse such public asset management, and how it might anticipate to the call for efficiency and risk control as well as on adding public value, a typology of four strategies of public asset management is introduced by Roovers and Van Buuren (2016).

3.1. Four styles of public asset management

We can distinguish four ideal-typical styles of public asset management (Roovers & Van Buuren, 2016). These styles are based upon different orientations of public asset managers in relation to two key issues in asset management. First, the task interpretation is a crucial issue. Asset managers can either focus upon their primary or core task, or be more open for enabling the addition of public value with their assets. Secondly, their managerial orientation on how they manage their assets can be more exploitative or more explorative, in the sense that they can be more focused upon optimizing their own core capabilities (reliability and control) or exploring what other actors can contribute and add.

This leads to four styles of asset management in which a regular focus on efficiency can be combined with a more broadened public orientation: (1) mono-functional - asset manager realizes the main function of its assets and manages them with only an eye on the principle core function of the asset; (2) integrated - asset manager realizes an integral approach of its assets, and manages them with this integral approach in mind; (3) accommodating - asset manager realizes the main function of its assets but accommodates other functions as well; and (4) learning - asset manager is responsible for the main function of its assets, but invites stakeholders to participate, intertwine other functions and to manage, explore and develop the system jointly (Roovers & Van Buuren, 2016).

Using a specific asset management style undoubtedly has consequences for the results that can be achieved, but is not a free choice. A more mono-functional style helps to improve effectiveness (performance of the assets) and efficiency (with as less effort as needed) and fits well with more traditional methods of asset management. While on the other end, a learning style is more suitable for dealing with large uncertainties and complexities for which appropriate asset management approaches still have to be discovered. A largely mono-functional style might be more induced by political desires of budget control and risk management, while a more learning style might be propagated by societal desires for more sustainability or quality. Legal conditions and formal organizational tasks can put constraints on an asset management style of an organization. Research on Dutch water boards shows that if constraints for a more open style of asset management are not met, these public organizations

Table 1
Overview of four styles of public asset management, derived from (Roovers & Van Buuren, 2016)

		Task interpretation	
		Strict and closed	Broad and open
Managerial orientation	<i>Exploiting</i>	Monofunctional style	Accommodating style
	<i>Exploring</i>	Integrating style	Learning style

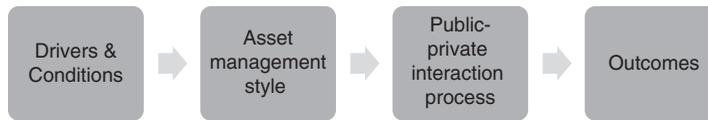


Figure 1. Conceptual framework

tend to fall back to a more closed style, fitting their legal and political constraints (Bil, 2016). The freedom of choice for any of these four types of asset management is thus demarcated by political agendas, institutional competencies and organizational routines.

In this paper we explore four cases in which public asset managers were confronted with ideas or proposals to create more public value in managing their assets by enabling sustainable energy production. In these cases different styles of public asset management were applied, which makes it interesting to analyse the impact of these strategies on the interaction between involved actors and the final result. We thus aim to analyse the following relationships (see figure 1).

4. Methodology

For this article we conducted comparative, longitudinal case study research based upon triangulating different data collection techniques. We conducted:

- a series of interviews, conducted by ourselves or our students writing their master thesis (Bakker, 2014; Wolf, 2015). For each case at least ten interviews were conducted with key players from the involved public authorities and private actors. The interviews were held with representatives of the national asset manager Rijkswaterstaat (the Dutch executive agency for Infrastructure & Water Works), various other governmental actors involved (municipalities, provinces and the Ministry as the asset owner) and private actors (representatives from tidal turbine constructors, private project initiators and engineering consultancies).
- document analysis of all formal documents that were produced in the various cases.
- participatory observation in a number of meetings between public and private actors involved in the four cases.

All four water works under study fulfil important functions for Dutch flood protection and water management. These cases are selected deliberately. This choice is motivated by the fact that these are rather extreme cases: using these flood defences for alternative functions is far from self-evident. In the field of water works the focus is traditionally on risk reduction. The room to accommodate private demands for shared use is thus restricted. In such a context it is especially interesting to analyse the difficulties of applying more accommodating or learning management styles aimed at creating public value. Although in all cases the same organisation functions as primary asset manager (e.g. Rijkswaterstaat), in all cases different management and employees of Rijkswaterstaat figured. Possible learning effects within the organisation of Rijkswaterstaat were no topic of our research.

Based on our theoretical framework, our empirical research was aimed at:

1. reconstructing the style of asset management of the national asset manager, the agency responsible for the national water works, Rijkswaterstaat, within each case.,
2. which drivers could explain this style,
3. the resulting interaction process between the national public asset manager on the one hand and involved public authorities and private or societal actors on the other.
4. how the specific style used impacts upon the ultimate outcome in terms creating more added value out of public water works.

Stakeholders within the cases were selected based on their role within the decision making process and their interaction with Rijkswaterstaat.

5. Case descriptions

Currently four major cases in the Netherlands show evidence of collaboration between public and private actors on the realisation of multifunctional water works. The works are all managed by the Dutch national water agency. Table 2 presents the main characteristics of the four cases. The sections below describe the cases in more detail.

The four waterworks are distributed over the Dutch territory as follows.

Table 2
The four cases

	Afsluitdijk	Oosterscheldekering	Brouwersdam	Grevelingendam
Asset function	Flood protection Fresh water management	Flood protection	Flood protection Water quality.	Water quality.
Asset manager's main aim	Restore primary function by reinforcement dam. Accommodate private and regional public interests for adding functions.	Maintain primary function of asset. Accommodate private and regional public interests for adding functions.	Construct breach in dam to restore water quality of adjacent lake at lowest possible costs.	Maintain primary function of asset. Accommodate private and regional public interests for adding functions.
Private interests	Construct and exploit testing and demonstration sites for tidal and blue energy generation at lowest possible costs.	Construct and exploit testing and demonstration site for tidal energy generation at lowest possible costs.	Construct and exploit tidal energy plant in a re-opened breach, preferably commissioned by government.	Construct and exploit a commercial test centre for tidal energy generation at lowest possible costs.
Progress & outcomes (January 2018)	2 out of 3 initiated private projects realised, 1 lacks necessary funding. Start of construction work for reinforcement planned end 2018.	1 of 2 initiated private projects realised, tidal turbines successfully installed.	Public and private stakeholders await political decision on reopening the dam, which is a precondition for a power plant.	Asset manager reopened the sluice. Private consortium works on business case and permits. Opening test centre planned in 2018.



Figure 2. Distribution of the four cases over the Dutch territory

5.1 *Afsluitdijk*

The Afsluitdijk is a 32 kilometre long dam in the north of the Netherlands, between the Wadden Sea and Lake IJssel. The dam needs a renovation because since 2006 it doesn't meet the legal norm for flood protection anymore. The asset owner's initial ambition was to transform the dam into a multi-functional water work, combining water safety with nature development, sustainable energy production and recreational functions. However, in 2009 the asset owner decided to tender just a 'plain' renovation and to focus on the primary functions of the dam: water safety and flood risk protection. This was due to austerity reasons and shifts in administrative responsibilities; the asset owning Ministry was no longer responsible for nature development and innovation. Complementary ambitions for the Afsluitdijk were left to be developed by regional authorities and private actors. The possibility was thus left open, which has to do with the somewhat ambivalent stance of the asset owner who remained in favour of the realisation of a multifunctional water work but was not able to take the lead in this.

An important component of the regional agenda was the ambition to expand an existing pilot installation for sustainable energy generation at the Afsluitdijk. The initiators hoped to seize the opportunity of the renovation to realize their ambitions. Although the asset

manager solely focused on water safety, support for regional actors was granted to develop their plans e.g. by ‘thinking along’ about planning and permitting options and by providing a financial contribution for sustainability projects. By supporting them, the asset manager tried to secure local support for the extensive renovation of the dam. With financial help of other national and regional authorities, a private turbine constructor managed to expand its test and demonstration site in one of the shafts of an outlet sluice. The asset manager supported the private firm in the permitting process. The ambition to open a second pilot installation did not succeed because of financial shortages and the unwillingness of the asset manager to adjust the time schedule of the renovation of the dam. The private initiator struggled with the ambiguous attitude of the asset manager; based on the encouraging discourse of the responsible minister it had counted on more public support. Another local firm managed to open a pilot installation for the generation of ‘blue’ energy. This firm also received subsidy from national and regional authorities and pro-active support of the asset manager to collect the necessary permits (Grotenbreg & Van Buuren, 2018).

5.2 *Brouwersdam*

The Brouwersdam is a 6.5 kilometre long dam in the south west of the Netherlands, part of the world famous ‘Delta Works’. The dam encloses a salt water inlet of the North Sea, creating a lake. Since this enclosure of the inlet, water quality of the lake has deteriorated, damaging ecological conditions and thereby the local economy. Therefore, a plan emerged to re-open the dam by making a breach and restoring estuarine dynamics in the lake. The authorities in charge (local and regional authorities as well as Rijkswaterstaat) searched for ways to finance this costly plan and came up with the idea to realize a tidal power plant in the planned breach. The national asset manager set up a joint project bureau with the regional authorities and actively investigated the possibilities and costs. They invited private actors, to think along, resulting in joint fact finding by public and private actors. An important finding of this consultation was that it is not possible to finance the making of a breach with the revenues of energy generation; the realization of a power plant will cost more instead. Nevertheless, both asset manager and regional authorities were still advocates of a power plant. For example, the provinces involved hoped to upgrade their worldwide reputation as home base for innovative delta technology with the realisation of the power plant. Authorities expected substantial benefits for tourism and local employment. The private actors involved sensed this public enthusiasm and expected to be commissioned by the authorities to realise the power plant. The asset owner however was not willing to do this. Regional authorities explored possible alternative finance mechanisms and the asset manager prepared a concession-based tender in which the realization and the exploitation of the power plant is combined with constructing the breach. In 2017 the project was put on hold due to the formation of a new government. The public and private stakeholders of a power plant now (January 2018) await political decision making of the new national government on financing a reopening the dam as this has proven to be a precondition for realising the power plant.

5.3 *Oosterscheldekering*

The Oosterscheldekering is an 8 kilometre long storm surge barrier, part of the Delta Works in the southwest of the Netherlands. The barrier holds 62 breaches that can be closed off in case of risk of flooding. In 2008 two private actors, a consultancy firm and a turbine constructor, both applied for a permit to install turbines to generate tidal energy in two of the barrier's breaches. The firms wanted to realize a show case for their products; producing sustainable energy was of secondary importance. Besides a permit application at the asset manager, both firms also applied for local, national and European funding schemes.

Installing turbines in the breaches of primary flood defence infrastructure, that must be able to close quickly in case of flood risk, had never been done before. Therefore, the permitting procedure was not a straightforward process. Laws and regulations, such as the spatial planning acts and permit assessment criteria, did not fit the innovative private plans and had to be adjusted. The asset manager expressed an ambition to contribute to the multifunctional use of infrastructure, sustainability and technology development and decided to 'think and work along' with the private initiators and help them to come to a viable permit application. In an intensive, collaborative process the asset manager and private firms eventually came to an agreement about the terms and conditions under which the firms could install their turbines in the water work. The province of Zeeland exerted some 'positive pressure' on the other authorities involved to make the project possible because of its ambitions with regard to water management innovation in the region. Even after securing the permit, the private initiators had a hard time closing their business case. They both got public funding but had difficulty finding additional private investors. As a consequence the realization was postponed multiple times. One of the firms sold its share in the project, including public funding, to the other one. In September 2015 this firm successfully installed five turbines in one of the dam's breaches (Grotenbreg & Van Buuren, 2018).

5.4 *Grevelingendam*

The Grevelingendam is another part of the Delta Works in the southwestern part of the Netherlands. It is an inland dam and its water safety function is no longer in use. The dam now holds a road connection and functions - among other things - as a location for recreational events. Because the water quality in the adjacent lake has deteriorated since the construction of the dam, plans were developed to realize the objectives of the EU Water Framework Directive. These plans comprise the reopening of the sluice in the Grevelingendam, thereby restoring estuarine dynamics in the water behind the dam. Following this plan, the idea emerged to realize a testing centre for tidal turbines in the sluice. The region aims to become 'the home for the tidal energy industry', which makes regional and local public authorities in favour of the realization of such a testing centre. However, involved authorities were willing nor able to finance, realize or exploit such a testing centre themselves. Therefore they started a search for private initiators by organizing a series of workshops (with help of an EU subsidy) to bring potential initiators and other stakeholders together. The public

authorities hoped that private firms and knowledge institutes would unite to realize the test location without governmental participation. However, the workshops did not have the result they hoped for. To facilitate a testing centre, the ministry of Water Works decided to reopen the sluice anyway. The asset manager was given the assignment to renovate and reopen it, at the costs of five to eight million euro, to make it fit to accommodate a testing centre. Construction work was finalised in 2017. An engineering consultancy firm eventually formed a private consortium with partners and applied for the necessary permits and a significant amount of public subsidies and to realize the testing centre. Planned opening of the testing centre is at the end of 2018.

6. Analyses: styles of public asset management in the cases

In this section we analyse the asset management styles used in the four cases as well as its consequences for the process of coproducing public value through collaboration between public and private actors.

6.1 Afsluitdijk

In the Afsluitdijk case the asset manager initially applied a learning asset management style, aimed at combining the reinforcement of the dam with other functions, like nature development, sustainable energy generation and recreation and tourism. The asset manager thus aimed for realizing a multifunctional water work and conducted an extensive market consultation, including a competition for private companies to draft an integral plan for the development of the dike and its environment. Private parties formed large consortia with regional and local public authorities and a range of other stakeholders. These consortia delivered multifunctional, innovative scenarios for redevelopment of the dam that largely surpassed the expectations of the national asset manager (Lenferink, Leendertse, Arts, & Tillema, 2014). But when the asset owner, due to financial budget cuts and shifting responsibilities, lowered its ambition the asset manager's style changed from learning to accommodating. The last four years the asset manager was preparing the reinforcement of the dam and was actively accommodating projects of local public and private actors. For example, he did this by establishing one contact person for all questions and requests from the region. The asset manager helped private initiators to come to viable permit applications and was, to a certain extent, willing to adjust its own rules and regulations. He offered to include the local projects in the tender for reinforcement, but this did not show beneficial for the project owners. The relatively small local projects paled into insignificance compared to the reinforcement and the asset manager was willing nor able to adjust the planning or scope of the reinforcement of the dam. One could say that the accommodating style of the asset managers was helpful to realize two sustainable energy projects. These projects included the installation of 'additional infrastructural objects' at the water work. This would not have been possible if the asset manager had used a strict mono-functional style. At the same time the importance to realize the reinforcement in

time, was rather high. This was still the primary interest of the asset manager. The accommodating style was thus bounded to what was deemed feasible, given the main objective of the asset manager.

6.2 *Brouwersdam*

In the case Brouwersdam the asset manager applied a learning asset management style. In an open and collaborative process the asset manager worked together with other authorities, local stakeholders and market parties to explore the possible future of the Brouwersdam and the possibilities of a tidal energy plant. The asset manager closely worked together with local authorities in a joint project bureau that researched the financial, technical and social feasibility of a power plant. They conducted an extensive market consultation, exploited a project website and regularly meetings were held to inform local stakeholders. The plan to realize a power plant is part of a larger programme concerning the development of the whole delta area in the southwest of the Netherlands. The realisation of the power plant depends on partially re-opening the Brouwersdam by making a breach. The feasibility of the breach itself largely depends on the construction of a convincing package deal between regional authorities and stakeholders with various measures on recreation, nature development and fisheries. These measures have to create enough benefits to justify the investment of making a breach. Realizing a sustainable tidal power plant is a potential component of this package deal and only a small factor in the entire project. The asset manager acted accordingly: realization and exploitation of the power plant will be integrally tendered together with the construction of the breach. A downside of the pro-active style of the asset manager is that the private actors took a somewhat passive and awaiting attitude.

6.3 *Oosterscheldekering*

In the case of the Oosterscheldekering the asset manager applied an accommodating asset management style. He reacted positively to the request of the private actors to install turbines to the dam. Although the plans were innovative and never implemented on this scale before, the asset manager was willing to accommodate private initiators on his water work, mainly because of the positive exposure it would generate. In an intensive collaborative process of consultation, research and negotiation the asset manager and project owners came to mutually acceptable solutions. The asset manager invested quite some time in this process and adjusted its permitting rules to enable the installation of the turbines. Despite these adjustments the terms and conditions under which the project owners have to operate, are still quite strict. For example, it must still be possible to take the turbines out of the water within a few minutes time, so that the breaches in the dam can be closed. This condition generates extra costs for the project owners. Additionally, the asset manager was not willing to purchase the generated energy, a request from the private project initiators to make their business case more viable. Similar to the Afsluitdijk case, the accommodation of the asset manager was a necessary condition for the energy project to succeed but it was no sufficient condition; one of the two initiated projects did not succeed.

6.4 Grevelingendam

The asset manager of the Grevelingendam applied an accommodating asset management style, but in a rather passive way. He decided to reopen the sluice and make adjustments to it so that the realisation of a testing centre is physically possible (estimated costs 5-8 million euro). Despite repeated requests from private actors for more involvement, for example by being a project partner and making financial investments in a testing centre, the asset manager made clear that the renovation and reopening of the sluice would be his sole contribution. In 2017 the sluice was reopened. This is much earlier than was intended, especially to accommodate the realization of a testing centre. When the sluice is reopened, the opportunity will be available to realize such a testing centre, but this entirely depends upon investments of private initiators and public support of other, mainly regional, authorities. One could describe the asset management style as passive accommodating because the asset manager is willing to take the ambition to realize a testing centre into account, but does not actively participate in realizing it.

In table 3 we summarized the analysis of the four cases.

Table 3
Styles of asset management and their consequences

	Afsluitdijk	Oosterschelde-kering	Brouwersdam	Grevelingendam
Asset Management Style	Phase I. Learning Phase II. Dual strategy: accommodating / integrating	Active accommodating (helping private actors to make use of the public work)	Learning	Passive accommodating
Asset manager's actions	Primarily focused on renovation; supported private developers in permitting process; willing to include private projects in renovation tender.	Mobilized expertise for private developers. Cooperated in permitting process. Liberalized the demands on private developers	Collaborated with regional and local public authorities; conducted extensive market consultation to explore possibilities for multifunctional use of water work.	Renovated and reopened sluice to make realization of testing centre possible.
Drivers and conditions	Regional pressure to make the Afsluitdijk an icon. Political will at the national level to offer private actors room to show innovations. No support to give them more time & budget.	Regional pressure on Rijkswaterstaat to enable a showroom for innovative sustainable technologies.	Ambivalent and insufficient support from regional coalition. No political urgency to take measures.	Minister is willing to support regional ambition to create the opportunity for a test centre by reopening the sluice.
Interaction asset manager vs. private actors	Laborious interactions in which private actors ask RWS to do more than they can	Private developers still had to deal with many, rather strict, requirements of the public asset manager who has to safeguard the primary function of the barrier.	After extensive market consultation, private actors now in a relatively passive position, await public tender.	Enthusiasm of authorities created confusion on public commitment. Private developers expect government to act and vice versa.

6.5 Discussion

First of all, we can observe a strong relation between the asset management style used and the resulting interaction process between public and private actors. A more open and exploring style results in a collaborative process in which reciprocity and mutual understanding can emerge. It helps to establish a process in which actors together look for opportunities to add public value. This is most visible in the case of the Oosterscheldekering. A more closed and exploiting style results in a more time-consuming interaction process, with high transactions costs between public and private actors because of the necessary efforts to synchronize values, interests and objectives. The resulting process gives rise to frustrations between public and private actors.

However, there is – contrary to what we expected – no clear and linear relation between the asset management style used and the outcomes of the process. In other words: an active style of the asset manager is not automatically answered with an active response from private actors, neither the other around. The clearest examples of this are the cases of the Afsluitdijk (accommodating, not very active) and the Brouwersdam (a very active exploring style). In the first case some projects are realized, while in the case of the Brouwersdam it remains an open question whether a tidal energy plant can be exploited, based on the pending discussions between public and private about its usefulness and necessity and the hesitation of public authorities to invest in a tidal energy plant. Thus, the style used explains – to some extent – the way interactions develop, but is no guarantee for a particular outcome. Other factors, like technical and legal issues, are important but for these issues hold: “where there is a will, there is a way”. In turn, the willingness to find a way is highly dependent on the pressure put on a project by other stakeholders in particular regional authorities. This pressure depends highly upon the question whether the project fits into other agendas (like regional development, innovation, nature restoration et cetera). The question whether integrated water and energy works can be realized, thus connects to the capacity of actors to connect this issue to other agendas.

The interaction process between actors is often very time-consuming and frustrating. This can be explained by the fact that actors do not know what they will encounter on their way. The ignorance about the conditions actors have to reckon with, is understandable given the fact that realizing integrated water and energy works is not done before. The asset manager is not prepared for this type of initiatives and thus has to explore how to deal with them. At the same time actors can avoid much disappointment when there is more clarity at the start of a process about the conditions that have to be taken into account.

It is interesting to see how private actors react upon the public asset management style as applied. As we saw in the Afsluitdijk case, a more cautious attitude at the public side provoked a more proactive private strategy, in order to convince public actors about the desirability of multifunctional use of public assets, while – as we saw in the Brouwersdam case – a more proactive public attitude made private actors more passive, because they expected an even more supporting role of public actors when they remained passive and hesitating about taking risk in a project aimed for by public actors. This differs from the Grevelingendam case where we saw that a more active public style stimulated an active

attitude of private actors who were stimulated to take the opportunity granted by public authorities.

In the different cases the asset manager frames his own behaviour in all cases more open and pro-active than his actual actions were (Grotenbreg & Van Buuren, 2017). This easily led to ambiguity about what private actors could expect from an asset manager, causing false expectations and subsequently even frustration. The cases show that ambiguity leads to delays, when actors have to do additional activities because they receive less support from the public asset manager than expected. In the longer run this ambiguity might harm the relations with private actors because they need reliable and predictable public counterparts for making significant investment decisions. Within a context of transparency and mutual understanding, both a more open/explorative and a more closed/exploitative asset management style can result in public value creation, especially when public and private actors can compensate for each other limitations. There is no one best style of asset management for creating public value: the performed style must match the interests of stakeholders and the conditions limiting the project. Each case requires a search which style is useful and necessary, keeping in mind the specific conditions of the case, the characteristics of the private actors and the possibilities of the asset manager.

In our cases political objectives at the national and the regional level, like promoting innovation, showcasing sustainability and reinventing the iconic value of the Dutch Delta Works form a powerful driver for Rijkswaterstaat towards a more active and enabling style. A problem is that for these political ambitions often no money is made available and also no formal responsibilities are assigned. This brings the asset manager in a dilemma: how to do justice to political and societal interests when it comes to enabling the multifunctional use of its water works and to safeguard their primary function within strict and predefined legal, budgetary and administrative boundaries? In all cases we see that the public asset manager tries to find a satisfying balance between these two claims. Finding an appropriate balance depends not only upon the internal flexibility of the asset manager, but also upon the willingness of private actors to accommodate the demands as formulated by the asset manager.

Although Rijkswaterstaat is involved as an asset manager in all four cases, it seems that in all these cases the same dilemmas play and the same search how to facilitate external initiatives is necessary. There are two explanations why there are nearly no signals of a more overarching learning process. First of all, there is a strong project-oriented focus of Rijkswaterstaat: every project is executed as a separate task with a dedicated team. Secondly, there is no formal instruction from the ministry (the asset owner) on Rijkswaterstaat to enable the realization of water and energy works and thus there is no formal justification to come to an organization-wide strategy on this topic. Only within concrete projects the possibilities can be explored.

A final observation concerns the role and strategy of other public (regional) authorities. They help to put pressure on the (national) public asset manager to take a more cooperative stance. They also contribute necessary resources (subsidies, permits, political support) to

implement the private projects. Especially when the asset manager is not allowed to do more to accommodate external initiatives, regional authorities can facilitate them with their regional policy objectives (like economic growth, tourism, sustainability) that are at stake as powerful driver. However, as we found earlier, it is not easy to align the activities of public authorities in an effective way (Grotenbreg & Van Buuren, 2018).

7. Conclusions

Public asset management – especially in the field of flood risk management – is predominantly approached from a New Public Management perspective as a matter of maximising reliability and efficiency, and minimising risk and complexity. However, the context of public asset management is changing rapidly. Asset managers are confronted with other actors who see potency in using these assets for other forms of value creation. And these agendas cannot simply be ignored. There are both societal and political pressures to enable novel combinations of functions and to move away from a too strict focus on efficiency and formal responsibilities. Asset managers thus have to develop new ways of asset management to retain legitimacy.

In this article we have explored four different asset management styles and with help of a comparative case study we explored which style was applied in four projects in which national water works were claimed for sustainable energy production. We were especially interested in the relation between the applied style, the resulting interaction pattern between public and private actors and the outcome of that interaction in terms of public value creation.

Our comparative case study revealed many difficulties to apply more open and exploring styles of asset management. Creating (more) public value asks for a more open, explorative asset management, corresponding with an explorative strategy of innovation, in which initiators pro-actively search for diversifying their ‘goods and services’ (WRR, 2008). Within the Dutch context of asset management of public water works the dominant paradigm is still based upon new public management, as can be seen when we look at how public-private partnerships normally are managed (Verweij, 2015). This makes it extremely difficult to use a more pragmatic repertoire to deal with private interests and societal needs.

Creating public value through a corresponding asset management strategy raises tensions when the organizational and institutional context of an asset manager strongly favours a mono-functional strategy. As Alford and O’Flynn (2009, p. 176) state: “public value focuses on a wider range of value than public goods; more than outputs; and what has meaning for people, rather than what a public-sector decision-maker might presume is best for them. More significantly, it connotes an active sense of adding value, rather than a passive sense of safeguarding interests”. Until now, there is a quest for adding value, but there is huge ambiguity about what public asset managers are allowed to do when it comes to public value creation. Moreover, although we discerned different styles of asset management in the four cases, it also became clear that these practices

are far away from the public value pragmatism advocated by Alford and Hughes (2008). The main focus (as practiced) of the asset owner and politicians is on a sober, efficient maintenance of public works. There is a discursive shift towards more openness to accommodate private and societal initiatives (Grotenbreg & Van Buuren, 2018) but to legitimize a more proactive and supporting role of public asset managers for public value creation, discursive change is not enough. Institutional adjustments and political willingness is indispensable.

At the same time, realizing integrated water and energy works, is not only a matter of public innovation. It also depends upon innovation from the private side. Private actors cannot suffice with a wait and see attitude, based upon opportunism to rely as much as possible on public support and funding, or with simply asking for cooperation without understanding the dilemmas of public asset managers. Public value creation with water assets asks for breaking through institutional role perceptions often labelled as the guardian versus the commercial syndrome (Jacobs, 1992). When public and private actors come to a sense of mutual understanding and reciprocity, they are also willing to come to an agreement on integration of functions.

Transparency is an important building block in such a process. When expectations of private actors about what can be enabled and facilitated turn out to be false, this can easily result in frustration and distrust. Our cases show evidence that asset managers tend to regard their style to be more open and explorative than perceived by other actors. But it is much more productive to invest in the sympathy of the private actors and to let them understand the difficulties public asset managers encounter.

The added value of this study is at least threefold. First of all, this article sheds light upon an interesting trend in water management which has to do with the plea to use public assets for new forms of public value creation. This trend poses serious questions on public asset managers and asks for new strategies. Our analysis, using a novel typology of styles of asset management can fuel the debate about how public asset management can facilitate public value creation and reveals how different styles result into different interaction patterns and outcomes. Finally, our study reveals that public asset management takes place in a complex network of interdependent actors and that decisions regarding value creation with assets in water management not only depends upon the institutional and legal room for manoeuvre of the asset manager, but also upon the regional network of actors that puts pressure on the asset manager and that reframes the asset in terms of economic development, innovation and regional branding.

The main caveat of this study is its generalizability. To unravel more specifically which style of asset management can be applied (successfully) under which conditions, it is necessary to replicate this study in other contexts. It is for example very interesting to see the variety of additional functions water treatment plants in the Netherlands already got and the entrepreneurial stance asset managers at the regional level already developed (Bil, 2016).

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