



Ir. DE WOUDE-GEMAAL

Futures Right in Front of You: Participatory Futuring on Sea-Level Rise and Climate Adaptation at Dutch Water Heritage Sites

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Abstract

In the Dutch delta, climate adaptation is inevitable. Water heritage sites can help Dutch citizens to imagine and discuss the uncertain futures related to that fact. This article proposes public engagement programs in which heritage organizations and water management institutions use historical locations for participatory futuring with citizens on the impacts of sea-level rise. During physical and/or digital tours along various heritage sites, participants can be invited to reflect on scenarios for the Dutch delta. The sites are not just backdrops. Their tangible and sometimes unfamiliar histories can foster long-term thinking, reduce the psychological distance to climate change and, crucially, inspire alternative futures through the lens of forgotten pasts.

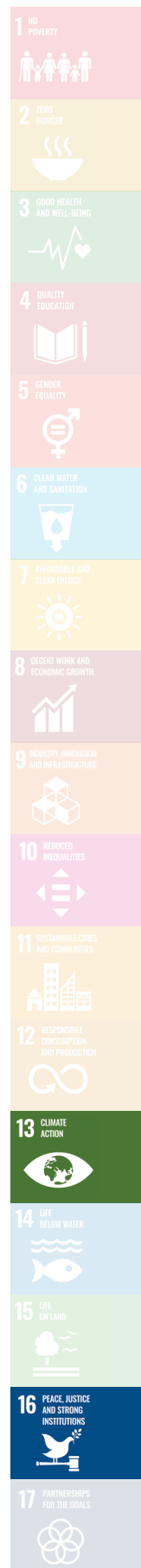
Policy Recommendations

- Heritage organizations and local water boards should regard their historical sites not only as 'places of memory', but also as 'places of futuring'.
- Departing from this insight, they could set up collaborative tours along various water heritage sites during which participants are invited to reflect on scenarios, imagine futures and discuss their preferences.
- Participatory futuring programs at heritage sites should be extensively tested and finetuned.

KEYWORDS

water heritage
participatory futuring
collective mental time travel
climate communication
water narratives

WATER VALUES



Introduction

Climate change, sea-level rise and exacerbating weather conditions can fundamentally transform river deltas and the lives of their human inhabitants. This is no less true for the Netherlands. Will the nation succumb to the sea, turning its future citizens into climate refugees? Will Dutch engineering ingenuity provide safety behind monumental sea walls? Or will the Dutch move to artificial mounds, floating cities or even develop an ecofriendly utopia? All these options are on the table. They occur in climate fiction and theater plays, but also in scientific debates and official governmental reports.

The future belongs to all of us. Because of that, futurists have long argued that not only experts, but also non-professionals should take part in discussions on long-term challenges (Barendregt et al. 2024). This is no less true in the Netherlands. Climate change, exacerbating weather conditions and sea-level rise could demand expansive adaptation schemes. If so, these could drastically change the landscape, the economy and the ways of life of Dutch citizens in the coming century.

When asked how their descendants will inhabit the delta, however, Dutch citizens admit that they find it very hard to imagine (Thiel and Mol 2020, 24). This inability is consequential. The future shape of the territory and its nation-state is not solely determined by environmental factors. It is also a series of political choices; decisions that should be reached democratically and deserve to be discussed as such (Pot 2024, 172–73). There is a need for what futures researchers call “participatory futuring”. But how? Heritage can help us out.

While our current, anthropogenic climate change is unprecedented in human history,

people always had to interact with challenging environments. Water heritage sites are the material records of these varying past interactions. The places show the struggles and ingenuity of people in the past, how these people understood their environment and what they, ultimately, valued (Hein 2025, 33–35). In the Netherlands, various adaptation scenarios for sea-level rise can be probed via these historical sites.

The overall argument stems from research I did for a report for the knowledge center (kenniscentrum) of the North Sea Flood Museum (Watersnoodmuseum) in the Netherlands (Duiveman 2025b). With the right information and instructions provided, I argued, historical water sites can invite citizens to contemplate on various future scenarios. Moreover, by linking various heritage sites during participatory futuring tours, visitors are encouraged to compare, discuss and evaluate these futures. “Heritage,” futurist Richard Sandford (2019) contended, “gives participatory futures some clay to work with.” I argue there is more than enough of that historical clay available in the Dutch delta.

The proposed tours, however, have not yet materialized and are not yet tested. This Blue Paper extends the report’s argument for experiments with participatory futuring routes along heritage sites. I begin with a very short introduction to the concept of “collective mental time traveling”, move on to the three major story lines in Dutch public discourse on the futures of the Delta, to then outline three reasons why specifically heritage sites provide the affordances for explorations of those futures. I conclude the paper by discussing example routes and the requirements for participatory futuring at the locations. Surrounded by the past, visitors can prospect the possible.

	Apocalyptic	Territorial	Amphibious
Protagonist	Dutch nation	Dutch nation	Water / Dutch nation
Antagonist	Dutch nation	Water	Water / Dutch nation
Plot	Tragedy	Struggle and victory	"Boy meets girl"
Lesson	We should prevent this	We should conquer the waters	We should learn to live with water
Emotions	Fear; guilt	Pride	Humility

^ Table 1 Three water story lines (Source: Adriaan Duiveman, 2025).

Collective Mental Time Traveling

Scholars in memory studies point to the fact that memory not only enables us to commemorate the past, but also to imagine the future (de Saint-Laurent 2018; Brescó de Luna 2018; Szpunar and Szpunar 2016). We imagine futures which ‘rhyme on’ past phenomena (i.e. historical analogies), or we focus on ongoing processes that started in the past and will lead to a future we expect (i.e. historical genealogies) (Duiveman 2025a).

Collective memory and collective future thought are in a close, reciprocal relation. Both ways of thinking beyond the present require imagination, both give meaning to the present and both are triggered by the same perceived situation: uncertainty (Obradović and Ivanović 2026). Moreover, both remembering and future thinking draw on the memories available to individuals as well as to communities. According to some researchers, it is therefore only logical to combine both temporal movements under one umbrella term: collective mental time traveling (Michaelian and Sutton 2019; Merck et al. 2016). When discussing the futures of their delta, the Dutch automatically engage in collective mental time travels as well. Yet, the variety of their temporal “destinations” is limited by the availability of memories.

Apocalyptic, Territorial and Amphibious Storylines

Communities connect and capture these memories in larger narratives. Literary scholar Lotte Jensen argues convincingly that various “water narratives” lingered through Dutch history and now re-enter the climate debate (Jensen 2024; 2020). On the one hand, these water narratives are grand narratives about the Dutch nation’s relation to the water that surrounds and flows through its territory over the centuries. On the other, water narratives function as narrative templates in which new and even expected events can be easily explained and structured (Duiveman and Jensen 2025, 7). Taking Jensen’s insights as my point of departure, I argue that three general storylines which connect the nation’s pasts and futures emerge in the public discourse on the pasts and futures of the Dutch delta (table 1).

The first storyline is apocalyptic (Duiveman and Jensen 2025). Drawing on the long history of floods, the apocalyptic storyteller envisions even larger, more encompassing catastrophes in the coming century. These calamities would, eventually, make the Netherlands uninhabitable. The disasters are the result of the hybrid and sinful consumption of its current citizens. However, the actors that employ this storyline seldom portray the apocalypse as inevitable.

Instead, they use the apocalyptic vision as a wake-up call that points to other, more hopeful scenarios (Davidson and Kemp 2024).

The second, territorial storyline claims that it is the Dutch nation's historical mission to safeguard its land against its oceanic arch nemesis (Duiveman 2024). Moreover, if not just protected, the Dutch should enlarge their territory. The territorial story line taps into the patriotic pride many Dutch citizens feel about the hydrological feats of their historical engineers, based on technology and cooperation.

The final storyline, the amphibious, takes an in-between approach. In its future, people will still live in the Dutch delta, but in order to do so they accommodate to and “live with water” (Kraan et al. 2025). Some of the visions that can be categorized under the amphibious storyline seem rather – by lack of a better word

– futuristic: large-scale sea weed farming, high-tech mobility on water, even floating cities. Nonetheless, adherents of the amphibious future are eager to point to the traditional survival tactics of farmers and fishermen in the past, such as living on artificial hills and having an emergency boat at hand (Duiveman 2025a; Kraan, Haasnoot and Mach 2025, 10; Bakema, Knotters, Woolderink 2024). These traditional survival tactics constitute what water historian Petra van Dam (2017) called the “amphibious culture,” hence the name of this storyline.

The Storylines Exhibited

The three storylines can be recognized in governmental reports, newspaper op-eds and climate fiction. They are also, consciously or not, told at water heritage sites. In exhibition texts, videos and guided tours, heritage practitioners



^ Fig. 2 Installation at the Watersnoodmuseum poses visitors various dilemmas to decide the fate of the Netherlands (Source: Watersnoodmuseum, 2024).

make references to present concerns and future scenarios. Sites emphasize one water narrative over the other. For instance, a visitor at the Cruquius Museum in one of the old steam pumping stations that drained the Haarlemmermeer follows a predominantly territorial water narrative. The exhibited objects, introductory video and guided tour tell the story of humans' technological dominance over the water.

Yet, there are museums and organizations that experiment with telling multiple water histories and water futures. I will give two examples.

Last year, the Watersnoodmuseum [North Sea Flood Museum] opened a new exhibition on the long history of water management in the Dutch delta. It concludes with the multimedia installation "Delta Dilemma" in which visitors have to collectively decide the fate of the Delta via various questions (fig. 2). These questions built on the framework of "adaptation paths" of hydrology think tank Deltares, with scenarios fitting the territorial and amphibious storylines. However, if the participants did not agree and failed to take decisions in time, they "lost" the game which resulted in an apocalyptic ending.

The second example is an inventive temporary exhibition and workshop designed by students of Utrecht University. After publishing my report, I discovered that the students developed ideas along similar lines as I did. They wanted to engage people with various futures of the coastal province of Zeeland. Inspired by the future cones which will be discussed in the next section, they created a physical installation in which visitors of a cultural center were invited to trace three diverging threads – "dikes," "terps" (artificial hills) and "faith" – from the past to the future (Flores and Chambers 2025). Information cards with historical events and

future scenarios dangled from the lines. In the accompanying workshop, visitors were asked to reflect on and imagine possible futures, departing from the pasts they could find in the installation. The various histories, the students reported, "remind[ed] visitors that every future grows from selective memories of the past" (Flores and Chambers 2025, 12).

I argue for a similar multi-narrative approach to participatory futuring, with the distinction that I would like to use actual water heritage sites to do so.

Three Reasons for Heritage-based Participatory Futuring

It matters where you imagine the future. And with "where," I mean an actual, physical where: the place. Futures researchers have created fascinating spaces that encourage creativity, reflexivity and interaction for participatory futuring (Hoffman, Versteeg and Hajer 2024). Yet, these were new locations, meticulously curated to enhance certain emotions and cognitive abilities. Searching through the academic literature, I could not find similar experiments done at historical sites. Building on the current literature and theories outlined above, however, there are three ways by which heritage can be expected to enhance participatory futuring.

First, heritage can function as a counter-clock encouraging long-term thinking.

Water heritage connects two temporalities – i.e. conceptions of time. The first is the geological, deep time of millennia, in which sea and rivers have slowly shaped the Dutch delta. When people contemplate on deep time, this can have a humbling effect (Krznaric 2020).

Yet, it can also feel rather abstract and, literally, inhuman. The second temporality, historical time, is the temporality of human generations. This is the time in which people acted upon and responded to the landscape. We can locate ourselves in historical time, as well as our ancestors and our descendants. These tangible, lived pasts enable us to imagine lived futures (Sandford 2019).

Because water heritage combines the two temporalities, it can function as “counter-clocks” that point to various time rhythms (Fredengren and Owman 2024). While these rhythms differ in length – varying from decades to eons, from generations to water cycles – they are always beyond our day-to-day lives. As such, it encourages people to think long-term.

Second, heritage provides proxy-immediacy of the future.

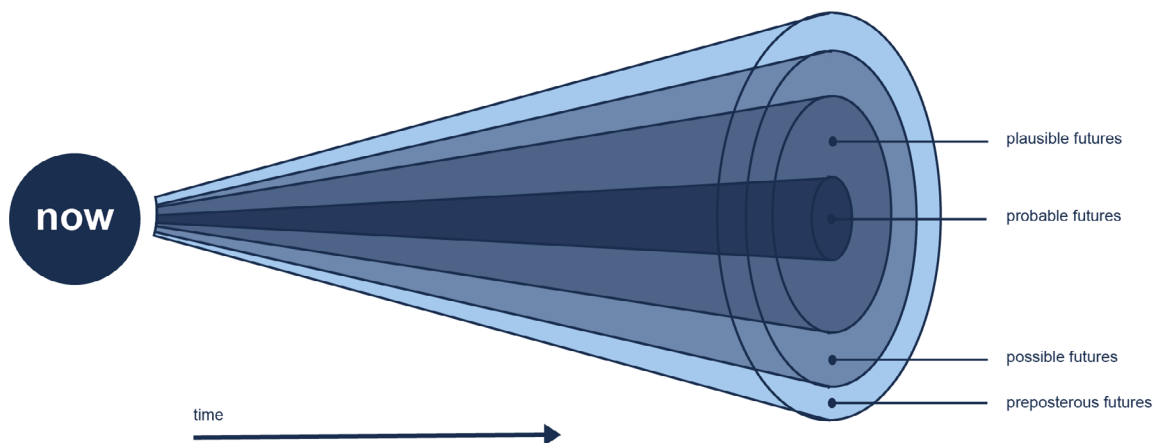
Anthropogenic climate change is unprecedented. Yet, it is not the first time that people had to deal with a challenging environment. In the Dutch delta, inhabitants had to cope with floods for centuries. These interactions between humans and their environment are re-

corded in material heritage. Artificial mounds, dikes, sluices and wheels – small lakes created by dike breaches – show that people had to develop strategies to live in a world that was not always favorable to humans.

By reflecting on and discussing at heritage sites, visitors can imagine how it is to be challenged by the environment. Research has shown that climate change is psychologically distant for people in the Global North (de Guttery et al. 2019; Jones et al. 2017; Pahl et al. 2014). For them, the problems are deemed far away in time and place. They believe that the disastrous consequences will befall on people in the Global South and/or on abstract generations in the far future.

Heritage sites close to people’s homes can bridge the psychological distance. It makes climate change local, showing that the immediate environment of the visitors already harbors risks. Risks that can re-emerge or grow in the coming decades. As such, heritage provides a proxy-immediacy for future climate change and the problems it will cause.

Third, sites holding unfamiliar pasts encourage envisioning unfamiliar futures.



^ Fig. 3 Joseph Voros' futures cones (Source: Adriaan Duiveman, 2025).

Just like individuals can “unlock” memories when they visit places they once have been, cognitive scientists recently argued that groups can retrieve collective memories at historical sites (Velasco and Sutton 2026). The exact mechanisms of remembering are not exactly similar, of course. However, the notion that communities use physical locations to store memories of their collective past has been around since the seminal work of Pierre Nora (1989). Considering that remembering and future thinking are so closely related, it is only logical that Nora’s “places of memory” can easily function as “places of futuring” as well.

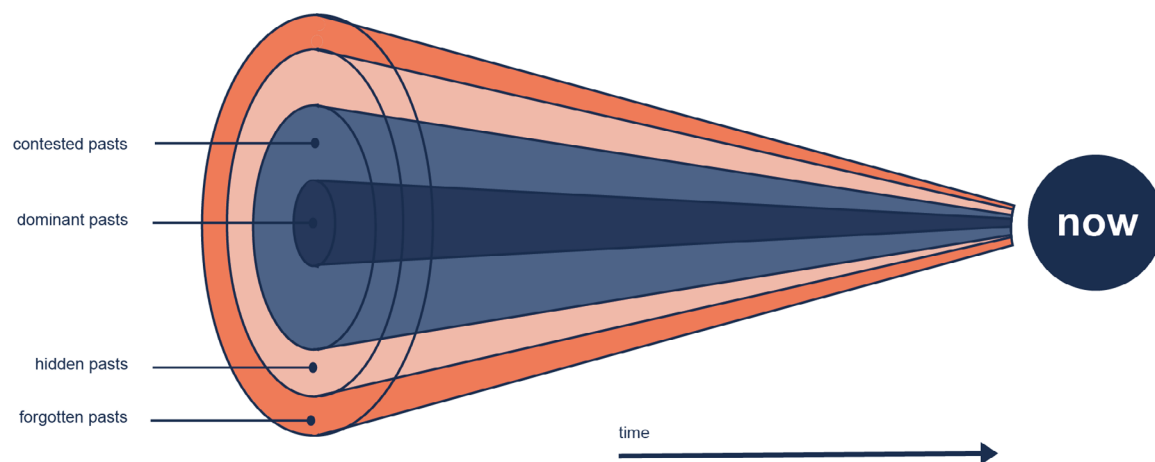
According to social scientist Josephine Chambers (2024), one could aim Voros’ futures cones to the past (fig. 3, 4). In that case, we see the dominant pasts – the histories we were taught in school and saw in movie blockbusters – in the center. Moving to the edges, the far less known hidden and forgotten pasts emerge.

The scholarship on mental time traveling has shown convincingly that our conceptualizations of the future are inspired by those of the past. If we want to have a rich understanding of what can happen, it is therefore essential to

consider what already happened. Especially those elements of the past that are forgotten can inspire the weirder visions of the future. As such, heritage practitioners and communication professionals can bring these historical objects and experiences from the “archive” to the “canon,” to borrow the words of memory scholar Jan Assmann (2015, 338). Or, to translate it to the cones: a wider cone for pasts enables a wider cone for futures (Chambers 2024).

How to Future Well

Based on these three reasons, I advised Dutch water heritage organizations and water boards to organize tours along various sites at which citizens are invited to reflect on the future. The tours can take various shapes: bicycle routes, bus excursions or digital tours. They can also be futuring workshops organized for large groups or just guiding materials for couples who would like to have an alternative heritage experience at their own leisure. While there are many options that could be worked out and could be tested, I think that there are three essential elements to keep in mind when setting up a futuring via heritage program.



^ Fig. 4 Josephine Chambers' pasts cones (Source: Adriaan Duiveman, 2025).

First, it is essential that visitors encounter multiple sites that enable them to envision various futures. For instance, in an example route I developed for a part of the province of Frisia, visitors would visit (1) a lake where once were multiple villages, (2) the Wouda pumping station from 1920 that is now a UNESCO World Heritage site (fig. 1) and, finally, (3) a former fishing village that was built on an artificial hill (table 2). The histories of these sites could invite visitors to envision futures that connect to, respectively, apocalyptic, territorial and amphibious storylines. If the visitors would only visit the pumping station, for instance, this testimony of historical engineering accomplishment would make it easier to envision a territorial future, but less likely to imagine an amphibious one.

Second, it is important to be honest about the uncertainties that still exist in the climate models and socio-economic forecasts. When taking visitors on tour, it should be made clear that they are invited to imagine futures that are based on certain presumptions. For instance: it is the year 2100, the sea has risen X m, the soil subsided X m, the nation-state of the Netherlands still exists and has a population of X million. This list contains a large number of conditions, but without these it would be difficult to have a meaningful exercise and a conversation that does not capsize in the sheer endlessness of possibilities. Instructors and/or instruction material, however, should make very clear that the presumptions are just that: presumptions.

Third, instructors and instruction material should strike a fine balance between providing enough information about the heritage site and the presumptions on the one hand and leaving room for creativity on the other. While some historical context information is necessary for visitors to appreciate the place they engage with, the material should not push visitors to just envision a future that merely replicates the past. The key, I think, is asking the right questions in the guiding material or futuring workshop, based on various modes of futuring via the past.

To take historical analogies as starting points, for instance, instructors could ask: How would the amphibious approach to water of the ancestors translate to the future circumstances of our great-grandchildren? Which advantages and which disadvantages are there to reinventing this way of living with water? Or, building on historical genealogies: What was technologically impossible when the ancestors built the pumping station, but could be realized now? And what could be possible in the future? Are there limits to what we can realize? If so, what limits? These questions should encourage visitors to think and imagine from the heritage site, but also to go beyond that tangible past.

Conclusion

The idea that water heritage can be a means for climate adaptation has found wide acceptance

	Apocalyptic	Territorial	Amphibious
Bicycle tour Waterland in Frisia	Drowned village of Elahuizen	Dutch nation	Water / Dutch nation
Bus tour West Overijssel	Museum Schokland (Flevoland)	Pumping station Mastenbroek	Museum farm Kampereiland
Digital, national tour	Tower of Koudekerke	Vlieter Monument at the Enclosure Dam	Pole houses of the former island of Marken

^ Table 2 Examples of futuring heritage tours (Source: Adriaan Duiveman, 2025).

in Dutch water management organizations. To give an example, the Dutch Cultural Heritage Agency (RCE) and hydrology think tank Foundation for Applied Water Research (STOWA) collaboratively investigate how historical maps can inform policymakers and designers in creating waterproof neighborhoods. Furthermore, the insight that water history and heritage can make citizens water-aware, has also been widely acknowledged and applied (Duiveman 2025a).

This article proposed another use of heritage, beyond practical measures and awareness campaigns. Heritage sites, I argued, can be places to open up the discussions on the futures that citizens expect, fear or want. Building on the most recent insights from memory studies, this article argues that the ways we imagine the future are closely related to the stories we tell about the past. By setting up tours along various heritage sites, visitors and participants do not only discover various histories, but they are also encouraged to imagine various futures for the Dutch Delta. Inspired by tangible pasts, they can discuss which futures they find likely (or not) to happen, which futures they prefer and what would be needed to make a certain future reality.

The advised approach has not yet been materialized in actual tours. In other words: my proposal is still based on theory. If heritage and water management organizations would like to set up an experiment, it is possible to investigate the experiences of visitors via ethnographic research and surveys. Furthermore, based on these results, the approach can be fine-tuned to deliver the most engaging and inspiring experience for visitors and participants. At heritage sites, futures would be just in front of them.

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