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Counteracting the Myth of Dry Feet in Dutch Planning for Flood Defense: Lessons for New England

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Introduction

Roughly one third of the Netherlands falls somewhere in the range of 0 to 22 feet below sea level, an area also home to the majority of the population and economic activity.

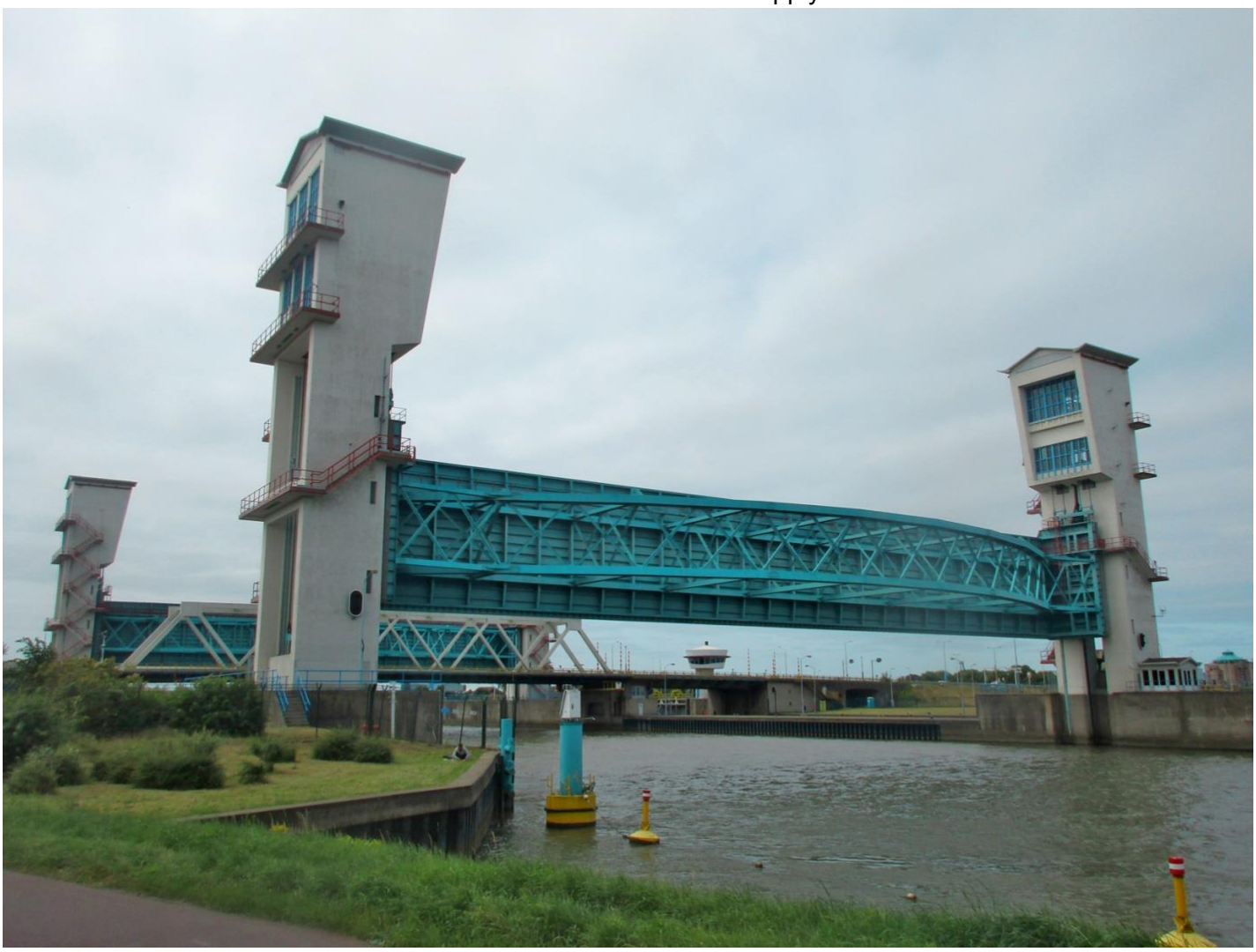
Based on these facts, we might think that planning for flooding is part of every Dutch citizen's DNA. Certainly, the Dutch have become expert in the science and art of water management. For example, the Dutch government has developed sophisticated safety standards that account for location-specific flood risks, protection of human life, and property value. Within these standards, current defenses are designed to withstand flooding that has a probability of occurring every one hundred years, or even extreme flooding that occurs every 30,000 years.

Engineered flood protection in combination with other safety measures, such as beach nourishment and dune re-enforcement, have protected the Dutch people so effectively that a "Myth of Dry Feet" has prevailed for generations in the minds of most Dutch. The Myth is the cultural assumption that awareness of flood risk and flood defense are not necessary because the Dutch government holds all responsibility and have won the war against water, guaranteeing the Dutch *dry feet.*

Climate change projections suggest that the level of certainty the Dutch government has provided in the past can no longer be guaranteed and going forward the Dutch people will need to share in the responsibility for flood protection. Consequently, efforts are underway in the Netherlands to counteract the Myth of Dry Feet and engage the Dutch people in planning for flood defense.

Here in New England, events closer to home such as Superstorm Sandy have raised similar concerns about the need to increase community and individual responsibility for flood defense. "Be prepared to act locally—don't wait for the Feds" is a quote often heard in New England in the aftermath of Sandy. But how to do this?

Understanding the approaches used by the Dutch to confront the Myth of Dry Feet may provide New Englanders with models. How are the Dutch effectively engaged in planning for flood defense? How are communities in New England engaging stakeholders in these same conversations as we become aware of our own vulnerabilities? Are there lessons from the Dutch that we can apply here at home?



The Hollandsche IJssel storm surge barrier was the first component of the extensive system of Dutch flood protection measures called the Delta Works. The barrier was built in 1958, just five years after the devastating floods of 1953 that initiated the Dutch government's efforts to take full responsibility for flood protection in the country. Photo: Kristen Grant

Methods

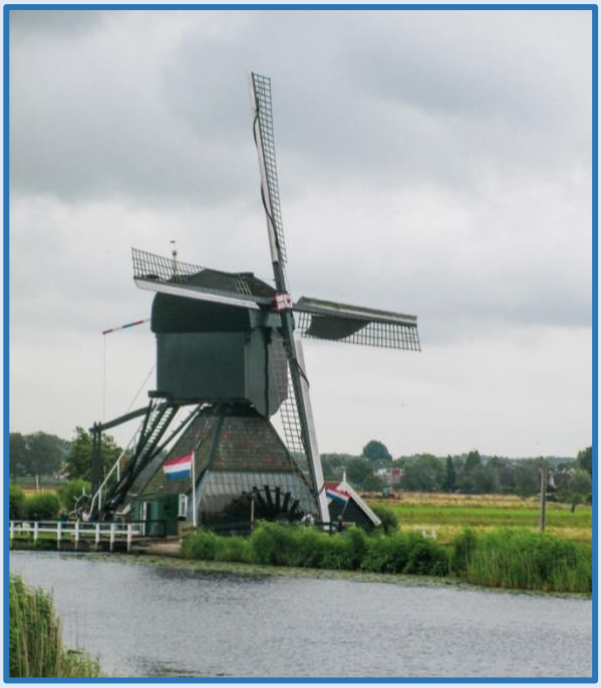
This study was conducted through a series of 19 interviews (14 in the Netherlands and 5 in New England) with practitioners, academics, and government officials who are involved in work and/or research to help stakeholders (described below) address the impacts of flooding. Each interview was at least one hour long. Discussions were recorded and notes were taken at the time of the interview. Interviewees received the questions in advance of the interview, including inquiry about:

- background in stakeholder engagement in planning for flood defense
- definitions of stakeholder and stakeholder engagement
- differences between engagement in planning for flood defense versus other types of planning
- and an example of effective stakeholder engagement in planning for flood defense from their experience, including who was involved; how they were engaged; challenges, or barriers to stakeholder engagement; outcomes of the effort; lessons learned.

Audio and notes from the interview were then cross-referenced to create a summary of the interview which was reviewed and approved by the interviewee. A Grounded Theory approach was used to identify thematic patterns in the data as the interviews progressed. The central themes to emerge from over 32 hours of interviews are relevant for practitioners in the Netherlands and New England, and are likely to be transferable broadly.

A dike in the south-western part of the Netherlands breaks during the flood of 1953. The flood killed more than 1,800 people, flooded 500,000 acres of land, and forced 72,000 people in the most densely populated part of the country to flee their homes. Photo: deltawerken.com

The Memorial Library in Ocean Park, Maine after the Patriots Day storm of April 2007 and the library on a dry day later the same year. Top photo: Bill Edwards. Bottom photo: Kate McCormick



A windmill in the south of the Netherlands operates to pump water out of the floodplain and into the canal, creating drained land called a polder. Photo: Kyle Fritz

So much of the Netherlands is below sea level because these areas were drained from swampy delta floodplains. Beginning in the 1500s, the iconic Dutch windmills functioned as pumps to remove water from the floodplains, creating what is called polder lands, which could now be inhabited and farmed. The resulting water was then diverted into canals and held back behind dikes to maintain the newly-created polder lands. Thus, the Dutch have more than 500 years of experience in creating land through water management, making flood defense an essentially constant feature of Dutch society. Nevertheless, major flooding disasters have resulted in tragic consequences in the country over the centuries. These have led to a progression of technological, management, and policy approaches designed to mitigate flooding impacts.

Following deadly floods in 1953, the Dutch government assumed full responsibility for flood protection and developed an extensive system of dikes and storm barriers called the Delta Works. The result is that even minor flooding is fairly uncommon. So uncommon that most Dutch citizens are actually unaware of their level of flood risk.

Results

Two key concepts in this study are *stakeholder* and *stakeholder engagement*. Because these concepts were central to the individual framework of each interviewee's responses, the first question was to define each concept. A broad and widely inclusive definition, such as the one below, was most common.

> "[A stakeholder is] anyone who has a role to play, a share of the outcome, cares about something in a work capacity, or suffers the consequences. This includes future generations."—planning practitioner, New England

The definitions of stakeholder engagement commonly included the idea of sharing knowledge and learning from each other. They also note that being engaged in this way tended to lead to greater levels of commitment to the process and responsibility for the results.

> "When stakeholders are involved in developing knowledge they are more connected to the process and the decisions."—researcher, Netherlands

Using these two definitions as reference points, the emerging themes were organized to address the questions:

- Where does effective stakeholder engagement happen?
- Who is engaged?
- Why do they become engaged?
- When do they become involved?
- How are they most effectively engaged?

These themes are discussed below, accompanied by the words of interviewees to illustrate how the themes have been demonstrated in their experiences.

Where does effective stakeholder engagement happen?

Stakeholders are more effectively engaged in planning for flood defense when the planning happens at a scale and within a specific context that is relevant for the stakeholders.

To provide us with scale and context for this stu6dy, consider that the Netherlands is roughly half the size of Maine, but with a population of 17 million or approximately 13 times that of Maine's. In this context, flooding in the Netherlands could be considered a threat to the Dutch culture itself and that the issue is relevant on a national scale. Conversely, the geographic size and diversity of Maine (and moreover, the United States) suggest that in order for the context to be made relevant for Maine and American stakeholders, especially those at the community level, engagement in planning for flood defense may be more effectively addressed at a regional or even local scale.

> "You can't just fly Dutch experts to various locations around the world and tell them to do it the Dutch way."—lead researcher, Netherlands

> "Stakeholder engagement is context sensitive – there are different times and tools for stakeholder engagement and different roles for stakeholders."—researcher, Netherlands

> "Go and observe community meetings to gain an understanding of what approaches are taken now and what issues the community is dealing with. Every community is so different, so the stakeholder engagement design needs to be context specific - don't assume one size fits all."
> —state adaptation planner, New England

Who is engaged?

Poldering is an age-old Dutch term that refers to:

> "…having a vision and working with different interests to accomplish it by involving all stakeholders and clarifying their roles."—academic, Netherlands

This tradition is reflected in the prevailing Dutch approach of involving individuals, networks, organizations, professionals, and government in decision-making because all are identified as having critical contributions to make. New Englanders also recognize the value of involving diverse stakeholders.

> "Sharing knowledge among stakeholders is important because they all have different expertise and experience and each is valuable and necessary for solving complex flood defense problems."— researcher, Netherlands

However, competition among diverse stakeholders can pose a barrier to progress.

> "Some stakeholders do not want to work together or use mutual gain theory, but want to compete, make deals, and use a negotiating approach. But this approach focuses only on achieving one's own objectives."— government official, Netherlands

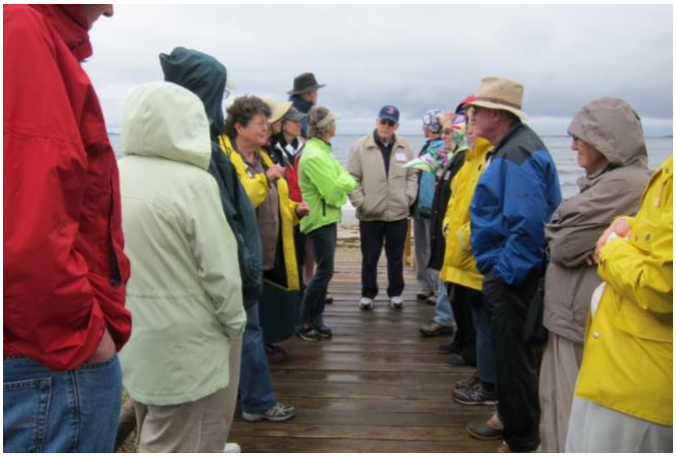
In particular, the importance of involving those who live and work locally in the impacted area to share their individual interests, was noted.

> "I have learned to avoid the word 'should.' Local communities are really good at solving their own problems." — adaptation consultant, New England

The importance of commitment from decision-makers is also a common theme. It was noted that decision-makers often send delegates or representatives to participate. However, sometimes weak links between the representative and the decision-maker can be a barrier to the success of the engaged group in achieving its goals.

"Representatives involved in the project group need to go back to their own organizations to present the group's ideas to decision-makers who are not involved in the process, and may not support the group's proposals, generating distrust."—academic, Netherlands

Diverse stakeholders in the Netherlands discuss issues that emerged when using a Dilemma Cube – a tool developed by Julieta Matos Castaño. The cube helps stakeholders to identify how their needs and interests may conflict with those of other stakeholders. Photo: Julieta Matos Castaño.



Local residents in southern Maine tour sites where property owners have taken action to address impacts of flooding and erosion, enabling participants learn from each other. Photo: Kristen Grant

Why do stakeholders become engaged?

Stakeholders will be most effectively involved when planning directly addresses their needs, interests, and values in the long term, as well as the risks and uncertainty they directly face.

"In their work with residents, the City conducted research and developed maps specific to the residents' needs."—city planner, Netherlands

"The first step to making progress…is to identify the dilemmas. Stakeholders were asked to voice what was important to them in relation to those of others."—academic, Netherlands

In addition, considering stakeholder values is crucial. Values can be personal, meaning the things an individual regards as important in her/his life, or values can be social and held by groups as guidelines for beliefs and conduct within the group. For individuals whose lives may be most directly impacted by flooding, values (such as family property) are often at the core of their engagement. But for organizational or governmental stakeholders who are often involved in a professional capacity, values are rarely considered part of the language or culture of their work.

"Do not start with the solution and decide how to get there. Start from values. First find out what are key stakeholder values and what are your own, then find common values."
—academic, Netherlands

Physical safety is a basic human need. Risks to, and uncertainty about, safety also appear to promote engagement in preparing for flood defense.

"There is uncertainty surrounding projections of flood conditions. The bar for risk had been lowered by recent storms and the perception had become that flooding and flood impacts will continue and likely worsen in the future."—regional planner, New England

When do stakeholders become involved?

Stakeholders are more motivated to engage when the issues or events that present risks are close in time and space, so that the memory of the experience is fresh. The Dutch have been actively defending their country against flooding for hundreds of years, and consequently the risk has been and will continue to be ever-present in the Netherlands. Therefore, it may be that if the question in the Netherlands is *when*, the answer has always been *now*, making this question somewhat less relevant in the Netherlands. Flood defense in New England, on the other hand, may instead be understood in the context of, When are the risks high enough that we need to act? Now or later? This uncertainty about the future poses a challenge to becoming engaged now.

It should be noted, however that in the Netherlands this question of *when* is currently relevant in a slightly different context: When are the impacts from climate change severe enough that changes in management approaches are needed?

> "Relevant local impacts from recent storms meant that everyone had this on their minds and they were ready to talk about ideas."—regional planner, New England

How are stakeholders most effectively engaged?

Developing knowledge

The single most prevalent theme in how stakeholders are effectively engaged is through the process of developing knowledge. This theme was mentioned in 18 of the 19 interviews, with nearly half making specific reference to the importance of valuing diverse types of knowledge (particularly local knowledge) and the opportunity this provides for all stakeholders to learn from each other. Phrases such as *diverse knowledge, shared knowledge, interactive knowledge, co-created knowledge, knowledge exchange, joint fact finding,* and others were used to capture this idea.

A key distinction emerged between knowledge development generally, and valuing diverse knowledge. In the latter, all stakeholders are considered learners *and* teachers, rather than elevating one group (such as academics) to the role of delivering knowledge, and another group (such as residents) to the role of receiving it. Similarly, knowledge development processes create opportunities for dialogue, providing opportunities for all stakeholders to become listeners and speakers.

Sharing in knowledge development in this way can also help to balance power among stakeholders and reduce a hierarchy that may empower some stakeholders over others. This equality of stakeholders can help to increase their commitment to the process and the decisions that result from it.

> "Professionals, city officials and residents together looked at pilot buildings for adaptive strategies in a knowledge development process. The local owners themselves shared the majority of valuable knowledge."—city planner, Netherlands

> "[An approach used by our organization] is Group Model Building. This involves collecting different knowledge from various stakeholders on how systems work, and quantifying these values. This process helps stakeholders get the larger picture of the system. It also helps build support for continuing or stopping the project measure under discussion, and helps build agreement on next steps."—international researcher, Netherlands

Clarifying roles

Stakeholders are most effectively engaged when their specific roles and responsibilities are clear. This involves individuals understanding not only their own roles, but also those of the other stakeholders. Equally important is that stakeholders appreciate the value each of the roles provides to the functionality of the partnership. This clarity helps to build stakeholders' commitment to the partnership, and the process, as well as ownership of the decisions and next steps.

> "Stakeholders in the project took on specific roles. [A nature organization] was the project initiator, developed the island creation plan… and contacted membership networks. [A government agency] oversaw lease development..."—government official, Netherlands

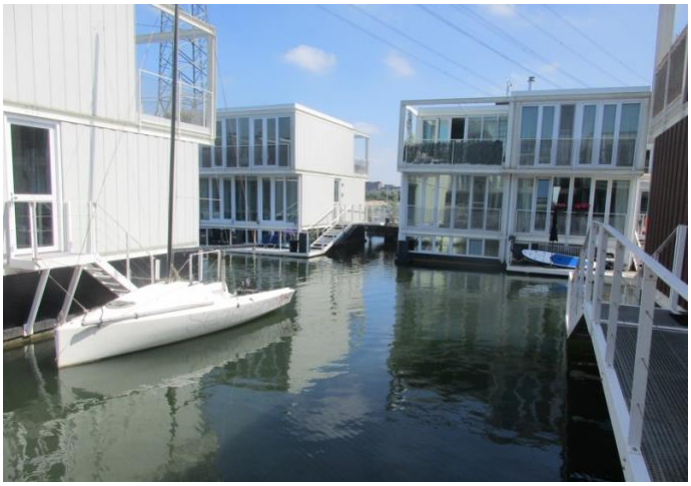
Credible information

Facts and data must be viewed as credible and legitimate by stakeholders. Participation of all stakeholders in developing knowledge may help promote stakeholder trust in the information. Additionally, efforts to make abstract data more concrete also help to improve trust in the information. Use of maps, visuals, local scenarios, and stories from personal experiences can make information more tangible, personally relevant, and real for stakeholders. Moreover, trusted facts and data should be used to inform decision making, but not as a proxy for a particular solution.

> "Although the process is not linear, know all the facts. Having facts in place is not the same as having the solution. However, when you really don't know, be honest. Pretending to know and later having to change the story is even more harmful."—academic, Netherlands

However, controversy over the use of data projections versus historical data depicts the uncertainty of the future and presents a barrier to some engagement efforts, primarily in New England.

> "There is a constant tension between planning decisions today being made on models based on historical data rather than climate change projections."—state adaptation planner, New England



The floating neighborhood of IJburg in Amsterdam where homes are built over artificial islands raised from IJmeer Lake, as a means of food protection. Photo: Kristen Grant

Trained, volunteer facilitators at a community forum in York, Maine help to maintain a neutral process in break out groups. Photo: Kristen Grant

Understanding perspectives
Stakeholders' diverse experiences result in the development of perspectives or mental models that guide their thoughts and actions. These perspectives and assumptions must be shared, clarified, understood, and valued by all stakeholders in order for a planning process to be effective, and to promote relationships and the building of empathy, respect, and trust among stakeholders.

> "For engagement efforts to be successful, there is a need for understanding of stakeholders' mindset in order to approach safety and planning from their perspective. Experts…did not fully understand or address the existing perception and underlying assumptions of community stakeholders, resulting in a loss of trust."—academic, Netherlands

Neutral process
The engagement process must be viewed by stakeholders as not biased to a particular perspective or solution. This level of neutrality is best achieved by a third-party process facilitator who is not associated with any of the represented stakeholder groups. The facilitators must also be skilled in designing and managing processes that are transparent, inviting stakeholders to participate directly in decision-making about the engagement process itself, while recognizing the time required to achieve an effective process. Skilled facilitators who possess relevant content knowledge may also provide additional value to engagement processes.

> "The City hired an outside contractor as a neutral third-party facilitator to oversee the workshops. The City has a facilitation training program for volunteers available to provide these services."
> —city planner, Netherlands

> "Whether communities are prepared to take action or not, our role is in facilitating these conversations. This requires total neutrality, no personal/professional agenda, ego deconstruction, respect for others and deep gratitude for them showing up.
> —adaptation consultant, New England

Discussion

Barriers

While common themes emerged around strategies that effectively engaged stakeholders in planning for flood defense, there were also themes related to engagement barriers.

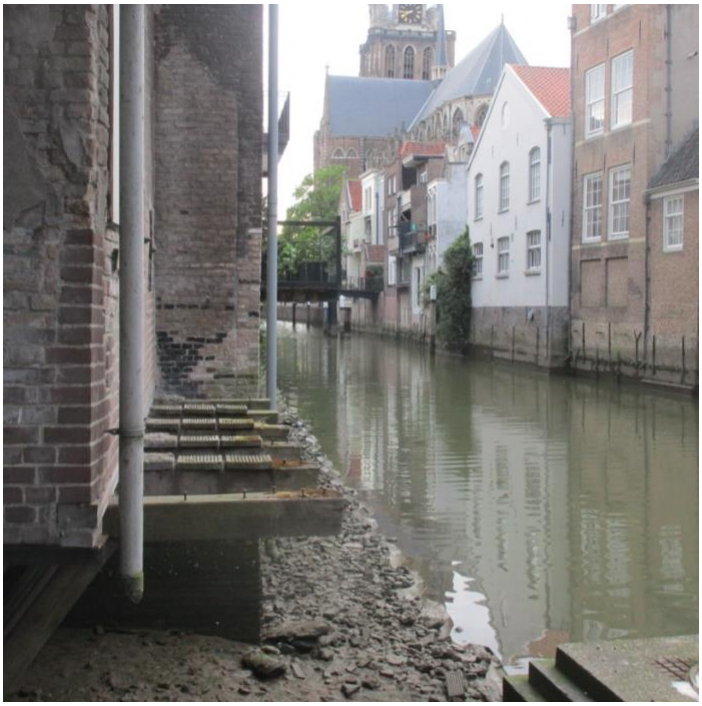
Expanding involvement
How to engage those who are most affected by potential flooding remains a challenge. New Englanders in particular noted a declining sense of civic responsibility, which results in greater pressure on a small group of community leaders, who may not be regarded by others as representing their viewpoint. The need to invest significant time in the engagement process is also noted as a barrier for stakeholders, as the time requirements can be both surprising and frustrating to participants.

Accounting for economics
There was wide recognition that economics and finances play a central role in planning for flood defense, and that social and environmental benefits are often discounted.

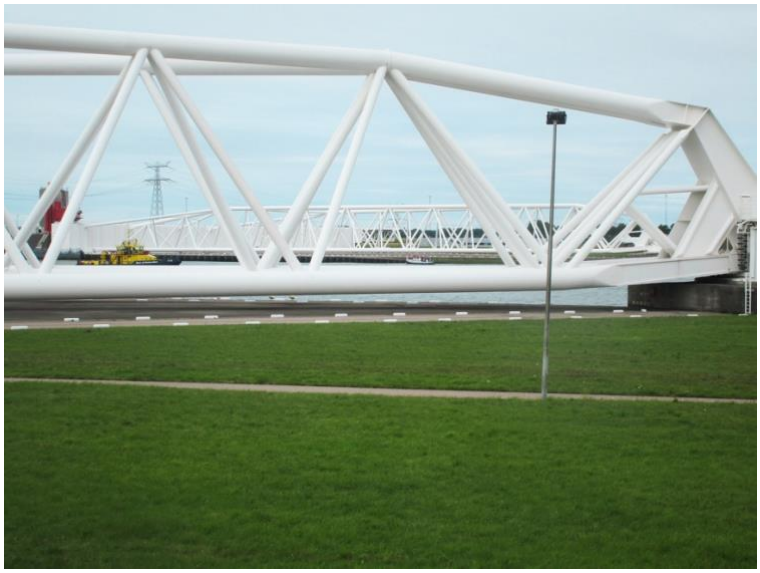
Crossing boundaries and disciplines
Planning for flood defense is an endeavor that requires cooperation from partners across traditional boundaries of geography, knowledge, and skill.

Acknowledging failures and inconsistencies
The Dutch have gained an international reputation for expertise in flood defense, yet there was a reluctance by some Dutch interviewees to perpetuate this image.

> "The policies and approaches of the Netherlands for flood management are not presented in a realistic light that exposes all the inconsistencies. We want to be flexible and secure at the same time…There is no truly win-win situation."—academic, Netherlands



This area in Dordrecht in the Netherlands is among only a few populated locations in the country that is not protected by a primary dike, and therefore exposed to high risk of flooding from the ocean. Here visitors can see the bottom of the canal at low tide, an extremely rare sight in the Netherlands. Photo: Kristen Grant



The Maeslant storm surge barrier is the most recent element of the Delta Works, completed in 1997. It is one of the three structures that protect the Port of Rotterdam. When it closes, the barrier's two massive doors fill with water. Within two hours, the doors sink to the bottom to hold back the flood waters. Photo: Kristen Grant

Application in Maine

The central themes that emerged in this study were identified in both Dutch and New England interviews. Both are highly developed industrial nations, which may account for the similarities in the themes, to some degree.

Several subtle differences should be noted by New England practitioners as we consider how to apply these lessons.

Level of risk

Efforts by the Dutch government to assume full responsibility for defending the country against flooding resulted in many Dutch citizens abdicating responsibility for their personal safety. But this is not to suggest that the Dutch are unaware that expertise in water management is essential to the survival of their culture. That fact is accepted and even a point of national pride. This essentially national-level consensus on the need for the Dutch to invest in flood defense, is not comparable in New England, however. Moreover, the home rule tradition of New England empowers each municipality to act on its own, making regional consensus on when, where, and how to take action, a serious challenge.

Scale and context

While both nations historically and currently engage in water management, the scale at which it occurs in the tiny but densely populated Netherlands is not comparable to our experience in New England. Thus, while flood defense could be considered relevant in a national context in the Netherlands, in New England efforts may be more effective at a regional or local scale.

Projected versus historical data

A noted theme of this study is the lack of agreement among New England state or local decision-makers on the use of projected versus historical climate data in community planning. New England as a region is somewhat less resistant to preparing for the impacts of climate change than some other regions of the U.S., nevertheless the lack of consensus on this point was raised in all of the New England interviews, but in none of the Dutch interviews. This suggests that stakeholder engagement efforts in New England will continue to confront this barrier, while this is less of a challenge to Dutch engagement activities.

Conclusion

In a sense, both the Netherlands and New England are confronting our own societal "Myths of Dry Feet". While the national management of water to defend against flooding essentially makes life in much of the Netherlands possible, it has become such a routine and expected part of that life that most Dutch citizens don't even think about it anymore. This has fostered the Dutch expectation that they have a right to *dry feet*. Conversely, daily life here in New England is unfettered by the management of water on a Dutch scale, and yet devastating flooding has been rare. It's possible that this has lulled New Englanders into our own myth—we can expect to have *dry feet* in the future, because we've generally had *dry feet* in the past. Yet as storm frequency and intensity and sea-level rise rates all increase here in New England, we can no longer look to the past as the guide to our future. As we in New England start to engage in confronting our own myth, Dutch practices may inform our path forward.

Acknowledgements

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