Personal Stories in Flooded Futures

Raising awareness for Dutch climate water risks through a Collaborative Future Storytelling workshop

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Thesis summary

1 Problem exploration

What is the problem?

Dutch citizens face increasing climate-related water risks that will impact the way they live, however they lack awareness. Futures feel too abstract, distant, or already "under control" due to historic successes in water management. Current science communication fails to connect these risks to people's daily lives. A new method is needed to make these risks feel personally relevant to Dutch citizens.

2 Research

How can we respond to this problem?

A Collaborative Future Storytelling (CFS) workshop can engage citizens by helping them create stories set in future scenarios. These stories are grounded in everyday experiences, allowing people to explore what future water challenges might mean for their lives. Besides that, CFS can help research projects by allowing them to involve non-experts in future thinking and gain deeper insights into citizen concerns, assumptions and values.

3 Project Definition

What does this mean for the project?

The project aims to create and test a CFS-based workshop that helps citizens connect possible futures to their daily lives. The goal is to make future water risks feel more real and personally relevant. The broader relevance of the project lies in supporting the democratization of future thinking and enabling research to gain deeper and more authentic public insights.

4 Methodology

How will we reach that goal?

The development of the CFS workshop follows a prototyping approach: iteratively building, testing, and improving the workshop through repeated sessions. This made it possible to get real insights into if methods work as intended and to test literature principles. The initial workshop is created based on design requirements, which come from the literature and an exploratory workshop.

5 Workshop Creation

What method can best reach the goal?

The resulting workshop uses a map to explore personally meaningful locations and explore possible future complications. Participants then build a shared future world and tell two stories within it through a turn-based storytelling game. The workshop is designed to be easy to understand, engaging, and collaborative, helping participants relate possible future problems to their own lives.

6 Results

What are the outcomes of the project?

The project results were analysed in two ways. *First, by examining the futures participants created to uncover their values and visions,* revealing varied flooded futures, along with concerns and values. *Second, by evaluating the workshops against set criteria based on literature, to assess whether the method achieved its intended goals.* This also gave insight into how specific elements of the workshop contributed to those outcomes.

7 Final Conclusion

Did the project succeed?

Yes. The workshop helped participants connect future water risks to their own lives in a way that felt personal and relevant. It allowed them to explore how these risks could affect everyday routines, spaces, and values. While variety of participant was limited, leaving questions about broader applicability, the workshop shows clear potential to make Dutch citizens aware about climate risks and the impact on their lives.

Preface

As a designer I've always positioned myself as someone who likes practical solutions. Ideas with real impact, where results matter more than abstract buzzwords. When I first saw this project opportunity about telling stories in the future, I must admit that it sounded quite abstract. But the future vision, human-centered focus, and workshop aspect were right in line with my interests.

Starting the project felt like a big step outside my comfort zone. The future storytelling method seemed abstract and unlike other SPD projects. I often get lost at the start of a project, especially when working alone and a lasting concussion didn't make things easier. But over time, I started to find my way. With the amazing help and support of my supervisors Roy and Laura, I gradually becoming more knowledgeable and learning to navigate the forest rather than getting lost in it. I became convinced of the value of collaborative future storytelling and realized its importance and relevance. Step by step, the project took shape and suddenly, without really noticing it, I was almost finished.

After more than a year of working on a graduation project, including the concussion that forced me to stop my first attempt, I've made it through the unfamiliar topics, uncertain times, and these final few months of intense hard work. I'm incredibly proud to have finished it, and of how the project came together.

I want to first thank my supervisors Roy Bendor and Laura Barendregt, who have been extremely helpful and understanding. You supported me not by pushing me in a direction, but by helping me find my own spin on the project. I always came out of our meetings with more confidence in myself and the project.

Secondly, I want to thank Negar Moghtaderi Asr, my supervisor from Deltares, who went out of her way to support the project, from sparring ideas to connecting me with the right people. Even though I didn't go that often, I really enjoyed the days I worked at Deltares.

I also want to thank my family and friends, who were always there to help me have fun during much-needed breaks or support me when I needed it. In particular want to thank my mother, who helped me by sharing her network for running the last two workshops and all my friends and family who made time to join the workshops and review my work.

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1. Problem Definition

What is the problem?

The Netherlands faces growing climate risks, including rising sea levels and heavier rainfall, which will have a significant impact on daily life. Still, these problems often don't feel relevant to Dutch citizens, leading to a general lack of awareness.

This chapter explores what those risks are, why this disconnect exists, and why a new approach is needed to connect these issues to people's everyday lives.

1.1 Climate change

The speed at which global warming is happening over the past 50 years is unprecedented. The future presents us with extreme challenges that will change our world and way of living. Climate change brings along many risks and complications, one being water risks. These will mainly impact the Netherlands through rising sea levels and increased rainfall intensity through shifting weather patterns (KNMI, 2023a).

> "The Dutch delta will feel the effects of climate change: rising sea levels, changing river flows and water levels, and the consequences of extreme weather." (Deltares & Reframing Studios, 2022, p.7, translated by author)

1.1.1 Water complications

Due to global warming, the ice caps in Greenland and Antarctica are melting, which causes sea levels to rise, which threatens low-lying areas like the Netherlands. This will increase the risk of flooding, especially in coastal and river regions. The KNMI expects that by 2100, sea levels could rise by 44–82 cm, and this will significantly challenge the Netherlands' flood management infrastructure (KNMI, 2023a).

Along with sea level rise, the Netherlands is also facing increased rainfall intensity which also causes storm surges when high river levels combine with heavy winds. Since the 20th century the annual rainfall has already increased by 20%, especially in the winter (Planbureau voor de Leefomgeving [PBL], 2024) The KNMI (2023a) warns that extreme downpours are expected to become more frequent as warmer air holds more moisture.

1.1.2 The effects for Dutch Citizens

Dutch citizens are increasingly exposed to flooding as climate change pushes national infrastructure beyond its limits. The Dutch sewage and drainage systems, while effective under normal conditions, were not designed for the more extreme rainfall now occurring (Ministerie van Infrastructuur en Waterstaat, 2025; Stichting RIONED, 2007). As heavy downpours become more frequent, these systems are overwhelmed, causing surface flooding and waterlogged streets. At the same time, higher river levels caused by sea level rise and inland rainfall threaten to exceed the capacity of flood defenses, which were never built for such extremes (PBL, 2024). If the current systems are not adapted, rivers and increased rainfall will increasingly flood homes, roads, and communities. These events not only damage property but also disrupt essential infrastructure such as roads, railways, power grids, and water treatment plants. This leads to long-term interruptions in mobility, energy supply, food distribution, and emergency response. Addressing this will require major upgrades, yet resources are limited. (PBL, 2024).

Flooding also increases health risks. As stormwater overwhelms drainage systems, runoff pollutes surface water, which is a primary source of drinking water. This raises water treatment costs and increases the chance of contamination (PBL, 2024). Areas already vulnerable to flooding face the greatest risk of water shortages and illness from contamination. Over time, climate change will reshape how and where people live. Adapting to this will require redesigning neighborhoods and rethinking infrastructure (PBL, 2024; Deltares & Reframing Studios, 2022). Vulnerable groups like low-income households, the elderly, and people with disabilities will face the greatest barriers. As Roosjen et al. (2022, p. 7) put it: "*De samenleving zoals we die nu kennen zal veranderen*" ("Society as we know it will change," translated by author).

1.1.3 It's already happening

These risks are no longer theoretical. In July 2021, Limburg received 160 mm of rain in 24 hours. Combined with high water levels from rainfall in Germany, the system failed (Figure 1). Streets flooded, homes were damaged, and the total cost reached €430 million (PBL, 2024; NOS, 2021). One year later, many residents were still waiting to return home (NOS, 2022).

We are already feeling the effects and they are going to get worse, not only impacting us physically but changing the way we will live: "The Netherlands must prepare for a changing climate and rising sea levels, especially if we fail to mitigate climate change" (Deltares & Reframing Studios, 2022). Dutch people must be prepared for these problems.

Figure 1. Flooded neighborhood in Limburg (NOS, 2022)

1.2 Lack of awareness under Dutch citizens

Dutch citizens are not aware of these problems. There are several reasons why.

1.2.1 Lack of Future Vision

Although climate risks are growing, many Dutch citizens remain unaware of how vulnerable the country is to flooding. While 77% of the population sees climate change as one of humanity's biggest challenges (European Investment Bank, 2021), few connect it to the actual dangers of living in a delta (Duiveman & Jensen, 2020).

Because of this, the threat feels distant and abstract. While the effects are starting to appear more often, the impact on people's lives still seem far away (Jonge Klimaat-Beweging, 2023). It is hard for people to think of these futures, mainly because people imagine the future as a slight extension of the present (Liveley et al, 2021), making it hard to grasp disruptive or unfamiliar change especially as it seems so far away. What makes it even harder is that Dutch citizens don't regularly experience floods, and most lack a direct memory of large-scale disasters. Historically, the Dutch lived with water through raised villages and dikes. But with the rise of pumps, polders, the "Afsluitdijk", and the Deltaworks, the approach shifted from living with water to controlling it (Ministry of Infrastructure and Water Management & Delta Programme Commissioner, 2023).

That success created psychological distance from the danger. Outside of areas like Zeeland, where the 1953 floods are still remembered, flood risk no longer feels real (Deltares & Reframing Studios, 2022). Even though the Limburg floods revealed how fast disaster can return, the lack of personal experience leads to limited urgency.

1.2.2 Too much Trust in Institutions

This successful fight against water resulted in a deep trust in Dutch institutions. Decades of successful water management have created a belief that the government will always protect the country (Deltares & Reframing Studios, 2022). Rijkswaterstaat and other agencies involved with protecting the Netherlands from water risks regularly project confidence. Deltares researcher A. de Leeuw mentioned in an interview that during the 2024 Rijkswaterstaat sea level rise presentation, the message was clear: "Don't worry, we can do this." An interview with J. Sanders by Nijhuis & Meijer (2020) confirms this by saying that Rijkswaterstaat pushes a story based on optimism and the ingenuity of the Netherlands. As J. Sanders and A. de Leeuw mentioned, message wasn't accidental. Emphasizing strength over uncertainty helps maintain public confidence and avoid alarming investors. This kind of messaging also creates a sense of false security. This need for protection is also written into Dutch law through the Dutch Water Act, stating that the government must prevent flooding: "*De beheerder draagt zorg voor het in stand houden van het waterstaatswerk en voor het nemen van de nodige maatregelen ter voorkoming van overstromingen...*" (The water authority is responsible for maintaining the water infrastructure and for taking the necessary measures to prevent flooding," Rijksoverheid, 2009; translated by author)

This protective mindset shows up in media, education, and cultural stories where water is framed as something to fight. For example Hans Brinker, the boy who plugged the dike with his finger and saved Haarlem, became a national symbol (Figure 2)(Oneindig Noord-Holland [ONH], 2022). and in Dutch media the fight against water is still more relevant than living

Figure 2. (Left) Statue of Hansje Brinker in Madurodam. (ONH, 2022)
Figure 3. (Right) Screenshot from NOS article about raising dikes. (Schuttenhelm, 2023)

This way of thinking has worked, but it also make it hard to imagine doing things differently. In contrast, people in Bangladesh expect floods. They design homes with concrete ground floors and lightweight, elevated upper floors that can be dismantled and moved (South China Morning Post, 2024). This mindset is particularly Dutch.

Having too much trust in the institutions leads to a lack of proper preparation for when it goes wrong (Deltares & Reframing Studios, 2022). This means that this lack of urgency and overconfidence creates an awareness gap between the risks Dutch citizens face and the awareness of these risks. This deep trust, while understandable, is reinforced by how institutions communicate about flood risks.

1.2.3 Lack of proper communication

Science communication in the Netherlands tries to bridge the awareness gap but often fails to connect. It still follows a "diffusionist" model. This model assumes that people are ignorant by default and just need the right dose of facts to understand something (Bucchi, 2008, p. 58). But simply giving people more information doesn't lead to understanding.

People don't just absorb information. They interact with it based on their values, their social context, and their prior knowledge (Bucchi, 2008) and climate scenarios and policy road maps often rely on graphs and long-term projections that feel abstract. KNMI's temperature projection in Figure 4 or future climate change scenarios in Figure 5 ask people to interpret complex data on their own. The video that explains those scenarios (Figure 6) does show examples of the impact, but general visualization can still feel too impersonal and far away. Even local examples, like Deltares' work in Terschelling use highly technical language as seen in Figure 7. As a result, the message rarely becomes personal or tangible. As Bucchi (2008) notes, providing more information doesn't automatically lead to better understanding or increased engagement.

Institutions recognize this problem and are trying to involve citizens more directly. Bucchi (2008, p. 67) calls this shift a "new mood for dialogue," moving away from top-down information toward engagement and co-creation. But in practice, participation often feels symbolic. Citizens are invited to give input, but major decisions have already been made, institutions pretend to listen but still steer the process (Bucchi, 2008).

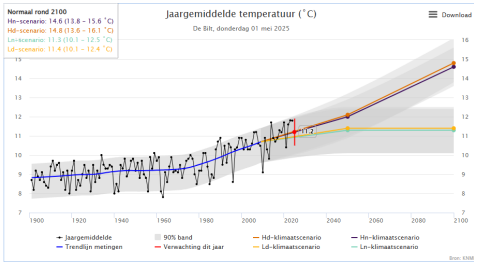

Figure 4. Screenshot of Average Yearly Temperature projection in De Bilt, the Netherlands graph. (KNMI, 2024)

Figure 6. Screenshot from KNMI's climate scenarios in short (translated title)(KNMI, 2023b), showing the a predicted future with higher temperatures. Screenshot taken at 01:23.

Figure 5. Four scenario's for climate change in the Nederland (KNMI, 2023a)

Klimaatscenario KNMI Hd - Hn (2050) Nederland	Toename (+)/Afname (-)
Winterneerslag	Tussen +4% en +7 %
Zomerneerslag	Tussen -5% en -13%
Zomerverdamping	Tussen +7 en +11%
Sociaaleconomische ontwikkeling	
Drinkwaterontrekking	+35%
Industriële onttrekkingen	+15%
Potentieel beregend areaal	+55%

Figure 7. Image showing possible climate changes in a storymap, referenced to in a newsletter send to Terschelling inhabitants to communicate the futureproof polder project (Deltares et al, 2025)

1.2.4 Why does this matter?

This lack of awareness is a problem because when people don't perceive flooding as a real threat, they won't be prepared when it happens. As Van Heel and Van den Born (2020) note, this low perception creates a sense of invulnerability that leads to inaction. Feeling safe reduces readiness, making floods more damaging and recovery slower. Duiveman and Jensen (2020) describe this as an awareness gap that leaves people vulnerable.

Besides personal lives, citizens who do not understand the risks cannot be involved in having a say in their futures. Local governments can use participant involvement to help in climate planning, but as As Van Heel and Van den Born (2020) point out, public engagement is only meaningful when people understand the issues. Without proper awareness, they cannot hold governments accountable or have a say in effective policies (Duiveman & Jensen, 2020). This weakens citizens' influence within the political system, leaving them with little say over environmental decisions or their own future. As choices remain in the hands of politicians, experts, and industry, democratic processes are undermined (Barendregt et al., 2024). Without clear, accessible, and relevant communication, citizens are left out of decisions that affect them.

Nikoleris (2021) reminds us that how we imagine the future shapes what we do now. But current communication often fails to make that future feel real, leaving citizens disengaged and unready.

1.3 Problem statement

Dutch citizens have limited awareness of how climate-related water challenges will impact their daily lives. The risks of climate change often feel abstract and distant. Current science communication methods fail to make those risks feel urgent or personally relevant, leaving people unengaged, unprepared, and disconnected from the decisions that shape their future.

A new approach is needed

To prepare for the challenges ahead, we need an approach that connects these problems to the everyday lives of Dutch citizens. Citizens need to be made aware of the futures they're facing, not just in terms of the scientific facts but in terms of how these changes will directly impact them. There is a need to move away from the traditional way of thinking that relies solely on technical or engineering solutions. It is necessary to show people how these issues connect to their own lives, so that they can understand the possible futures better and will be more prepared. This is where Collaborative Future Storytelling (CFS) comes in.

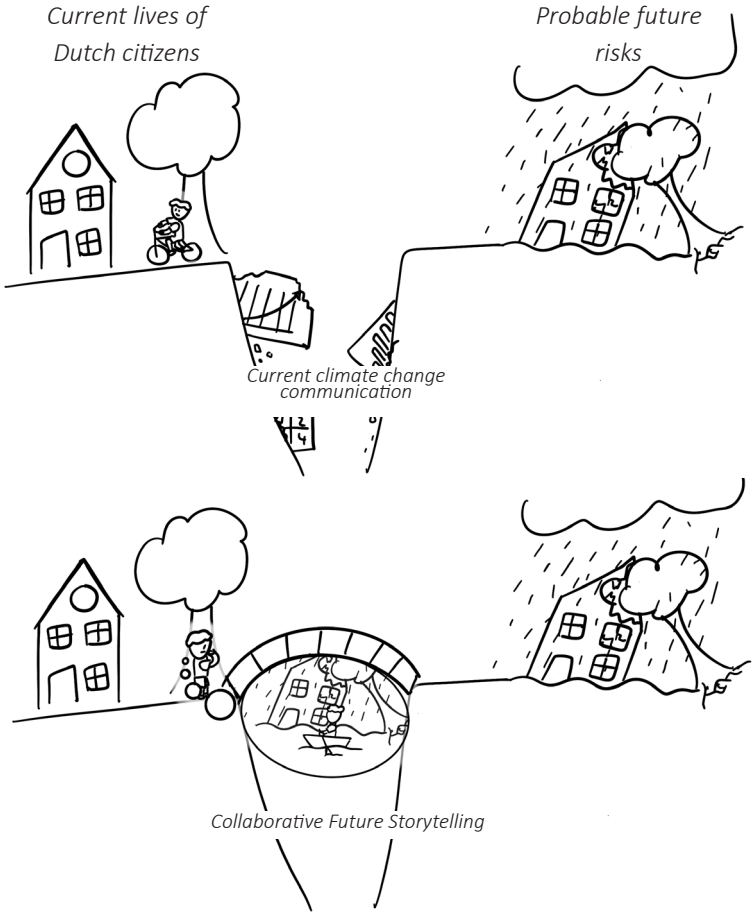

Figure 8. Collaborative future Storytelling can bridge the gap between the current lives of Dutch citizens and probable futures in a way that science communication cannot

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2. Research

How can we respond to this problem?

With the need for Dutch citizens to better understand how climate risks might affect their own lives, a method is needed that makes abstract futures feel more personal and relatable. This chapter explores the research behind Collaborative Future Storytelling (CFS) as a response to that challenge. It introduces the method, explains why it fits this specific problem, and outlines its potential value for both research and public engagement, with a focus on the case for Deltares. It also looks at how CFS could be effectively applied in practice by looking at what kind of format supports it, and what elements help make that format work.

2.1 Collaborative Future Storytelling

Collaborative Future Storytelling (CFS)(Figure 9) engages citizens in creating stories about daily life in possible future scenarios. These stories, grounded in participants' own values and experiences, help translate scientific projections into something more relatable. Instead of receiving information passively, citizens actively construct futures they can connect to, bridging the gap between data and daily life. As José Sanders (2020, p. 19) states, "One concrete story does more than ten statistics" [translated by author]. The following section will dissect CFS and explain its core elements.

2.1.1 What is Storytelling

Stories are part of how people naturally make sense of the world. When someone is asked where they're from or who they are, they usually respond with a story (Duiveman & Jensen, 2020). As Liveley et al. (2021, p. 1) put it, "we understand and explore our place in the world generally – and in future worlds especially – through narrative." In everyday life, people don't communicate in statistics. They explain what happened, how it felt, and why it mattered. Stories give facts meaning, offer context, and invite others into a shared understanding.

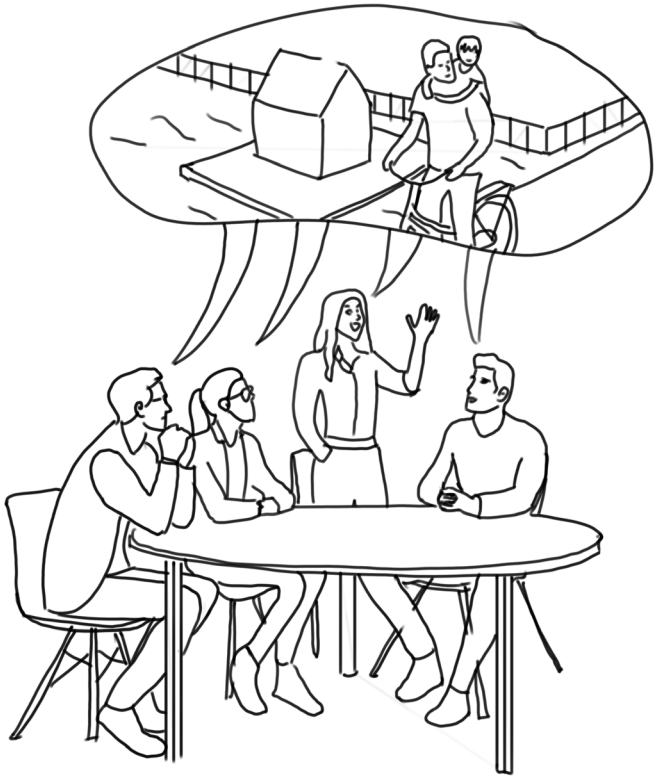


Figure 9. Visual showing people collaboratively telling a story

But stories go further than individual experience. Shared stories shape how communities think — not just about their experiences, but also about the future. (Duiveman & Jensen, 2020)

Stories are well suited to making abstract or distant risks feel real. It's one thing to hear that a dike might fail. It's another to hear someone describe losing their home in a flood. Stories can frame complex topics like climate change through relatable experiences and personal values, making them easier to connect with (Sanders, 2020; Turner & Taboada, 2021).

Stories also shape how the future is imagined. For example, Johan van Veen used storytelling in 1957 to build support for the Delta Works by framing the challenge as the story of a shared fight against water (Duiveman & Jensen, 2020). That story still influences thinking today, but as discussed in Section 1.1.2, it may now limit alternative approaches to water. Telling new stories about futures can open up new perspectives and challenge these older narratives.

In this context, a story or narrative refers to a sequence of related events or experiences that are meaningfully connected (Toolan, 2001). Storytelling is the act of constructing or sharing such narratives. A good story that reaches people should feel authentic, coming from the teller. It should be recognisable in relation to personal experience. It also needs to be imaginable — not so unrealistic or disjointed that it becomes unclear what is happening (Sanders, 2020).

2.1.2 Why is Storytelling suited for the Future

As discussed in Section 1.1.2, climate change futures are often hard to relate to. Science communication alone can feel too distant or abstract. Storytelling can help by grounding these futures in daily life. Liveley et al. (2021) explain that people understand abstract futures by mapping them onto familiar experiences which can be done through storytelling.

Stories don't need fixed outcomes. They allow for exploration and speculation, which is especially important when dealing with uncertain developments like possible climate futures (Dunne & Raby, 2013; Liveley et al., 2021). A story doesn't need to predict the future, it can offer insight into how people might respond. As Lambourne et al. (1990) put it, "Good stories don't predict the invention of the car—they imagine the traffic jam" (as cited in Liveley et al., 2021, p. 6) . This is more relevant than the specific technological predictions, as Tyszczuk (2021) argues that climate responses need to be social and political, not only technical.

Stories make space for this. They help clarify what matters to people and what needs to change. In this way, storytelling can make change feel both possible and necessary (Belton & Dillon, 2021).

2.1.3 What is the benefit of Collaborative Storytelling

While storytelling helps individuals make sense of complex futures, creating stories together can add even more value. Collaborative storytelling brings together different perspectives, backgrounds, and lived experiences. Turner and Taboada (2021) describe this as storymaking: a group process of imagining futures. Through discussion, participants hear new views and reflect on their own, whether by agreeing, disagreeing, or adjusting their ideas. Cueva (2024) adds that collaborative storytelling builds social connection and supports inclusion, especially when participants lead the process.

In many participatory processes, experts still shape the outcomes. Barendregt et al., (2024) warn that this often results in futures aligned with institutional goals, not public needs. Belton and Dillon (2021) address this by designing storytelling formats with built-in turn-taking and shared roles to reduce power imbalances. Cueva (2024) emphasizes that collaborative storytelling allows participants to become co-creators of meaning, not just respondents. While this doesn't erase all inequality, it opens space for more democratic and inclusive engagement.

2.2 CFS for research

In addition to helping citizens engage with complex futures, Collaborative Future Storytelling (CFS) can also improve outcomes for both researchers and participants.

The problem is that many future-oriented research and participation methods limit the depth and diversity of insights. Interviews and surveys often stay on the surface. Participants may not express their real views, or they might give answers they think are expected (Belton & Dillon, 2021). Sanders and Stappers (2012) explain that participants often struggle to express tacit knowledge: 'things we know but are not able to verbally communicate' (p. 52). Telling a story can help reveal this. Participatory processes are also built around experts or stakeholder groups, not everyday citizens (Barendregt et al., 2024). These formats assume expert knowledge leads to better results. In practice, they often exclude the people most affected by the futures being discussed. This happens both by not inviting citizens into the process and by making participation difficult due to the abstract and technical nature of the topic (Barendregt et al., 2024).

Though it may be efficient, this approach risks narrowing the discussion to practical solutions and misses emotional or social dimensions. Cueva (2024, p. 1) notes that this comes at the cost of the "human and social" aspects, leading to incomplete understanding of what's at stake. It also raises a democratic issue. Cueva argues that people have a right to be involved in decisions that affect their lives. Barendregt et al. (2024) add that democratizing research means involving groups who are often excluded, especially those most vulnerable to change.

2.3 The case - Deltares

Collaborative storytelling offers a way around both the practical and democratic limits of standard methods. Because storytelling comes naturally to people (see 2.1.1), it lowers the barrier to participation and makes it easier to engage with complex topics like climate change (Belton & Dillon, 2021). It allows participants to explore scenarios in their own terms, revealing tensions, contradictions, or implicit concerns, and offering deeper insights than surveys or interviews (Belton & Dillon, 2021). It also helps researchers pose better questions and explore overlooked issues (Cueva, 2024). In group settings it becomes possible to see how values align or conflict. This provides a more nuanced understanding of community perspectives (Belton & Dillon, 2021) and helps institutions in designing participation around people, not just policies.

For research institutions, this leads to outcomes better suited to a local context, as they are grounded in public values and more likely to gain public support. For citizens, this can lead to not only developments better suited to their values and wishes and gives them a chance to help shape the future — something currently lacking, as discussed in Chapter 1.1.2.

Before exploring how the method can be applied, this section introduces Deltares, which provides the institutional context for this project. The role of Deltares within the project will be further explored in Section 4.2.

Deltares is a Dutch applied research institute focused on water, subsurface, and infrastructure. It provides scientific knowledge and tools to support governments and other stakeholders with long-term challenges such as sea level rise, flooding, and climate adaptation. One of its key focus areas is developing strategies for spatial planning in vulnerable regions like river deltas and coastal zones (Deltares, n.d.). This focus also defined the project scope: water-related risks.

2.3.1 Flood-resilient Landscapes

As part of this work, Deltares launched the program Flood-resilient landscapes, an area development initiative exploring how Dutch environments can remain safe and livable under future climate conditions and limited space (Figure 10). The program approaches water safety not only as a technical issue, but as something that also requires rethinking how people live, move, and interact with their surroundings. It combines physical design, local knowledge, and scenario thinking to support regional planning (Reframing Studio & Deltares, 2022).

This project fits into that context by offering Deltares a new way to approach public engagement in local communities. Collaborative Future Storytelling can provide valuable input for programs like Flood-resilient landscapes, where the social side of climate adaptation is key to the success of proposed changes. In an interview, water management expert Annemargreet de Leeuw confirmed that Deltares is indeed looking to involve the public more directly: “No, that’s exactly right. That’s also entirely how it is approached from the Flood-resilient Landscapes project.” After I explained the method and its focus on lived experience and awareness, she confirmed its relevance to Deltares’ goals, responding, “Yes, that’s exactly right.” She also acknowledged the value of the approach for the public, stating: “I can completely imagine that it would be very valuable to feel what that means if you live there in 2080.” (A. de Leeuw, interview, 2024, translated by author).

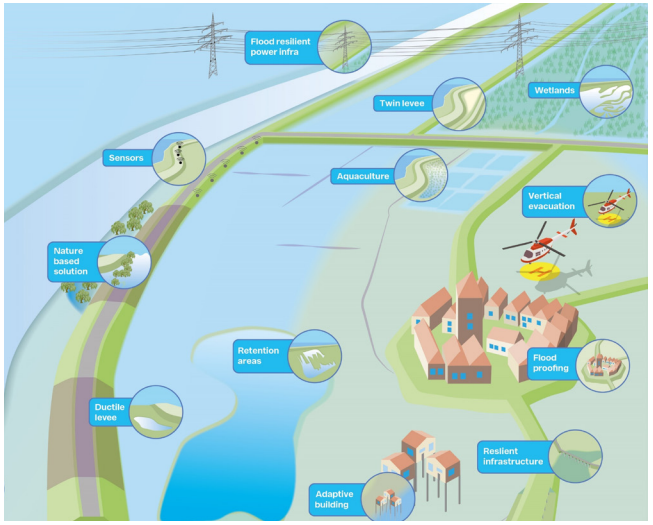


Figure 10. Visualization of flood-resilient landscape strategies, including retention, adaptive building, and evacuation zones. Adapted from “Waterveilige landschappen Home,” by Deltares, 2024.

2.3.2 Narratives

To support the Flood-resilient landscapes, Deltares and Reframing Studio (2022) developed a set of narratives exploring how Dutch society might evolve in response to climate-related water risks. These narratives are not fixed scenarios or policy proposals. Instead, they are tools for reflection and discussion. Each one is built around three attitudes to dealing with the future based on public thinking (Further explained in Appendix A.1):

↕ *Matterscape*: how society looks at physical space — from *Controlling* the landscape to *Moving with* water. This reflects whether people see water as something to resist or something to adapt to, influencing how space is designed and used

↘↖ *Powerscape*: how society handles politics and power — from *Horizontal*, where decisions are shared and local, to *Vertical*, where decisions are made top-down by institutions or governments. This affects how people relate to authority and who gets to shape change.

↗↙ *Mindscape*: how people deal with uncertainty — from holding on to the *Past* to imagining new paths into the *Future*. This shapes whether change feels risky or full of possibility.

By combining these three axes, eight different but related narratives emerge as seen in Figure 11. These narratives reflect a range of attitudes toward water, governance, and change in the year 2100 (Further explained in Appendix A.2).

- *1. Collectivist:* Small communities protect heritage and manage water locally, drawing on traditional and place-based methods like terpen.
- *2. Protectionist:* Protecting through large-scale defenses and national independence, continuing the fight to control water.
- *3. Global:* Managing water through international cooperation, smart technologies, and large-scale infrastructure.
- *4. Ecomodernist:* High-tech, dense cities and wild nature are kept apart, relying on human innovation and geo-engineering to manage water.
- *5. Hedonistic:* Short-term comfort is prioritized by accepting that problems will happen — responding through quick fixes and reactive living
- *6. Arcadian:* Water safety follows aesthetic and cultural memory, preserving heritage landscapes rooted in a romantic past.
- *7. Ecocentric:* Nature leads through wetlands and ecological systems, supported by laws grounded in ecosystem science.
- *8. Amphibian:* Mobile, adaptive communities live with change, focusing on resilience rather than prevention and rhythms shaped by water.

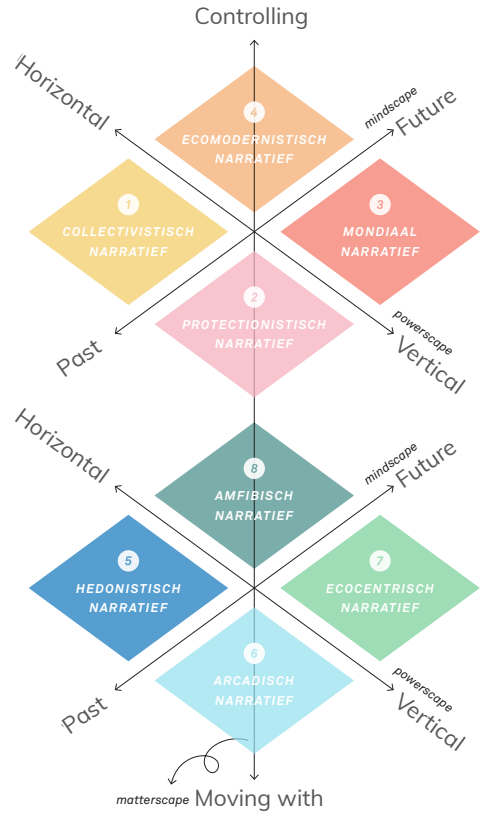


Figure 11. Framework of eight future narratives based on attitudes towards the future (Deltares & Reframing Studios, 2024)

As seen in Figure 12, these narratives provide a visual representation of possible future developments. These can be physical, such as terps (Man made hills) or local water buffers, or societal, such as collectives working together or citizens taking on individual roles.

By looking at their values, Deltares can speculate where an area or community fits on these axis and give an idea of how that community might want their future shaped. These narratives or axis are not strict categories. Depending on local context and how fast change happens, some narratives may become more relevant than others. Communities might move between them over time or combine elements of several, and different areas will have different relevant placements on the axis. Deltares uses these narratives to discuss the future with publics. By looking at narratives rather than direct interventions, citizens can easier find common ground as the narratives are detached from personal stakes like an individual's shop or garden and more connected to community values (A. de Leeuw, interview, 2024)

In CFS, these narratives can offer a way to set the scene for the future. While speculative, they are grounded in real possibilities. The narratives help frame climate futures not just as problems, but as changes that could shape how people live, providing a possible basis for looking towards futures. Narratives can be a tool to help storytelling, and storytelling can aid the narratives by uncovering values and ways citizens think about the future. This can help reveal which narrative already exist in an area, or which ones feel most meaningful to people there.

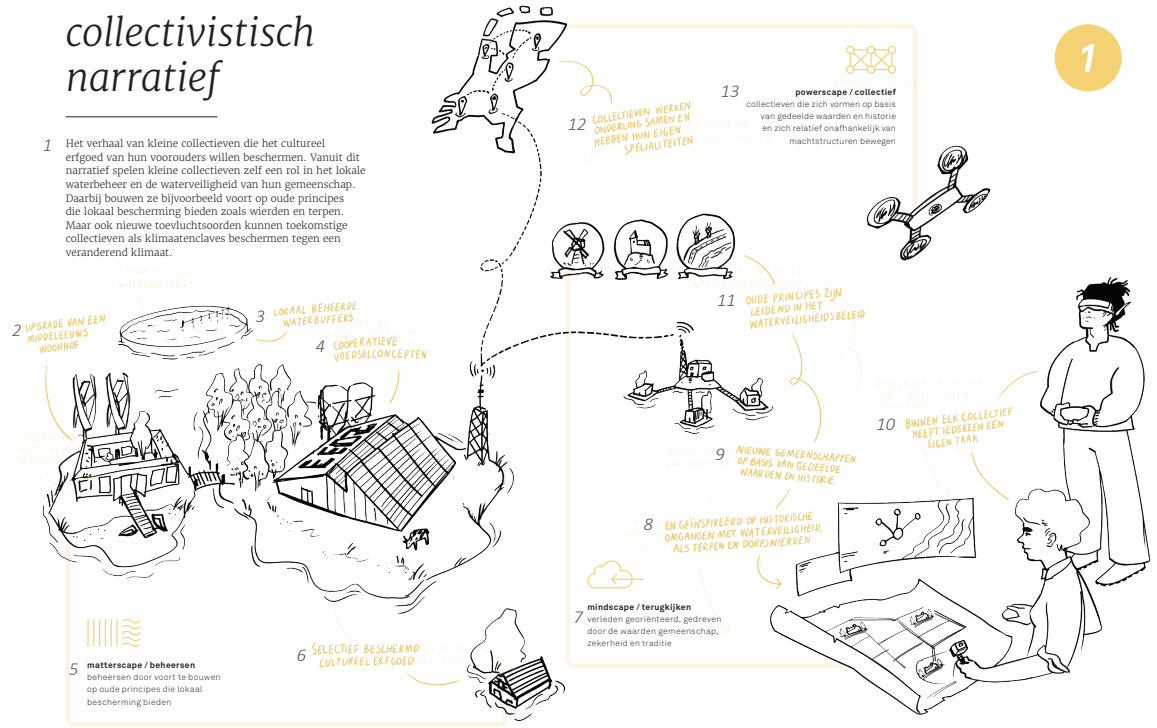


Figure 12. Visual of the Collectivist narrative, as seen in Figure 9 (Deltares & Reframing Studios, 2024). Key elements in the visual (originally in Dutch) are translated below for clarity

1. *The story of small collectives that want to protect the cultural heritage of their ancestors. From this narrative, small collectives themselves play a role in local water management and the water safety of their community. They build, for example, on old principles that offer local protection, such as terps and wierden (artificial mounds). But also new refuge zones can protect future collectives as climate enclaves against a changing climate.*
2. *Upgrade of a medieval residential courtyard*
3. *Locally managed water buffers*
4. *Cooperative food concepts*
5. *Matterscape / Controlling – controlling by building on old principles that provide local protection*
6. *Selectively protected cultural heritage*
7. *Mindscape / Past – past-oriented, driven by values of community, security, and tradition*
8. *A revival of historical approaches to water safety such as terps and village mounds*
9. *New communities based on shared values and history*
10. *Within each collective, everyone has their own role*
11. *Old principles guide water safety policy*
12. *Collectives work together and each have their own specializations*
13. *Powerscape / Horizontal – collectives that form based on shared values and history, and move relatively independently from power structures*

2.4 How can we apply this method

If storytelling can help people imagine futures in more personal and meaningful ways, the next step is to apply it in practice. How can storytelling methods be designed to help people explore futures of their own lives together?

Candy (2018, p. 242) points out that the goal is not to "broadcast ideas," but to design and stage an experience of the future. To shape a format that fits this project, I reviewed existing storytelling approaches and considered how they could help Dutch citizens imagine climate-related water futures in grounded, personal ways that fits within the scope of this project.

2.4.1 Choosing a format

Exploring options

Various storytelling formats have been developed to explore the future. Some, like Candy and Dunagan's (2016) experiential scenarios or the physical narratives reviewed by Kuzmanovic et al. (2019), use tangible artifacts, immersive spaces, or sensory elements to help participants feel like they are stepping into a future world. These formats can make abstract risks more relatable, but they often require significant production effort and are tied to specific locations. This makes them less suitable for a flexible, low-barrier method that can be used in different communities.

Other methods involve participants asynchronously. Cueva's (2024) storytelling game, for example, enabled market vendors to co-create energy futures by responding to audio fragments. This approach made participation more accessible and inclusive, but lacked direct interaction between participants. As discussed in 2.1.3, this limits the potential of storytelling to support shared reflection and collective meaning-making.

Finally, collaborative storytelling games such as those developed by Belton and Dillon (2021) and Turner and Taboada (2021) provide structured formats for group storytelling. Participants build stories together through discussion, turn-taking, and world-building, revealing assumptions and values along the way. These formats align closely with the goals of this project, but they often focus on systems, technologies, or professional roles. As discussed in chapter 2.1, this project focuses instead on how people imagine possible futures of their own lives.

Gaps in these methods

The reviewed storytelling formats do not fully explore how future changes might affect people's personal lives. Many focus on large-scale systems, professional roles, or technological developments. This matters because, as discussed in 1.1.2 and 2.1.2, many citizens struggle to relate to abstract climate futures and are unprepared for when it goes wrong.

This gap is clear in the literature, yet as mentioned in 2.1.2, making futures feel personal is essential if we want citizens to connect to them. Without that connection, climate risks stay abstract and irrelevant.

Choosing the Format of a Workshop

Based on this analysis, a collaborative workshop format is the most suitable method for this project. It offers the flexibility to engage participants in different local settings, without needing fixed locations or large resources. This makes it both practical and realistic within the project's scope.

The format draws on existing methods such as Belton and Dillon's (2021) turn-based storytelling and Turner and Taboada's (2021) world-building. These approaches support grounded, inclusive storytelling and create space for participants to build futures based on their own values. As discussed in 2.2, this structure can support deeper insights and shared reflection.

This format also fits my own facilitation experience, developed during the Creative Facilitation elective, and is manageable within the time and resources available. Its low threshold makes it well suited for small-scale testing in this project. For public engagement efforts, it offers a structure that institutions like Deltares can adapt and apply while keeping outcomes relevant to the people and places involved.

2.5 Designing an effective workshop

If Collaborative Future Storytelling can help people imagine climate-related futures in a more personal and meaningful way, how can a workshop be designed to support this process? What makes a storytelling session not just creative, but relevant, inclusive, and engaging enough to reveal deeper values and insights?

This section explores those questions. It looks at what design choices support a good CFS workshop, based on research, examples from other methods, and my own facilitation experience. It breaks down the key principles like grounding futures in real places, supporting personal reflection, and promoting collaboration. These principles form the foundation for a workshop that uses the Collaborative Future Storytelling methods optimally.

2.5.1 Ground Future Context

As described in 1.1.2, people struggle to engage with futures that feel too distant or abstract, like the scientific climate risks. To bridge the gap between scientific projections and daily life, these futures should be possible and relatable, while staying realistic to what might happen.

When participants think about a future it is easy to go to abstract, science fiction–like futures. These can feel disconnected or unrelatable (Auger, 2013). But if futures stay too close to the present, they won't push participants to reflect or rethink their assumptions (Dunne & Raby, 2013). As a middle ground, futures should be clearly different but still imaginable (Figure 13).

Auger (2013, p. 2) proposes a "perceptual bridge" to help make abstract futures easier to understand by grounding the futures in familiar elements (Figure 14). This allows futures to be probable and thought disruptive to how participants see the world now, while staying grounded. Kuzmanovic et al. (2019) uses a hotel room as a bridge to show a recognizable location being changed in a future as seen in Figure 15 and Narrating climate futures from Nikoleris, A. (2021) takes participants on a guided tour through a city, telling them how these places can change. Relating futures to current knowledge makes them easier to understand. The Deltares narratives described in 2.3 can support this well. They show a transformed Netherlands, with floating churches or nature-inclusive cities (Figure 16), but still recognizable to participants. These scenarios help participants enter a future through something they already understand.

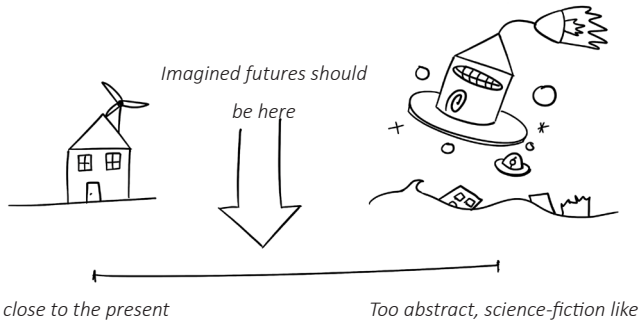


Figure 13. Futures should be different but still imaginable

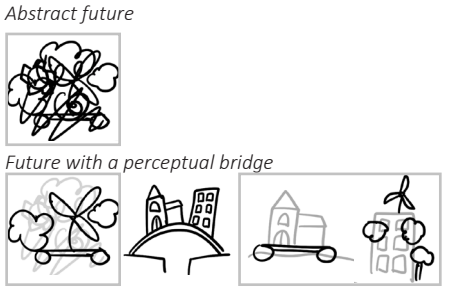


Figure 14. Future elements placed in recognizable contexts can bridge the gap and move them from abstract to recognizable

Figure 15. Lucid Peninsula, an immersive installation exploring a hotel room in a future with extreme pollution. (Kuzmanovic et al, 2019, p. 109)

Figure 16. Visual excerpts from Deltares' future narratives, showing a nature-inclusive city (Narrative 7) and a floating church (Narrative 6). Adapted from (Deltares & Reframing Studio, 2022).

The facilitator has a role in keeping this balance. As Miller (2018) notes, it's often better to lightly steer participants toward grounded, relevant futures than to let them drift into confusion or irrelevance through for example a full utopia or dystopia. This guidance shouldn't override participant ideas, but it should help make sure the story stays close enough to possible futures that participants can see themselves in them.

Design takeaways:

Use Deltares narratives or similar tools as perceptual bridges

Ensure futures are plausible, rooted in science, and not too abstract.

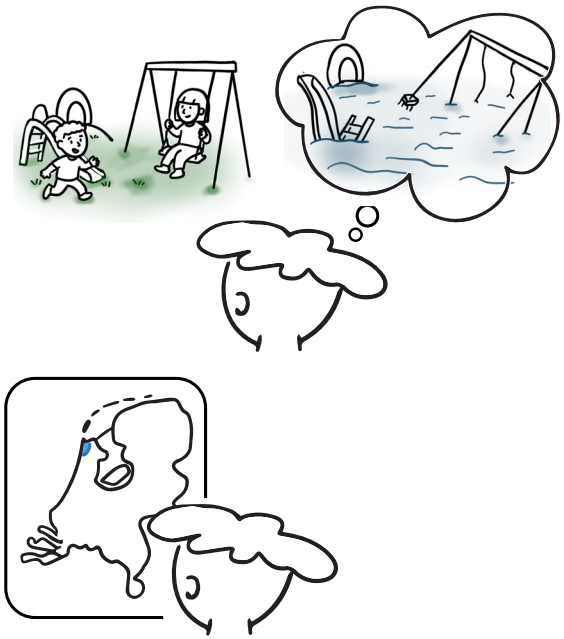


Figure 17. A meaningful place being changed is more impactful than an unrelated town

2.5.2 Connect the Future to the Lives of Participants

It is not enough for a future to only feel realistic. As described in 2.1.1, storytelling's main strength is that it places participants inside a future by connecting it to their own lives. Showing futures through aspects people know raises understanding of what might change. Connecting it to personal values adds personal relevance.

In the workshop this can be supported by helping participants surface values through locations that, for example, represent something to them. These could be a park, the route to work, or a childhood memory. Places like this become anchors when imagining how water-related futures might affect their lives (Kuzmanovic et al., 2019; Turner & Taboada, 2021). Imagining a flood in a random town is easy to ignore. But imagining water flooding your usual bike path or your child's playground creates a stronger connection (Figure 17). It helps relate the risk to personal values like freedom or security for your child (Figure 18). It makes the risks feel relevant and personal. A. de Leeuw (expert interview, Deltares) noted that values are often hard to express directly, so it is beneficial to help participants surface these values through for example locations that represent something to them.

Creating a character can further support this connection. Characters allow participants to enter the story "from within" and explore how future social norms, emotions, and challenges might unfold through someone's perspective. As Liveley et al. (2021) note, characters act as entry points into imagined worlds. Turner and Taboada (2021) observed that when participants took

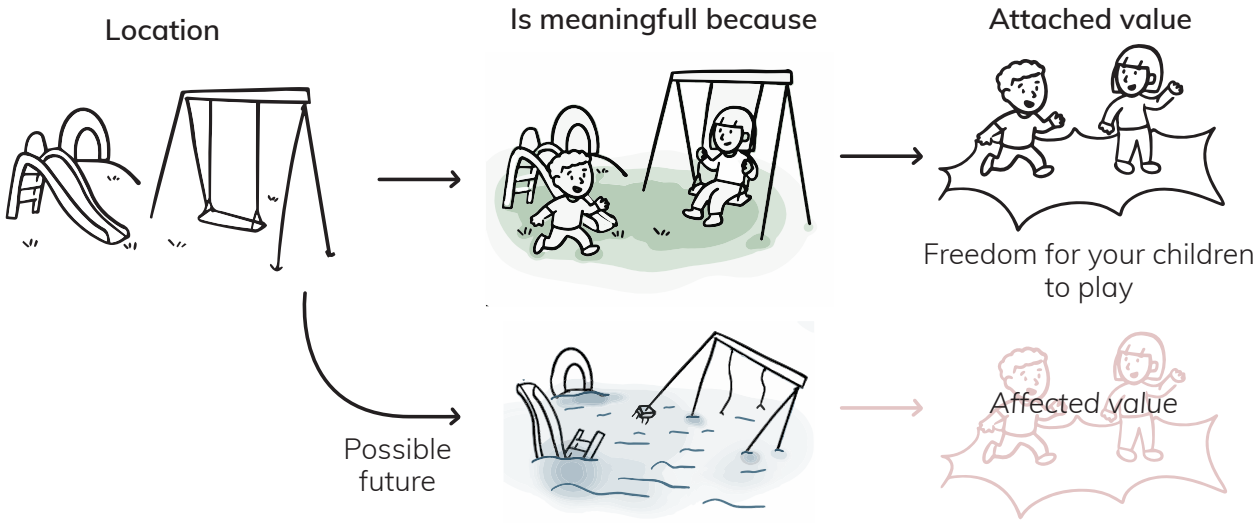


Figure 18. Relating future risks to meaningful locations shows how they can impact values

on a character role, they shared more insights and reflected more openly. It helped them step outside their usual perspective. Through characters, participants can reflect on change more personally and gain new perspectives on what the future could mean for themselves or their communities.

By combining lived experiences with a character lens, storytelling can become a way not just to describe the future, but to feel it.

Design takeaways:

Identify familiar places and routines through which participants can relate the future to their values.

Include a character to help participants step into the future.

Figure 19. Image of the Climate Fresk workshop I visited. The workshop game is played by placing the cards in a cause and effect timeline.

2.5.3 Allow the participants to explore their values

As discussed in the previous part, people understand futures best when they relate them to personal experiences. They should have space to explore these experiences on their own terms. Turner and Taboada (2021) argue that when participants create stories, they naturally focus on what matters to them. Participants will gravitate toward the locations that are personally relevant for them and the futures that they create will automatically feel grounded in what they find most important. They should be given the freedom to do so.

Therefore, minimal interference by the facilitator is desired. Facilitator involvement risks influencing the results and steering the story away from what participants would have created themselves. As Turner and Taboada (2021) note, the more the facilitator intervenes, the less the story is anchored in participants' own meaning, which weakens their ability to relate to a future being explored.

A personal experience during a Climate Fresk workshop (Figure 19) had a facilitator who, possibly to show she knew the material, filled in answers for us as participants. This impaired the learning as you did not figure it out yourself, removed the feeling of ownership in the final result, and was also frustrating as it took away from the satisfaction of making the connection yourself, giving insights into how facilitator interference can negatively impact learnings during the workshop.

Design takeaways:

Limit facilitator intervention

Allow participants to bring their own meaning into the story

2.5.4 Lowering the barrier of participation

A workshop should be understandable. As noted in 1.1.2, it is difficult for citizens to think about futures because the topic often feels abstract and distant. Storytelling can make this more accessible (see 2.2), but the creative process itself doesn't always come naturally. From my experience in the Creative Facilitation course, abstract storytelling can feel confusing and disjointed, just like future scenarios. This adds to the barrier of participating in future thinking. Engageli (2024) warns that a steep learning curve, like this barrier, can frustrate and disengage learners — especially when the topic already feels unfamiliar or abstract. The workshop should therefore be easy to follow, lowering the barrier to complex future thinking. Creative thinking should support, not complicate, this process. A method that enables non-expert citizens to participate can help make future thinking more inclusive and democratic and ensure that those most affected by climate change also have a voice in shaping its futures (see 2.2)

To support this, many methods use familiar storytelling formats such as tabletop role-playing games (Turner & Taboada, 2021), speculative games (Belton & Dillon, 2021; Cueva, 2024), or immersive experiences (Candy & Dunagan, 2016; Kuzmanovic et al., 2019). These approaches structure the creative process in a way that is understandable for non-experts, while still guiding participants to explore speculative futures.

Design takeaways:

Ensure the workshop is understandable without prior in-depth knowledge on climate change risks.

“Structured Freedom”

The challenge is to guide participants without restricting their creativity. Too much structure limits personal exploration (see 2.5.3), while too little creates confusion (see 2.5.4) (Figure 20).

Giving people “structured freedom” means creating a process that’s clear and easy to follow, while still letting them explore what matters to them. Games can offer this kind of structure by guiding participants without limiting their freedom. As Candy (2018, p. 242) explains, games create “structures of participation” that help people imagine and explore unfamiliar futures through play. Vervoort (2019) expands on this by describing how games let players interact with roles, systems, and future scenarios from a first-person perspective, making complex futures more tangible and accessible.

Both Candy and Vervoort emphasize storytelling and foresight games as well suited to this. Prompts and simple formats open up imaginative play (Candy), while interactive systems support engagement with complexity (Vervoort). These formats support creative freedom and don’t require a facilitator or game master. They are participant-led, with rules and roles understood through reading. This kind of accessible structure offers a useful model for my workshop. The world begins undefined and takes shape through participant input, encouraging divergent thinking (Belton & Dillon, 2021) not just about settings or events, but also about values, politics, and systems. As noted in 2.1.3, participant-led processes help build social connection and support inclusion.

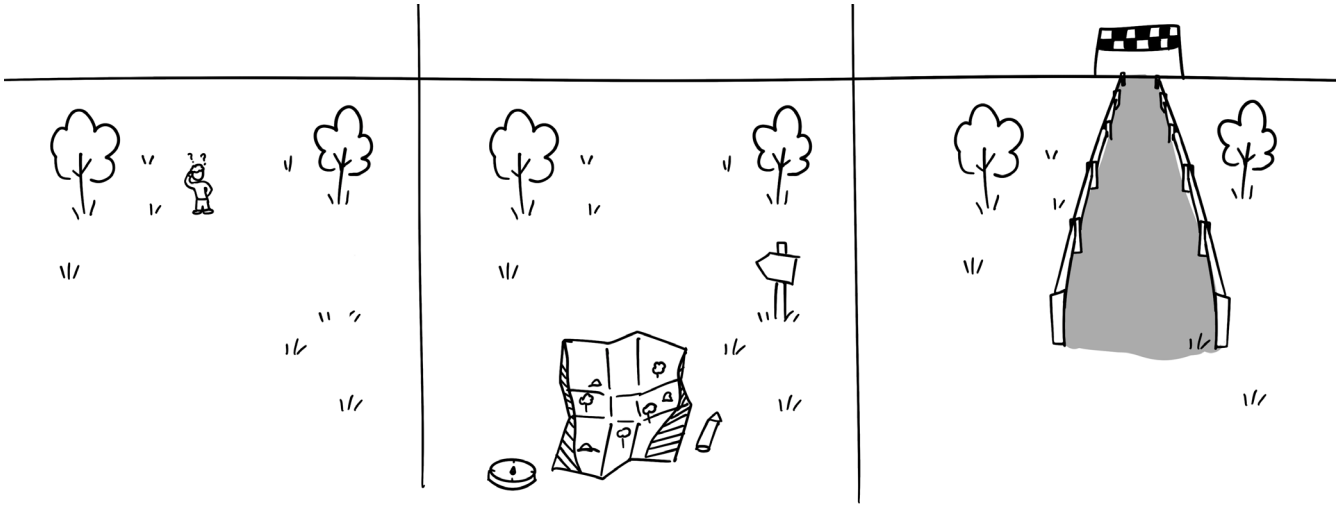


Figure 20. Visualization of Strucutured Freedom. The left shows no structure, which leads to confusion. The right shows too much structure, limiting personal exploration as participants can only follow a fixed path. The middle illustrates structured freedom: participants are guided in the right direction while having the tools and space to explore what matters to them.

Storytelling games like Microscope (Vulgaris, 2015), The Quiet Year (Mr Art and Photography, 2021), Fiasco (The Board & Barrel, 2022), and The Thing from the Future (Candy, 2018), each offer useful mechanics for guiding collaborative storytelling. Microscope uses turn-based world-building, letting players decide on key periods, events, and scenes like seen in Figure 21. This ensures equal participation and keeps the process open-ended but focused. The Quiet Year adds a shared map as seen in Figure 22, helping participants visualize change and interact with the story physically. Event cards introduce just enough unpredictability to keep the narrative dynamic without overwhelming the group. The Thing from the Future uses creative prompts based on combinations of future arc, terrain, object, and mood (Figure 23). These “enabling constraints” (Candy, 2018) lower the barrier to participation while sparking imagination and divergent thinking.

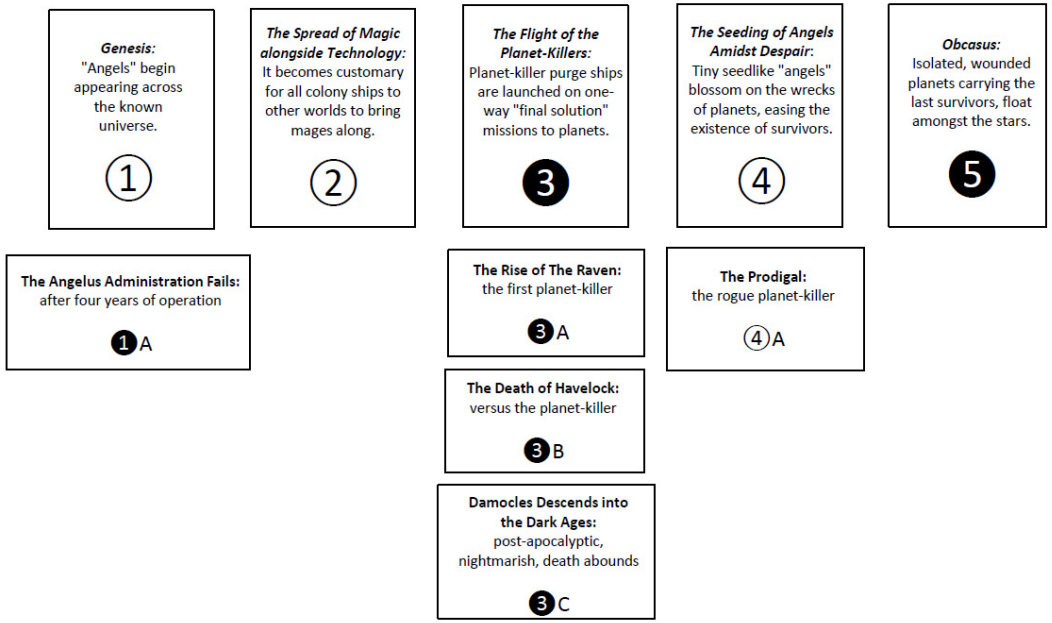


Figure 21. Example of a Microscope RPG timeline. (Jeromai, 2018).

Design takeaways:

Use storytelling games to guide participants into a probable future without steering outcomes

Use elements like prompts, maps, or turn-taking to guide participation

Figure 22. Gameplay setup of The Quiet Year with the map, prompt cards and dice. (Shut Up & Sit Down, 2013).

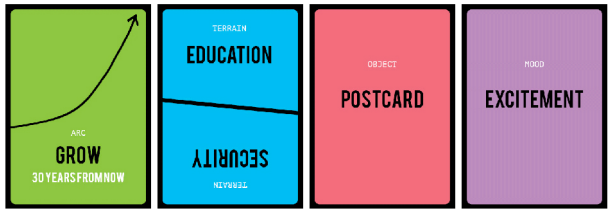


Figure 23. Example cards from the game The Thing from the Future, showing four prompts: arc, terrain, object, and mood. Varias (2015).

Promoting interaction

Allowing for interaction can also lower the barrier of participation. Drawing for example can unlock creativity, especially for participants who struggle to express themselves verbally (Heijne & Van Der Meer, 2019). In The Quiet Year (Figure 22), drawing and interacting with a shared map, watching a future take shape, becomes a common language to understand the future.

Interaction deepens engagement. Actions like drawing, placing cards, or pointing to maps help participants connect with the story in new ways. As Fredricks et al. (2004) note, this kind of behavioral engagement increases focus and ownership.

Sanders & Stappers (2012, p. 66) build on this, saying that making through, for example, drawing can not only engage participants in thinking creatively but also help reveal the deeper, implicit knowledge. As Jansen et al. (2023) show, drawing can unlock ideas that are hard to express in words.

Design takeaways:

Add points of interaction like cards or maps

Promote drawing

Allow multiple options for participants to express themselves

2.5.5 Promote collaboration ("storymaking")

While storytelling helps make futures more personal, "storymaking" through collaboration supports understanding through discussion and shared meaning, as discussed in 2.1.3. But collaboration doesn't happen by default. Even in group settings, stories can stay fragmented or be led by the most vocal participants.

As mentioned in 2.5.3, personal exploration is important for connecting a future to individual values. When participants don't get the chance to explore those values, their involvement and learning can be limited. A good workshop design should support open participation, while still guiding the process so that no single person sets the direction of the story.

In the Climate Fresk workshop mentioned earlier in 2.5.3, some participants tried to show they were very knowledgeable by wanting to give all the answers. Giving each participant a fixed number of cards helped prevent this from taking over, since every participant had control over key pieces, even vocal participants had to negotiate with quieter ones. This shows that equal participation doesn't happen automatically, but structures can support it.

Proper structured freedom, as found in games like Microscope and The Quiet Year, can support collaboration. Turn-based storytelling, used in Microscope, prevents dominance and ensures equal input. A shared map, like in The Quiet Year, helps participants build on each other's ideas visually and spatially. These mechanics support what Belton and Dillon (2021) describe as democratic participation, where the group creates a future that reflects multiple voices, not just the loudest.

Design takeaways:

Add points of interaction like cards or maps

Promote drawing

Allow multiple options for participants to express themselves

2.5.6 Foster Engagement

For the workshop to connect to the lives of participants, they need to care. They need to not just show up, but actually want to participate. As DecisionWise (2024) explains, when people are engaged, they're more committed and outcomes improve. This also applies to storytelling: the more participants care, the more meaningful their stories become.

Fredricks et al. (2004) break engagement into three forms:

Behavioral: participants are actively involved through talking, drawing, making decisions

Emotional: they feel personally connected, curious, and invested

Cognitive: they try to understand the future, think critically, ask questions

When engagement is low, stories stay surface-level and disconnected. When it's high, participants bring in lived experience, link it to future risks, and create stories

that feel relevant and real.

To support this, workshop tasks should feel authentic and allow for ownership. They should encourage collaboration, support different ways of expressing ideas, and be enjoyable to do.(Fredricks et al., 2004). Much of this is covered by other design principles in this section. Giving participants freedom and limiting facilitator interference increases ownership and authenticity, collaboration is encouraged and different ways of expressing ideas should be accounted for. The storytelling games providing structure are typically played for fun with friends, they also bring an element of enjoyment to the workshop format.

Each form of engagement can be supported directly (Fredricks et al., 2004):

Behavioral: Use physical interaction like pointing at maps, placing tokens, or drawing.

Emotional: Give structures that promote moments of curiosity, surprises and laughs. Let participants create characters and explore personal, emotionally rich futures that make them care.

Cognitive: Prompt reflection and discussion. Ask what a change might mean, or what a character would do next. Get people thinking, not just talking.

Design takeaways:

Build activities that support behavioral, emotional, and cognitive engagement

Include physical interaction, personal storytelling, and discussion prompts

2.5.7 Facilitate to get the most out of the participants

Even a well-designed workshop relies on effective facilitation to bring out its full potential. The facilitator guides the group, supports participation, and keeps the process focused, without involving their own views (Heijne & Van Der Meer, 2019). Based on my experience in the Creative Facilitation elective, several principles stand out:

Be active: Guide participants when they get stuck. Steer gently if they drift too far off, by reminding them of their own values or story structure, not by correcting them.

Be neutral: As discussed in 2.5.3, avoid influencing the direction of the story. Ask open questions that help participants go deeper, but don't steer the outcome.

Be flexible: Every group is different. Adapt the plan if needed, while staying clear on the workshop's goals.

Care for participants: Make sure everyone feels heard, supported, and comfortable. Physically and emotionally. Allow for breaks and provide food and drinks.

Facilitator rules to share with participants:

Quantity breeds quality: Encourage participants to share freely. More input leads to better results.

Hitchhike: Build on each other's ideas.

Trust your instinct: When working with values or storytelling, it's often more effective to go with instinct than to overthink what's a "good" idea.

This facilitator care is also relevant in the workshop organisation. Heijne & Van der Meer (2019), highlight that participants in group settings can feel insecure about speaking up. Giving each participant the opportunity to speak in a low-key, non-evaluative way increases comfort and helps them open up. They also stress the importance of break(s) every 60 min to keep participants focused throughout the session. Breaks can also mark a transition between phases of the workshop, helping participants refocus before moving into a new topic.

Design takeaways:

Support without steering — guide, don't direct

Stay flexible, while keeping the goal in view

Encourage openness and emotional input

Include an icebreaker and schedule breaks

2.5.8 Conclusion

Designing an effective workshop for Collaborative Future Storytelling requires more than choosing the right tools; it is about shaping a process. People engage with futures when it feels real, personal, and shared. That means grounding stories in familiar contexts, linking them to lived experience, and giving participants the freedom to explore what matters to them. Structured freedom and promoting interaction lower the barrier to participation and support collaboration. The facilitator is central to balancing these elements. They must steer gently, remain neutral, adapt in real-time, and prioritize the comfort and engagement of the group. When people are emotionally invested, cognitively active, and feel ownership of the story, the outcomes are not just speculative, they're meaningful.

2.6 Value proposition

Dutch citizens are not looking towards the future enough. The risks of climate change feel abstract and distant, and many people stay in the familiar story that the government will protect them. Science communication fails to bridge this gap as its methods are still too abstract. Collaborative Future Storytelling helps bridge this gap by making futures more tangible and relatable — connecting them to everyday life. It lets participants tell stories based on their own values and experiences, making potential futures feel more relevant and personally meaningful. It has the potential to make Dutch citizens more aware and better prepared for possible climate complications.

CFS also includes participants in future discussions and helps uncover their assumptions and concerns. For research institutions like Deltares, this method can provide deeper insights into what people care about and offer opportunities to involve groups that are normally not part of climate discussions. It supports better public engagement and enables more inclusive, grounded, and publicly supported decisions in spatial planning.

3. Project Definition

What does this mean for the project?

Building on the method introduced in the previous chapter, this chapter defines how it will be applied to address the core problem. It lays out the project's specific goal, connects the problem to the method, outlines the broader relevance, and briefly introduces the key stakeholders involved.

3.1 Goal

To develop and test a workshop that uses Collaborative Future Storytelling (CFS) to help bridge the gap between scientific communication and the everyday lives of Dutch citizens by making future water complications more tangible and personally relevant.

The workshop does this by presenting possible, science-based future scenarios through the lens of personal values and lived experiences. This allows participants to better understand how these abstract futures might affect their own lives, making future risks feel more concrete, relatable, and personally meaningful.

3.2 Broader relevance

This project aims to contribute to the broader goal of democratizing thinking about climate futures. It does so by lowering the barrier to participation and making future thinking more inclusive. Instead of one-way, expert-driven communication, the method creates space for citizens to take part in imagining the future.

It also aims to support better public engagement and research for institutions. A method like Collaborative Future Storytelling may help uncover deeper insights into what people value and worry about. This can be a step toward more inclusive and supported decision-making in projects like area development and climate adaptation, giving citizens an opportunity to get a voice in shaping their future.

3.3.1 Dutch Citizens (Also Target Audience)

Citizens are the main focus of this project. They are the ones who will experience the effects of climate-related water risks, whether through flooding, infrastructure failure, or changing living conditions. As discussed in 1.1.2 and 2.1.2, these risks often feel abstract and disconnected from daily life. At the same time, citizens are not usually invited to participate in imagining or shaping these futures.

The target audience is adult citizens, roughly between the ages of 20 and 70. The younger citizens will experience futures most directly, and older citizens hold decision-making power now. Both groups can contribute meaningfully to the discussion. The format is not designed for children, as that would require more explanation of climate concepts and a different facilitation approach.

Climate change will have an impact on all Dutch citizens (1.1.1). A key benefit of storytelling is that it can engage participants who are usually excluded from future climate thinking. The workshop should therefore be accessible enough to engage a broad range of Dutch citizens in future thinking. This means having a low barrier of participation (2.5.4) suitable for most Dutch citizens, not requiring a certain level of education or focusing on a specific occupation or population group.

While it should be approachable to most, the workshop does assume a basic level of climate awareness. This is present in 77% of Dutch citizens (1.1.1). The workshop is not meant to explain why it is happening, but to explore how it might shape daily life.

Participants should come from the same area. This provides a common context for exploring community values and gives the story a place to unfold. It also aligns with the .Flood-resilient landscapes (see 2.3), which look at local values and concerns.

Figure 24. Terschelling LivingLab stakeholder meeting. Adapted from Studio Natuur en Ruimte (2023)

Figure 25. Terschelling from satellite. Image by NASA (n.d.), via Wikimedia Commons.

3.3.2 Deltares

Deltares is both a key stakeholder and the case provider for this project. As a research institute focused on water and subsurface systems, Deltares is exploring new ways to involve citizens in climate adaptation beyond technical consultation. This project supports that goal by offering a method that helps Deltares not only inform citizens, but also learn from them. (see also 2.3).

Terschelling context

The collaboration with Deltares helped ground the project in a real-world context. The workshop is developed with the intention of being tested during a Deltares project on Terschelling, where a Living Lab is currently underway in collaboration with Hogeschool Van Hall Larenstein. This Living Lab brings together local stakeholders to explore future challenges on the island, with a focus on concrete policy and intervention strategies as seen in Figure 24.

The Terschelling context made for a relevant and grounded test setting. As an island shaped by water (Figure 25), it is directly affected by climate change. Recent winter flooding disrupted transport and tourism, yet these events were often seen as isolated incidents rather than as part of broader climate trends, as noted during stakeholder discussions. At the same time, the island faces serious future risks like sea level rise, salinization, and groundwater challenges. Deltares saw value in testing the workshop here as a way to explore how residents interpret these risks and what kinds of futures feel realistic or desirable to them.

Collaboration with Deltares

The collaboration involved occasional meetings, progress updates, and feedback sessions. Deltares provided input on the workshop design and its potential value for broader engagement strategies. In return, I shared findings from the prototyping process and insights from the test sessions. Deltares also supported participant recruitment through their network.

Insights for Deltares

Beyond this specific case, the workshop can provide useful insights for Deltares. They can reveal how residents of an area interpret water risks, what kinds of changes feel acceptable or not. Also how future visions align or clash with expert scenarios and citizen values. As discussed in 2.2, future storytelling can provide new opportunities for public engagement by allowing participants to explore futures from their own perspective. This can help Deltares design more inclusive engagement strategies and align interventions with local meaning and priorities. These outcomes are especially relevant in programs like the Flood-resilient landscapes, where long-term success depends on public support, as mentioned in 2.3.1.

3.3.3 Other institutions

Other institutions, such as government bodies and water boards, also stand to benefit. As discussed in 2.2 and 2.5.4, this method lowers the barrier to participation and helps connect expert planning to citizens' lived experiences, which is essential for building public support for future adaptation. Governing bodies will also function better with knowledgeable citizens as they can be held accountable as mentioned in 1.1.2. While the project alone won't fix public engagement for institutions, it can contribute a step in the right direction.

4. Methodology

How will I reach that goal?

This chapter explains how the workshop was created, starting with the prototyping approach it uses, why this approach was chosen, and the risks or such an approach. It then introduces a set of guiding design principles, presented as requirements, which form the basis for the design decisions made during its development. The chapter also discusses how these requirements were shaped by earlier literature and by an exploratory workshop held on Terschelling.

4.1 Project approach - Prototyping

4.1.1 Approach

This project follows a prototyping-based approach. Rather than comparing multiple storytelling methods, it focuses on developing and refining a single format through iterative testing. This suits the limited timeframe of the project and the complex nature of workshops, where parts interact dynamically and participant responses are not always predictable

The process begins with a theoretically grounded version of the workshop, tested in context to see what works and what doesn't. Based on the outcomes, the design is adjusted and tested again (Figure 26). Since elements build on each other, it is more useful to test the full experience than isolated parts. Without a working structure, even good ideas may seem ineffective.

This approach builds on earlier experience from the Bachelor's and the Advanced Prototyping minor, where testing in context often proved more valuable than detailed planning. The Creative Facilitation elective further confirmed that workshop dynamics are unpredictable, as participants often respond differently than expected. These insights reinforced the need for hands-on, flexible testing in this project.

Ideally, the workshops would be run with unfamiliar participants, since they are more likely to respond honestly. In practice, most of the prototype workshops involved friends or acquaintances. They are easier to recruit and schedule, which makes it possible to test more versions in less time. This also reduces pressure, creating space to try new ideas without worrying about whether each test works perfectly. While this enabled faster iteration and more creative risk-taking, it may have influenced how participants engaged with the material.

4.1.2 The goal of Prototyping

The core goal of the prototyping phase is to test whether the workshop method enables participants to connect possible futures to their own lives. This step is central to the design: according to literature on speculative design and experiential futures, once people relate a possible future to their lived experiences, it also becomes more relevant and engaging (2.5.2).

That relevance, while important, is more difficult to observe or measure directly. It's abstract and subjective, and participants may not always be able to clearly articulate whether a scenario felt "relevant." But the connection to their own life is easier to identify, for example through the places they mention, the values they bring into their story, or how characters reflect familiar concerns.

This makes the personal connection a better focus for testing. If the workshop doesn't support that, the rest is unlikely to work either. The aim of this phase is therefore not to prove the overall effectiveness of future engagement, but to see whether this specific method can reliably create the conditions for it.

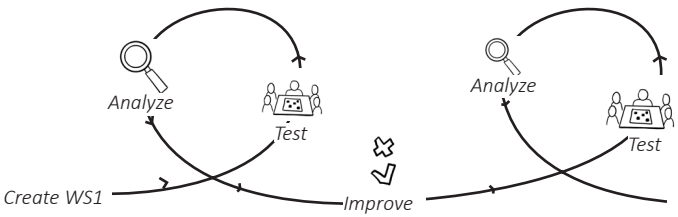


Figure 26. Prototyping cycle

4.1.3 Risks and Limitations

There are two main risks: tunnel vision and unpredictability of workshop outcomes.

The main risk of this approach is tunnel vision, committing too early to one structure or direction that in hindsight might not be the best option. To reduce that risk, I started with a broad literature base, reflected on my own facilitation experience, and ran an exploratory session to test the general idea of collaborative storytelling. Insights from that session will inform the design of the first full workshop, which will act as a baseline for future versions.

Another limitation is that not all workshop outcomes will be equally useful or revealing. Participants may still interpret prompts in unexpected ways, or external factors (e.g. timing, group dynamics) may influence engagement. However, since the structure is being tested as a whole, those unexpected responses are still part of what needs to be understood.

Iteration results help indicate whether the setup is clear, the framing makes sense, and the story-building process actually supports the goal of connecting futures to everyday life. It is important to take the workshop context into account when reviewing the results. Whether participants felt rushed, relaxed, confused, or curious can all influence how they engaged with the method. These contextual factors do not invalidate the results, but they do shape what can be learned from each test.

4.2 WSA - Exploratory Terschelling workshop

Before defining the requirements for the final workshop, I first needed to understand how Collaborative Future Storytelling might work in practice. To do this, I ran an early test during a Living Lab meeting on Terschelling. This exploratory session served as a proof of concept, not to evaluate the full method but to explore participant responses to the storytelling approach. The workshop also provided an opportunity to observe how CFS could support Deltares' public engagement goals.

The session offered concrete insights into facilitation, structure, tone, and participant engagement. These takeaways directly shaped the development of the method and informed the design requirements that serve to create the workshop in the next section, shown in Section 4.3. Rather than being part of the final evaluation, this workshop played a key role in defining what the final version of the workshop needed to achieve.

4.2.1 Setup

The workshop took place at a Living Lab meeting organized by Deltares and Van Hall Larenstein as mentioned in chapter 2.4.1. Prior to this session I had to negotiate the amount of time I would have, which resulted in three 15-minute slots during which I could I could pull groups aside during the LivingLab workshop activity. The participants were mostly stakeholders: farmers, landowners, municipal staff, and nature organisations. There ages were estimated from 30-60 providing a good participant variety, and most lived on Terschelling.

Time was short, so I designed a quick, recognizable and clear format: participants created a fictional newspaper front page about a local "hero" who helped during a future climate disaster. The format, inspired by Pip Decks (2024), is shown in Figure 27.

I tested this version beforehand with friends, resulting in insights, mostly about time management and the structure as seen in Figure 28. All participants signed consent forms.

Figure 29 and Figure 30 show the actual session and results. The translations and result analysis can be seen in Appendix B.1.

Figure 27. Terschellinger newspaper format (Permission to use the Terschellinger newspaper was acquired)

Figure 28. Test workshop for Terschelling workshop with friends

Figure 29. Participants in the 1st (top) and 3rd group (bottom) discussing and filling in the newspaper article

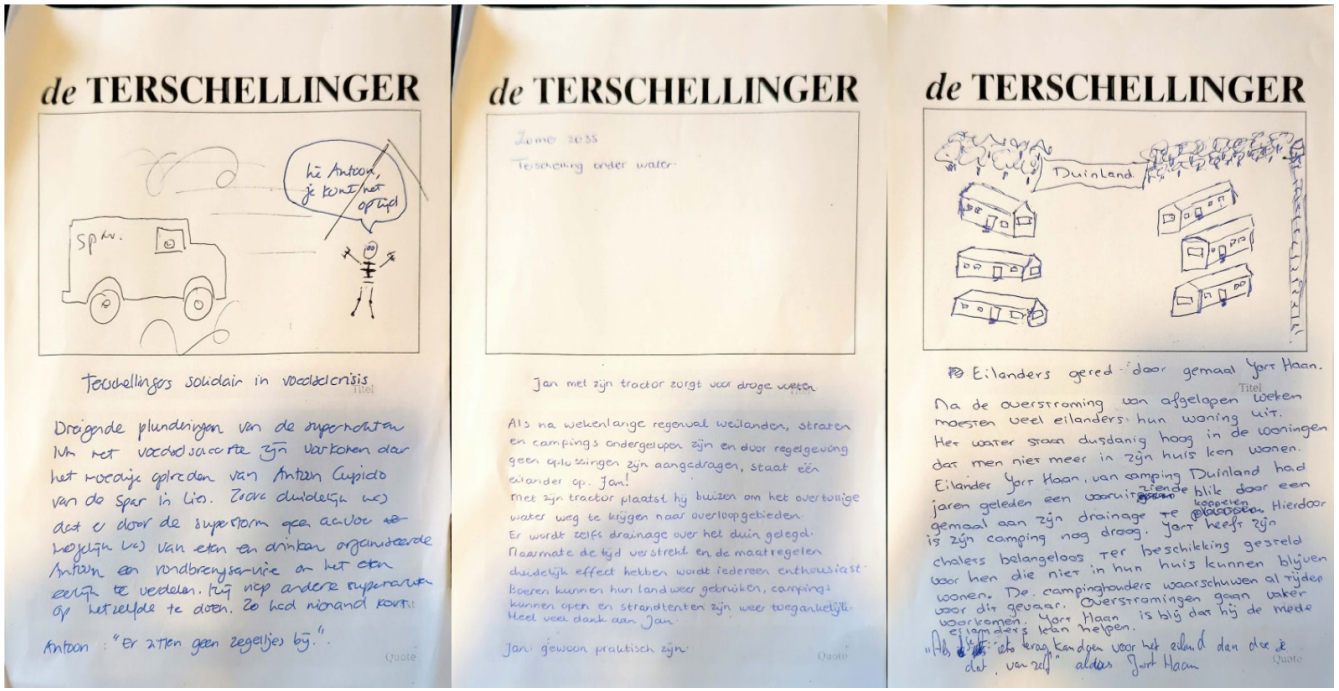


Figure 30.Created newspapers by participants during WSA

4.2.2 Key takeaways

The session gave me several useful insights into how to create a CFS workshop. These takeaways offered practical input that helped shape how I developed the method.

Testing CFS

The workshop acted as a preliminary proof of concept to show that CFS can work to get participants to tell stories about the future that connect to their own lives. While limited in scope, all the stories included elements of participants' lives being affected by climate change. Examples included flooded streets, draining water, fairly distributing stored food, and well-prepared campsites. This suggests that CFS can show how climate impacts might become personally relevant.

Bridging the future

Starting directly with future imagination was too big a leap. Participants found it much easier to tell stories when they related to past events like a winter storm or helping after a flood. The same applied when imagining a hero. It helped to base this character on someone they knew. Connecting a future to their own lives made it more concrete. This was also clear in the test workshop, where participants mentioned that they struggled to imagine 2100. The futures they described ended up looking almost exactly like today. This confirms how difficult it is to picture far-off, abstract futures and shows that people tend to see them as extensions of the present (1.1.2.1). These observations support the concept of perceptual bridges (2.5.1) and confirm the value of grounding futures in lived experience (2.5.2).

Structure and flexibility help

Some participants joined easily, while others resisted: "I really don't feel like doing this." (Translated by author) This showed how real the barrier to participation can be when asking people to be creative (2.5.4). Building trust quickly was essential. Changing my explanation on the spot and guiding participants with a relatable example helped. This confirmed that a clear, approachable structure can lower the threshold, but flexibility is just as important (2.5.4, 2.5.7) .

Structure helps, but steering can influence

To explain the task, I gave an example of a hero distributing food during a crisis. One group followed this closely and created a nearly identical story. This showed that examples can clarify, but also influence. In short sessions, they are helpful, but they need to be used with care. This supports what was discussed under structured freedom and participant-led meaning-making (2.5.3).

The format must be enjoyable

There was some early hesitation, and even a participant who said they were "so not looking forward

to it". However, participants ended up enjoying the workshop. As the workshop got going, the participant warmed up and enjoyed revisiting a shared memory of a Terschellinger clearing a flooded road with a pump. A fun workshop can be an entry point. People may not join a workshop because they care about climate, but they might if it's engaging and they can still become more aware. People should not only be included if they want to, they should want to be included. Quotes often triggered laughter, sparking discussion and encouraging input through shared humor. The emotion made the activity more engaging. Interaction helped here, as some people really liked drawing the newspaper photo and it visualized this future for them, building 2.5.4.

Storytelling can reveal insights

This small exercise revealed values like solidarity and resistance to unfairness. It also surfaced the shared assumption that they had to fix problems themselves — showing what mattered to these participants.

Dutch people can indeed be unaware

During the stakeholder presentation it was mentioned that a lot of farmers were described as uninterested in future planning because they assumed someone else would represent their interests. Yet these same farmers face rising salinity and other near-term climate risks impacting their profits. This underlines the need to make futures feel personal, not just informative (1.1.2, 2.1.2).

4.2.3 Conclusion

Even though the session was short and more of a first test, it showed the potential of CFS in connecting futures to the lives of citizens and offered real insights into how people engage with methods like this, confirming and building on ideas of the literature.

It showed that participants need structure to step into the future. Starting with something familiar helps lower the barrier and gets people on board. Once they're in, they're more willing to engage, even if they weren't at first.

Relating possible futures to participants' lives and values proved especially powerful. While values surfaced naturally, I saw that I needed to help participants uncover them earlier so they can bring them into the story more intentionally later.

The importance of good facilitating also showed. I had to stay flexible, further or differently explain when something didn't land, and avoid steering too much. And making the workshop enjoyable really matters. That's not just about participation, it also helps unlock better input.

These lessons directly shaped how I built the final workshop. They also confirmed what the literature said about building trust, lowering the barrier of participation, and connecting futures to what people already care about.

4.3 Requirements

This section summarizes the requirements for the Collaborative Future Storytelling (CFS) workshop format, based on the design takeaways discussed in Chapter 2.5 and the takeaways identified during the Terschelling workshop in the previous chapter. They serve as design guidelines during the workshop creation and should lead to a workshop that reaches the goal stated in 3.1.

R1. Ground futures in recognizable and real possibilities (Based on 2.5.1, 4.2.2).

a. Use Deltares narratives or similar tools as perceptual bridges.

b. Ensure futures are plausible, rooted in science, and not too abstract.

R2. Connect futures to participants' lives and values (Based on 2.5.2, 2.5.3, 4.2.2).

a. Identify familiar places and routines through which participants can relate the future to their values.

b. Include a character to help participants step into the future.

c. Allow participants to bring their own meaning into the story.

R3. Lower the barrier of participation to make the workshop to most Dutch adults with basic climate awareness (Based on 2.5.4, 4.2.2).

a. Ensure the workshop is understandable for people knowing what climate change is 3.3.1.

b. Gradually build up complexity.

c. Gain trust early in the workshop.

R4. Provide "structured freedom" through storytelling mechanics (Based on 2.5.4).

a. Use storytelling games and elements to guide participants into a probable future without steering outcomes.

b. Use storytelling games elements to promote equal participation and aid the "storymaking" process.

c. Avoid facilitator control, have participants lead the meaning-making.

R5. Promote engagement (behavioral, emotional, cognitive) (Based on 2.5.6).

a. Design the workshop to help participants to easily give input to promote behavioral engagement.

b. Design to allow for moments of humor, curiosity, and personal relevance to spark emotional engagement.

c. Prompt reflection and open discussion to support cognitive engagement.

d. Design exercises to not only be informative, but be fun (4.2.2).

R6. Design for interaction (Based on 2.5.4, 2.5.5).

a. Use tools like drawing and group discussion to support different forms of expression.

b. Include maps or physical prompts to make the experience tangible.

c. To incentives physical interaction and promote behavioral engagement (specifically from 2.5.6).

R7. Actively facilitate with flexibility and care (Based on 2.5.3, 2.5.7, 4.2.2).

a. Guide without influencing the outcome.

b. Adapt facilitation to group dynamics and participant needs.

c. Prioritize participant comfort and create a supportive setting.

d. Add an icebreaker and break.

5. Workshop Creation

What method can best reach that goal?

This chapter describes how the Collaborative Future Storytelling (CFS) workshop was developed and tested through four iterative prototypes. Each iteration explores whether specific elements of the method function as intended. The goal was to assess how participants responded to different design choices and facilitation techniques and to what extent these supported the intended outcomes.

The design of each workshop builds on the requirements defined in Section 4.3. Together, these iterations explore how key components of the method perform in practice. The results inform ongoing refinement of the CFS approach.

Each section describes one workshop/iteration. The workshops are reviewed based on whether the method works in practice as intended, answering this specific central question: Do the specific elements work as intended and help the phases reach the goal? This also means seeing if the expectations of the literature work as expected or hold up in practice or perhaps that the workshop works but could use some improvements on some levels.

A schematic overview of all iterations can be found at of the end of the chapter in section 5.8, which clearly highlights the changes across workshops.

5.1 WS1 - Initial workshop (Creating the workshop)

The first prototype workshop focused on creating a complete, testable version of the CFS format. It was designed using the requirements outlined in Section 4.3, and informed by previous literature, personal facilitation experience, and observations from the exploratory workshop on Terschelling. The goal was not to create a finalised method, but to test a version grounded in research that could serve as a basis for future refinement.

This, just like the following workshops, had 4 participants. This came from personal experience as a good balance between diversity of perspectives and the opportunity for each person to meaningfully contribute. Smaller group size helped preserve collaborative depth without losing individual voice.

Because WS1 was the first prototype, this chapter starts by laying out the full setup which is followed by the reflection:

- Phase 1, Phase 2, Phase 3, Phase 4
- Phase 1 reflection, Phase 2 reflection, etc.

The other workshops will focus on the specific changes building on the structure laid out in WS1. They will be shown as follows:

- Phase 1 Changes, Reflection
- Phase 2 Changes, Reflection
- Etc.

The outcomes of the individual workshops can be seen in Appendix D.

5.1.1 Core design elements

A few core elements, drawn from literature and insights from the Terschelling workshop, support the overall effectiveness of the CFS approach. These elements are not tied to a single phase but are embedded in the structure and flow of the workshop as a whole. While some can be adjusted independently, they remain interconnected and influence how participants move through the process.

Physical map as an anchor

Since all participants come from the same region (3.3.1), a printed local map serves as a spatial anchor. Inspired by The Quiet Year (Section 2.5.4), the map helps participants think spatially and reflect on their surroundings. The goal is to spark ideas about local places without needing heavy facilitator input. This supports structured freedom (R4).

There is some facilitator involvement in defining the specific area of the map. The goal is to capture an area where a lot of the participants lives would be, including specific locations that can be valuable like nature or transport, making it as large as possible without compromising the recognizability of specific places. (Figure 31).

Interaction through post-its and drawing

To encourage interaction and creativity (R6), the workshop includes tools like post-its and drawing prompts. These support behavioral engagement (R5.a) and offer physical, visual ways to explore ideas. Different forms of expression such as speaking, drawing, or acting help participants engage in ways that suit their personal comfort and strengths. Drawing in particular can help participants discover their own ideas by making them tangible.

Facilitator role

The workshop requires active, flexible facilitation (R7). The facilitator must guide the group without steering outcomes, respond to group energy, and help participants relate personal experience to future thinking. The Terschelling workshop showed the importance of this. The facilitator role will first be explained per phase and then be generally reflected upon.

Figure 31. Map of Rotterdam to be used in the workshop, including aspects like the Kralingse plas, the Schie to Delft, the station, the city center and the houses of participants still recognisable. Excluded elements like Rotterdam South or Hilligersberg, or Capelle as it was correctly assumed that participants did not visit these. Image retrieved via Google Satellite Maps using AllMapSoft (n.d.) Downloader

Structure and flow

The Terschelling workshop highlighted the relevance of building trust and offering a clear structure to help participants ease into what can feel like a difficult or abstract process. For many Dutch adults with basic climate awareness, a real barrier to participation exists — one that must be deliberately addressed (R3).

This means gradually increasing complexity. Participants shouldn't be thrown in at the deep end. Early exercises must be simple, require no prior knowledge, and intuitively build toward more abstract and creative thinking. Throughout the workshop the following elements that can possibly cause confusion will be build up:

The complexity of thinking: From recalling personal memories to imagining complex future scenarios.

Building the scope: From familiar, local places to broader systems and transformed future worlds.

Timeline: From past experiences to present values, then toward scientifically grounded and personally speculative futures.

The workshop follows four key phases, with an introduction, a break in between and a small reflection moment in the end.

Key phases of the workshop

Introduction – Explains the project context and workshop goals; includes consent form signing.

Phase 1: Icebreaker – Builds trust and lowers the barrier to participation (R7.d).

Phase 2: Value exploration - Surface meaningful places and values that serve as anchors for the future story (R2.a).

Phase 3: Future exploration - Introduces speculative futures to inspire the story (R1.a).

Break: A short pause (5–15 minutes) to allow ideas to settle and give flexibility in pacing (R7.d).

Phase 4: Collaborative storytelling – Participants create a shared narrative through a game that links the speculative futures of Phase 3 with their personal values from Phase 2 (R4.a).

Reflection: A small reflection moment to get insights from the participants and invite some deeper thinking on themes.

This process follows a diamond structure as seen in Figure 32, based on the workshop approach by Heijne and Van Der Meer (2019): first diverging, then converging. You can't start by asking participants to create a future that truly matters to them. The most meaningful ideas are often implicit and need space to emerge through exploration. That's why the process begins wide: participants explore places, values, and possible futures without pressure to choose. This phase allows them to absorb, reflect, and begin to notice what resonates. Once they have a sense of which locations and ideas feel relevant, they start shaping their personal story by selecting from what surfaced. The end of the diamond remains open — storytelling is also a space for discovery, where new ideas can still be brought in and explored.

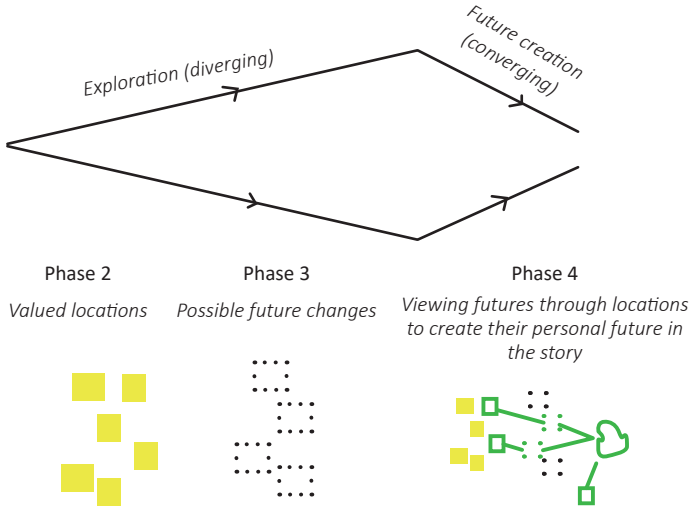


Figure 32. The workshop follows a diamond shaped process, first diverging in ideas, and then converging into the story. The vertical represents the amount of ideas, and the horizontal time.

5.1.2 Introduction

Purpose:

- Explain the project, build trust, set expectations, and provide context without steering or revealing too much (R7.d).

Steps:

- Welcome participants and hand out consent forms.
- Introduce the graduation project: Topic, goals, stakeholders.
- Explain planning.
- Emphasize the participation, ask questions, take a break when necessary.

5.1.3 Phase 1: Icebreaker, exploring water memories

Purpose:

- Break the ice, ease participants into sharing (R7.d), promote early engagement (R5.a) and create a low threshold for participation.

Game (Figure 33):

i. Participants introduce themselves by telling a short story related to a water memory.
   - Stories can be serious, funny, recent, or old. No pressure.

This format is based on a similar setup developed by my supervisor Barendregt, which included objects to promote interaction. “Because the next phase also serves as part of the setup, this first step is deliberately kept simple and only contains the storytelling.

Facilitator role:

- Go first to build trust and give an example.
- Support participants who hesitate by suggesting ideas or reminding them they can pass.

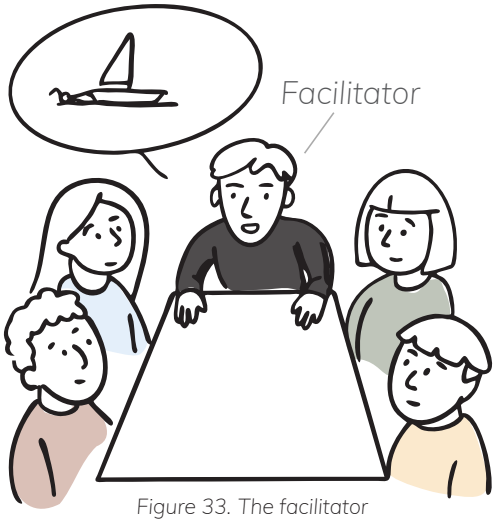


*Figure 33. The facilitator introduces himself via a memory**

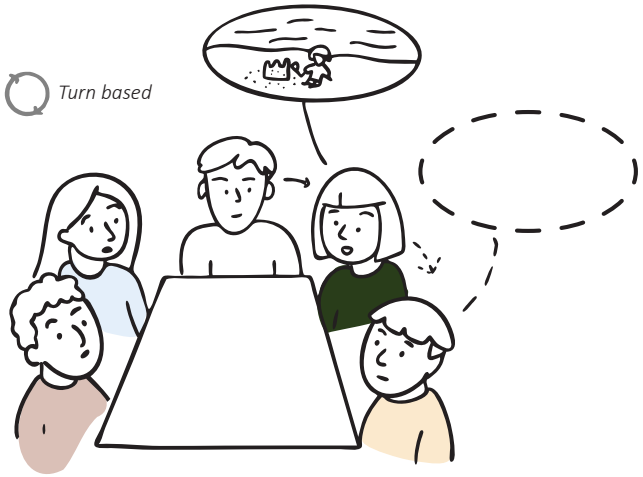


Figure 34. Participants follow in a turn based manner

* (Reduced tint) = Participant silent
(Full color) = Participant talking / Involved in discussion
= Facilitator actively facilitating
= Facilitator actively talking / explaining

5.1.3 Phase 2: Value exploration

Purpose:

- Help surface personal values through water-related memories and locations. These create relevance and act as reference points when imagining future scenarios (R2). When seeing the future's impact on personal values, the future becomes more relevant as discussed in Section 2.5.2 and illustrated in Figure 17.

Steps:

i. Participants explore a printed map of their local area.
ii. Each person chooses a place with water-related memory and describe a linked emotion.
iii. They write this on a post-it and place it on the map, sharing one by one.

The future can be made relevant by showing its risks through personal experiences, through which they can see it impact their values and experiences (R2.a). As mentioned in 2.5.2, it can be hard to think of values directly. It is easier to think of memories, which might help surface values indirectly. Memories will also bridge from Phase 1. As mentioned in 2.5.3, people naturally focus on what matters to them. By helping participants surface these experiences and values, they should take these to explore during the storytelling phase.

Facilitator role:

- Introduce participation rules (2.5.7).
- Guide the process through equal participation.
- Ask questions to move from memories to emotions to prompt deeper value exploration.

Figure 35. Participants place down water related memories

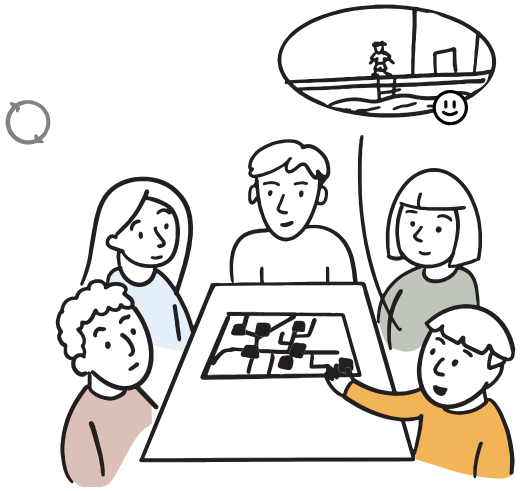


Figure 36.Participants explore a printed map of their local area

5.1.4 Phase 3: Future Exploration

Purpose:

- Help participants explore the possible climate futures to act as inspiration for the storytelling (R1.a).

Steps:

i. The Facilitator explains the 8 Deltares narratives as explained in section 2.3.2 (Figure 37).
ii. Participants explore the 8 Deltares narratives and discuss whether narratives feel plausible, strange or relevant (Figure 38).

To encourage originality and personal interpretation, the narratives are removed before storytelling (R2.c).

This step helps build a perceptual bridge (2.5.1) by relating the future to recognisable elements through the Deltares narratives. In the Terschelling workshop, starting with futures from scratch proved too difficult. The narratives serve as prompts to spark imagination.

Facilitator role:

- Explain the narratives.
- Ask open questions to support deeper understanding and cognitive engagement (R5.c).

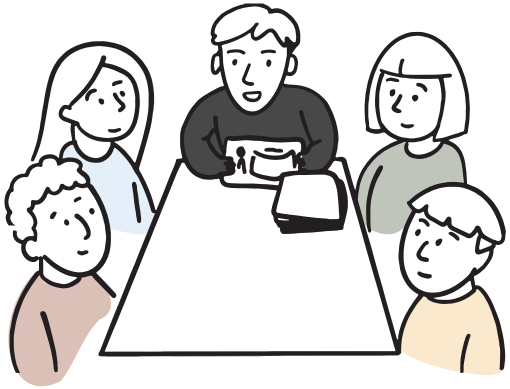


Figure 37. Facilitator Explains the narratives

Figure 38. Participants discuss the narratives

5.1.5 Break

- Purpose: Give participants a moment to pause, reflect, and recharge. Timing is flexible (5–15 minutes) depending on group pace. Placing the break here allows ideas from the earlier phases to settle before storytelling begins (R7.d).

5.1.6 Phase 4: Storytelling

Purpose:

- Create a good story (2.1.1) about life in a future shaped by water, connecting the scenarios from Phase 3 to the values and places from earlier phases.

Steps:

i. Participants collaboratively create a fictional character who lives in the future around 2100 (Figure 39).
ii. Together, they define a starting and end event a few years apart, setting the story's timeline (Figure 40).
iii. Participants take turns thinking of an event +- a year later that builds on the starting event, describing something that might happen in the future (Figure 41).
iv. After each turn the group collaboratively decides on what this event means for the character they created, whether this is positive or negative, and they can draw what happens on the map (Figure 42).
v. The next participant goes to place an event (Figure 43), the group decides what this means for the character repeating for 3 to 4 cycles until the group agrees the story has reached its conclusion. Example of event cards shown in Figure 44.

This format is adapted from the game Microscope discussed in chapter 2.5.4. It provides structured freedom, giving participants full control over the story direction while offering a simple, collaborative structure. This collaborative format also supports storymaking (R4.c). Rather than producing a single narrative arc, participants create possible futures together through small decisions, responses, and negotiations. The structure ensures that no one person controls the story, making it a more democratic and exploratory way to imagine change.

The character helps ground the future in everyday life (R2.b). Balancing positive and negative developments keeps the story relevant and avoids utopias or dystopias (R1.b). The timeframe of 2100 was the timespan also used by the narratives. It is far enough away for real changes to occur, while staying within a frame where we can predict what might happen.

Other formats like Dungeons & Dragons (Turner & Taboada, 2021) were considered but rejected due to their complexity and setup demands. Without additional prompt cards or facilitator interventions like in The Quiet Year or A Thing From the Future, Microscope stood out as the most participant-led option. It offers a lot of creative freedom while still being easy to understand, making it well suited for a workshop context that values structured freedom (R4).

Facilitator role:

- Explain structure and provide examples when necessary.
- Explain rules of participation, in hedonistic response and hitchhike (2.5.7).
- Ask open questions to lightly steer when stories become too abstract, or to help participants dig deeper to help cognitive engagement (R5.c).

5.1.7 Reflection

The workshop ends with a short reflection. This gave participants space to process what they had explored and helped deepen the discussion around key moments (R5.c). It provides insight into what worked, what felt personal, and what sparked engagement.

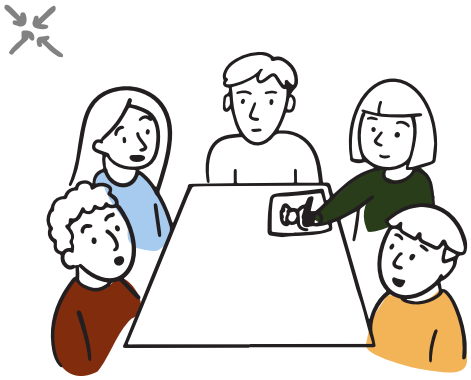


Figure 39. Setup: Collaborative character creation

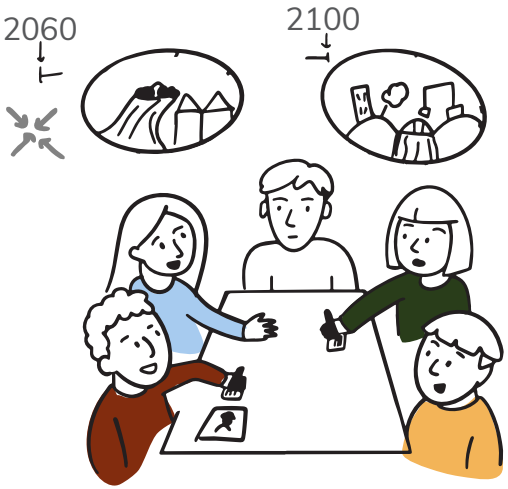


Figure 40. Setup: Deciding on the first and final events

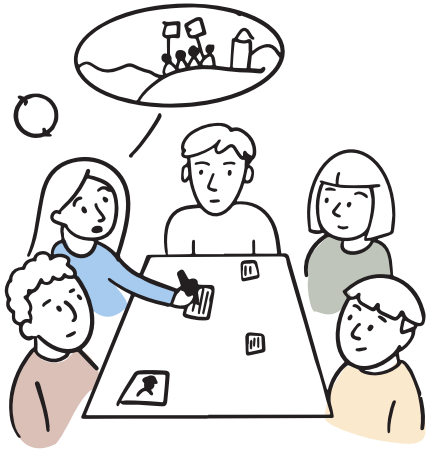


Figure 41. Game loop: A participant adds an event to the timeline

Figure 42. Game loop: Collaboratively decide what does this mean for the character

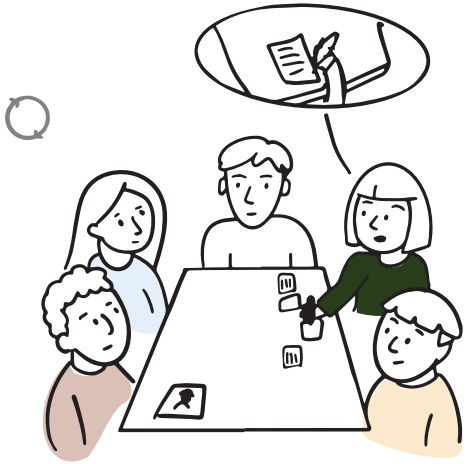


Figure 43. Game loop: Next participant adds an event to the timeline

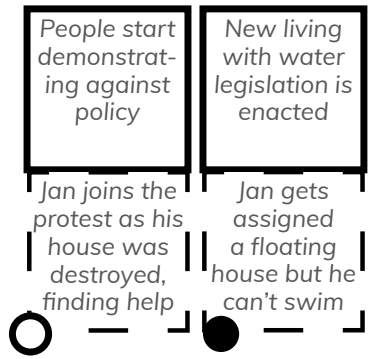


Figure 44. Examples of participant produced of event cards from Figure 41/ Figure 43 (top) and character implications cards from Figure 42 (bottom) during the storytelling phase.

5.2 WS1 - Initial workshop (Analysis and reflection)

This next section reflects on the setup for WS1, by highlighting what went well and what parts could use improvement. *Takeaways are marked like this.*

As the first workshop, this session was expected to reveal areas for improvement. The goal was to assess which elements needed refinement and whether the method as a whole was viable or required rethinking.

Results of the phases can be seen in Appendix D.1.

5.2.1 Phase reflections

First the individual phases will be analysed.

Phase 0: Introduction

There was no confusion. The introduction was clear and the setup worked as intended. *No changes are planned here.*

Phase 1: Icebreaker

Participants engaged easily. Sharing water-related memories helped them settle into the workshop. Even though they knew each other, most of the stories were new, which sparked laughter and helped the group open up. The tone was relaxed, if a bit informal, but the phase *worked.*

Phase 2: Value exploration

This phase aimed to surface values through memories of meaningful places, but the prompt didn't fully land. Participants shared strong memories (like "running around the Kralingse Plas" or "watching boats at Keilewerf"), but moving from memory to emotion and then to value proved too abstract. Facilitator help was needed to bridge that gap. The values that were written down weren't clearly reflected in the final story, likely because they were only mentioned once and not revisited. *This phase needs a sharper focus and a stronger connection to storytelling.*

Tying this phase to water-specific locations limited exploration. Non-water places might highlight water-related risks more effectively. *Location and value exploration doesn't need to be tied to water-specific places.*

Phase 3: Future Exploration

This was the least effective part of the workshop. The Deltares narratives were dense and overloaded with information. Even with highly schooled, the format was unclear. Once they understood the exercise, there was some valuable discussion. They compared scenarios, critiqued them, and questioned what felt realistic. One participant called the hedonistic scenario "completely unrealistic," which led to a useful exchange. *This showed that the narratives can support engagement, but the structure needs simplification.*

The axes (mindscape, matterscape, powerscape) confused participants and lacked context. The narratives also didn't carry into the story as intended. A few elements, like floating houses, might have come from the "Amfibic" scenario, but most were absent. It's possible the narratives still worked as a perceptual bridge by helping the vision of the future in the heads of the partipants, but that's difficult to confirm, especially with a group already familiar with climate change themes.

I originally assumed the narratives would provide enough context to spark creative engagement with possible futures. In practice, they leaned too heavily on a changed world and overlooked the that shape this change. *Future versions should simplify the format and include more concrete climate challenges to encourage reflection on what might go wrong.*

Phase 4: Storytelling

The storytelling phase went well. *The Microscope-inspired format provided enough structure while still allowing for creative freedom (R4.a).* Participants built on each other's ideas (like "Protests start" leading to "Danilo goes to a counter-protest"), had fun and stayed engaged. As discussed in Section 2.5.5, collaboration in storymaking requires structure and shared control — it doesn't happen by default. The story was creative and explored a transformed Rotterdam shaped by water.

Still, the story didn't reflect participants' personal lives. The singular events were large and abstract like war with Germany or bombed water defences which made it hard to deeply explore the effects on daily life or to the values surfaced earlier. The method was created by Belton and Dillon (2021) to help with uncover values and assumptions, which succeeded, but didn't fully anchor them in lived experience. I had hoped the character creation would close that gap, but the group settled on "a fictional 37-year-old harbor worker from Crooswijk," which didn't connect clearly to their personal lives. As a result, the story lacked emotional depth.

To better connect values to futures, the scope of the story should be narrowed and brought closer to participants' own lives. More relatable characters could also help make future scenarios feel more relevant and personal.

5.2.2 Workshop elements reflection

This section analyses the workshop elements established in 5.1.1. As they are present throughout the workshop these will be reflected on last.

The Flow:

The overall structure worked as intended. Phase 1 led naturally into Phase 2, creating a steady build-up. Phase 3 caused a disruption, but it didn't derail the session. Phase 4 ran without confusion. The workshop gave participants a clear path into storytelling and helped build trust over time. However, because this group consisted of friends, the format needs further testing with unfamiliar participants. The structure showed promise, but *further sessions are needed to confirm whether it holds in other contexts.*

Map Element:

The map showed strong potential. In Phase 2, it helped trigger place-based memories and gave participants a physical anchor for the discussion. During storytelling, it was referenced only occasionally, but those moments added spatial grounding to the narrative. *The map clearly supports exploration and connecting to the city, but there's room to do more.*

One idea is to use the map during Phase 3. Letting participants draw or annotate changes might help them imagine future shifts more clearly. Doing this before storytelling also gives context for what they're about to create. *Keeping the map visible in Phase 4 could help carry ideas forward into the story.*

This approach links to world-building. I initially avoided this step, assuming it would be too much work. But world-building doesn't have to mean inventing everything from scratch. Even light sketching like showing flooded areas or new infrastructure can help participants ground abstract futures in something concrete. As Duggan et al. (2017) point out, creating "future histories" helps anchor narratives. Turner and Taboada (2021) describe how the story world can become a collaborator in meaning-making. *The map, like building a world in The Quiet Place (2.5.4, Figure 22) could support that role.*

Facilitation:

This session made clear how active the facilitator needs to be. At times, I lost track of the evolving story, which limited my ability to step in when needed. During confusion in Phase 3 when participants did not understand the narratives, I quickly adapted and had each participant explain two narratives to someone else. That helped shift the group out of confusion. It also highlighted the need for the facilitator to stay fully present and be flexible to be able to respond to the group, adjust the structure on the fly, and steer lightly without dominating. (R7)

Engagement:

Overall engagement was strong. Participants laughed, contributed actively with post-its, had lively discussions surrounding the narratives and story elements and had to be reminded to finish the story as they wanted to continue. In Phase 4, energy dropped slightly when some participants had to wait for others to finish writing. The group discussions about character decisions helped keep things moving, but attention should be paid to this in the future.

5.2.3 Conclusion

Even with areas that need adjustment, the workshop's direction still holds. The individual exercises were fun and the structure worked guided participants into thinking about the future. Most elements achieved their intended purpose: the value mapping surfaced personal relevance (though the process needs to be simplified), the narratives sparked some reflection (though they were too dense), and the story brought creative engagement (even if the connection to daily life fell short). Problems like unclear prompts or the broad story scope are not structural flaws. They can likely be addressed by refining individual elements. That's why I continued developing this approach.

5.3 WS2 - Initial final test

This workshop was intended as the final iteration before returning to Terschelling. Based on what worked and what didn't in Workshop 1, I made several adjustments: refining prompts, shifting framing, and adding a lightweight world-building phase. The main goals were to bring the story closer to participants' lives, make future visioning clearer, and create a stronger link between the workshop phases.

By this point, the format was already established. I'll present each change, its potential risks, and how it played out in the same section to keep things easy to follow.

Results of the phases can be seen in Appendix D.2.

5.3.1 Phase 0 & 1, Break and Reflection:

No changes were made to Phases 0 and 1. While participants didn't all know each other, a shared dinner beforehand helped break the ice. The same applies to the break and the reflection, which also remained unchanged. The same counts for the break and the reflection, which won't be changed.

5.3.2 Phase 2: Meaningful location exploration

Changes

- The prompt shifted from *water-related memory* to *emotion* to *place of meaning* to *what it represents* to *link to area*.What it represented was intended to help surface the value, and the link to Rotterdam could have helped uncover deeper values..., not only for the participants. but also for research looking for the values of an area.
- This approach drew from the Community Values Mapping workshop by the Cornwall Conservation Commission (2022), which showed that asking people to name important places can surface values.

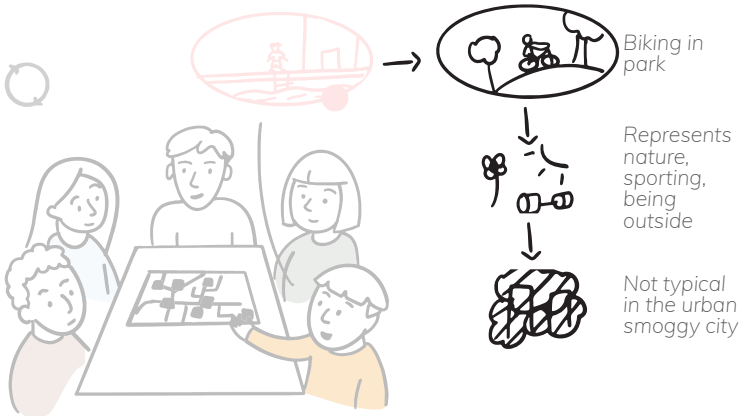


*Figure 45. Water-related memory changed to place of meaning > what it represents > link to the area**

Risks

- The phrase "places of meaning" could be too vague and cause confusion.

Reflecting on the changes

Good:

- Shifting the prompt helped. Participants shared more layered values, such as "Keile Café as a symbol of carefree summer nights," "Pride in the harbor and Rotterdam's international role," and "The cultural melting pot of the city." *This version of the prompt will be kept.*

Improvement needed:

- However, many values remained vague or unexamined. The phase would benefit from clearer facilitation and stronger examples to help participants dig deeper.
- As in Workshop 1, these values didn't naturally carry into the storytelling. Although the literature suggests people tell stories about what matters to them 2.5.3, that didn't happen here. *Floating homes* and *Cappelle aan den IJssel* were mentioned in the story, but they weren't drawn from participants' identified values or life experiences. Participants did not look at the places of meaning when telling the story. *The structure should accommodate participant exploration of their values in the story more and facilitator guidance could also help here.*

* *(Made red) = Element removed since last iteration*
(Grayed) = Element unchanged
(Black)= New / changed element

5.3.3 Phase 3: Future exploration

Changes

- A short discussion about climate risks based on simplified risks (Figure 46) from section 1.1 was added before the narratives (Figure 47), to give participants better context.
- The narratives were rewritten in simpler language, and the axis instead of scattered with text where condensed. (Figure 48). An overview of the full narrative changes can be seen in Appendix C.1
- A short future world-making exercise was added at the end (Figure 49) creating a collaborative storymaking moment of shared meaning making:
  - How will the city be affected by the changes?
  - How will the city react to these changes?
  - How will the places of meaning be affected?

Risks

- The phrase “places of meaning” could be too vague and cause confusion

Reflecting on the changes

Good:

- The risk discussion brought the possible consequences into the city. Participants engaged with how water might affect the city in the narrative exploration rather than reviewing the narratives in general terms.
- The collaborative world-building was a highlight. Participants said this helped them understand the probable future more clearly than the story phase. *World-building should become a larger, more structured part of the workshop.*

Improvement needed:

- The purpose of the future risks was not clear, which caused confusion about how to use them. Rather than saving world-building for the end of the phase, *they could serve as an outcome of both the problem and narrative explorations.* This could help ground the storyworld more clearly.
- The narratives, while less confusing, still felt abstract. The societal elements such as changes in governance or trust were especially unclear. *They should be trimmed to focus on physical and environmental changes.* A big dam in future context is easier to understand than the aspect of trust and a central water protector. As discussed in 2.1.2, stories don’t need to predict the future but can show how people respond to change. They might not predict the invention of the car, but they can imagine the traffic jam. The specific technological changes of the narratives can be used to set possible future contexts, and the societal changes can be explored by the participants.

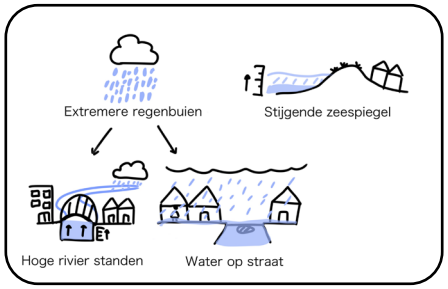


Figure 46. Climate risks visual

Figure 47. Climate risk explanation with Figure 46

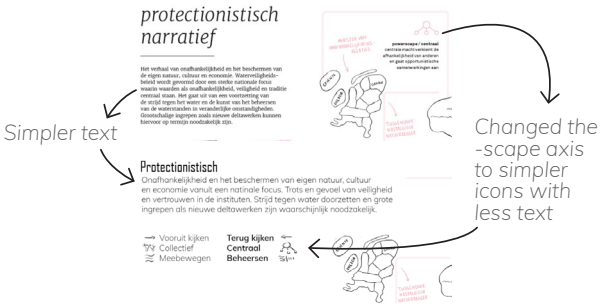


Figure 48. Changed narratives

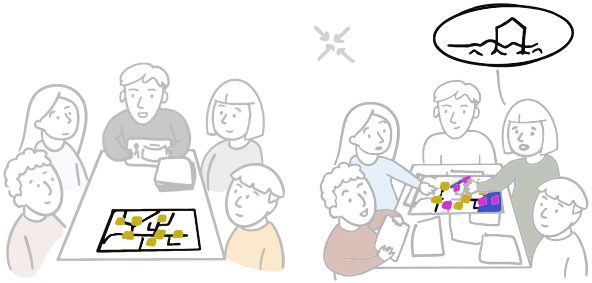


Figure 49. Value map introduced in the narrative discussion for world-building

5.3.4 Phase 4: Storymaking

Changes

- The story scale was adjusted from a timeline across years to a single day (in 2100) to bring it closer to the lives of the participants (Figure 50)
- The character creation was advised to be more relevant to the participants
- Collaborative decision-making about the character's response was removed, since it could interfere with individual prompts and reduce equal participation (Figure 51)
- This freed up time for a second story, in which participants were asked to include two randomly selected mapped places of meaning (Figure 51, Figure 52). This part was improvised as the time save was not considered. Because participants were interfering with each other's stories, a 'yes, and...' rule was introduced to encourage building rather than blocking (R4.b)

Risks

- The scope of a day could be so small that it limits exploration
- The lack of a collaborative decision could reduce engagement with more downtime

Reflecting on the changes

Good:

- The one-day format helped. It made the story feel more manageable and easier to connect to everyday life. The second story where mapped locations had to be included was stronger and more grounded. However, the random selection limited exploration. Participants stuck to those two spots and ignored others. *Letting participants choose their own relevant places would have supported more organic storytelling.*
- The "Yes, and..." improved flow in the second story. *This should be introduced from the start to encourage collaborative building and prevent contradictions.*

Improvement needed:

- The first story felt unfocused. Likely due to the predefined final event, led to reverse plotting as participants had an idea of how the story would go to that event, trying to steer the story ('*Parents don't respond*' to '*Luckily nothing was wrong*'). *Since the one-day format already offers enough structure, the final event card should no longer be needed. Also a "yes, and..." rule should be standard to the format.* *(More on the next page)*

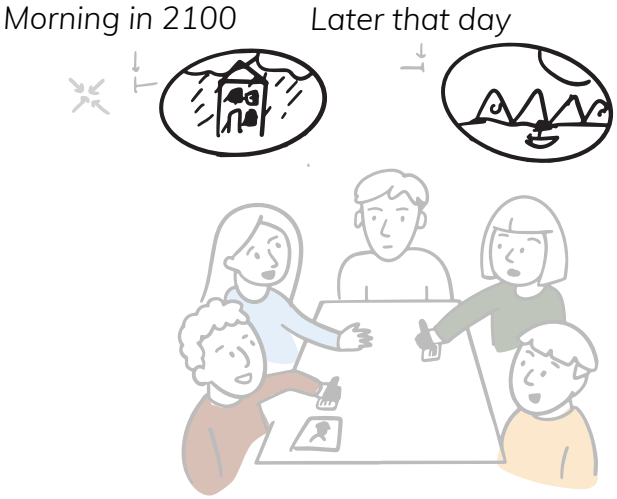


Figure 50. Decreasing timescale from years to a single day

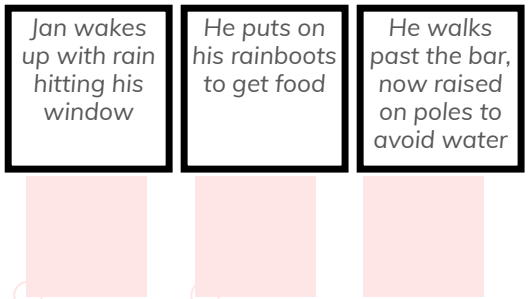


Figure 51. Timeline example without the character impact and smaller event timescale, with a meaningful location (bar)

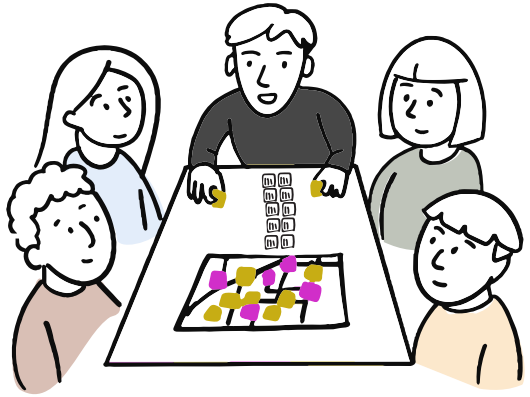


Figure 52. Added exercise for Story 2 to involve 2 random places of meaning from the map in the story

- Randomly selected specific mapped locations limited participant exploration (R2.c). The story ended up centered around only the randomly selected places (*Rotterdam Station* and *Café Oude Sluis)* with no other areas explored. Instead, *location return should be encouraged more lightly, through prompts that invite connections, rather than enforce them.*
- The character was mostly absent. Without a moment of collective reflection on what events meant for the character, there wasn't a strong thread. Still, having a character can remains valuable. It can help participants explore possible futures (R2.b), even if the character emerges gradually rather than being defined upfront. *The character can emerge naturally as participants move through the story and still help participants explore the future.*
- Finally, the second story didn't include any water-related content. This confirms that *a stronger world-building phase is needed*, not just to build context, but to make sure climate risks stay present in the storytelling.

5.3.5 Workshop elements

Flow:

The world-building helped with the flow, creating a better bridge between Phase 2 and 3. However, the planning for this workshop was somewhat rushed. The lack of good, defined structure created chaos for me as a facilitator which also showed in the workshop results. *A better script and structure is needed for the next workshop.*

Map:

Adding imagined future changes to the map increased participant engagement during exploration. The act of sketching or marking the future brought ideas to life in a tangible way. That said, its full potential wasn't tested alongside a well-grounded story. It shows promise, but its *impact should be evaluated further in a more structured and narratively grounded setting.*

Facilitation:

Facilitator presence remains key (R7). Flexibility allowed for improvisation in the second story, which led to a good outcome. As the session progressed and I became tired, my facilitation lost momentum, leading to drifting storylines with abstract technologies and little connection to water. *Clearer rules and stronger facilitation can help keep focus. A better personal structure is also needed to stay focused and maintain energy*

Engagement:

Participants stayed engaged overall and had to be reminded to stop exercises as they wanted to continue. Again, an energy dip occurred during writing moments, when participants waited for others to finish. This kind of downtime is expected, but discussions about character motivation helped keep the group engaged during those lulls. One participant, who knows me personally, suggested that my reading of group energy may be influenced by my ADHD. They didn't find the slower parts boring, but *a better session time could still improve attention and energy levels.*

5.3.6 Conclusion

The changes to story scale and the world-building phase were promising. They brought the story closer to participants' lived experiences and supported more grounded exploration. However, the storytelling phase still fell short of expectations. The workshop was not structured well and got chaotic, there wasn't enough structure to connect the values and risks to the final narrative, and the story was lackluster.

While this was intended to be the final version, the lack of strong story outcomes made it clear that another iteration was needed. In particular, world-building should become a central product of Phase 3. This shared world can provide structure, support exploration of water challenges and values, and — when well developed — become the setting in which the final story takes place. Making the world as a shared product of the group also supports collaborative storymaking

5.3 WS3 - One more final test

After Workshop 2, it was clear that while the new structure had potential, the session was too chaotic and the storytelling still lacked coherence. Workshop 3 focused on tightening the format: improving the script, simplifying materials, and expanding the world-building phase. To avoid the energy dip seen in previous sessions, this workshop was held during the day. Though the group still consisted of friends, the goal was to test whether the updated structure would relate more clearly to participants' lives and provoke reflection on climate futures.

Results of the phases can be seen in Appendix D.3

5.4.1 Phase 2: Meaningful location exploration

Changes

- A clearer prompt with examples was introduced:
  - What kind of place it is (e.g., transport, food, study, nature)
  - What it represents (e.g., pride, joy, stress)
  - How it relates to Rotterdam (e.g., typical, atypical, not at all)

Risks

- The examples might steer responses too much

Reflecting on the changes

Good:

- The structured prompt worked well. It helped surface a wide range of values from infrastructure pride to specific disliked bike routes and relaxing spots along the water. People shared personal places like Riff010, which reflected Rotterdam's spirit in unexpected ways. The examples did not overly steer responses.

Improvement needed:

- The final part of the prompt, how the place relates to Rotterdam, didn't yield much. OOnly one participant mentioned it, and it added little to the discussion. This element can be removed, while keeping the structure for identifying place and meaning. *Simplifying the prompt should improve clarity without sacrificing depth.*

5.4.2 Phase 3: Future exploration

Changes

- The phase was split into:
- 3a: Problem Exploration – Focused on broad climate risks like rising sea levels and increased rainfall (Figure 53)
- 3b: Changed World – Explored how Rotterdam might respond to these risks using simplified Deltares narratives (Figure 54)
  - The underlying dimension axes (2.3) were explained to provide context
  - Narratives were stripped of societal changes and reduced to physical impacts (Figure 55)
- After each phase, participants were prompted to explore how changes would affect Rotterdam and their personal places of meaning.
- This allowed participants to begin converging before Phase 4, creating a stronger foundation for a more coherent story phase (Figure 56)

Risks

- Participants might find it too difficult to identify and articulate relevant problems

Reflecting on the changes

Good:

- The world-building brought participants into the future of Rotterdam. They imagined a dynamic city shaped by water: rapids, wet feet, and the Maas overflowing its banks. They also explored possible responses — like green spaces to capture runoff, spillover zones, or flood-adapted infrastructure. Even failing infrastructure or temporary inaccessibility became part of the imagined city. These ideas brought out values like mobility and resilience.
- Drawing on the map encouraged engagement and showed that world-building was taking place both visually and narratively

Improvement needed:

- The axis explanation confused participants and didn't add value. *It should be removed.*
- Although the narratives were simplified, reading the full text still slowed things down. *Bullet-point summaries will be used in the next version to make the core ideas quicker to grasp.*

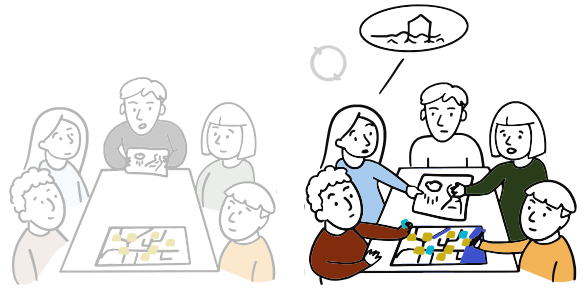


Figure 53. Phase 3.a - Problem exploration. Exploring the problems and putting them on the map

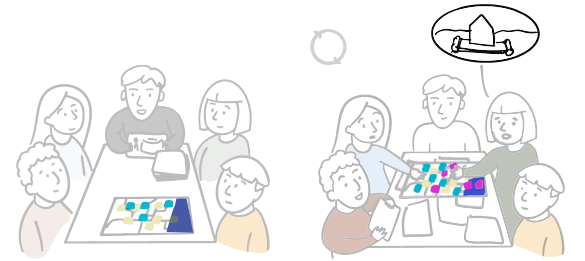


Figure 54. Phase 3.b - Future exploration. Thinking of possible future changes, with problems already on the map

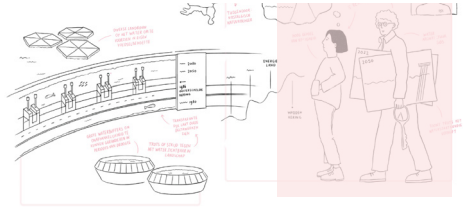


Figure 55. Narratives with removed social aspects, only looking at physical developments

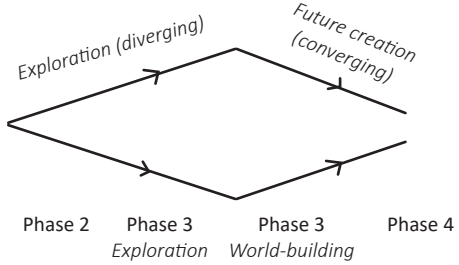


Figure 56. Changed diamond from 5.1.1, Figure 32. The world-building from Phase 3 now starts converging ideas

5.4.3 Phase 4: Storytelling

Changes

- Script improved for clarity.
- Final card removed; instead, the story began with “this person has a plan for the day.” This still provided an initial direction, but because plans can change, it was harder for participants to anticipate a fixed storyline and steer it (Figure 57)
- Character creation was simplified. Participants introduced the character in the first event rather than setting everything up beforehand (Figure 57). Exploring the character can help explore the world, whereas setting the character stuck in the beginning can limit exploration
- Participants were encouraged (not forced) to revisit mapped values and draw more.
- A second story was prompted to explore a different tone (utopian vs. dystopian)(Figure 58), inspired by A Thing From the Future (2018), in the hope that this would create some conflict which can surface interesting ideas

Risks

- Looser structure can lead to weaker stories
- Engagement can drop again
- The utopia/dystopia framing can be confusion

Reflecting on the changes

Good:

- The first story was strong and stayed grounded. Participants introduced characters like “Gerda,” who had to move due to flooding, or adapted with special gear like water-running shoes. Moments like yoga at 80, a zoo underwater, and homes crashing on Heemraadsingel, all tied back to earlier locations and showed deeper values like health, adaptability, or water as leisure.
- The narratives and future complications from Phase 3 reappeared organically. For example, water damage influenced behavior (e.g., not putting valuables on the ground floor), and spontaneous references to flooding or adaptive design suggested that the world-building phase worked as a perceptual bridge. Even if the exact scenarios weren’t copied, their influence was visible.
- The removal of the final event card worked well. The story still had direction but felt more open, and participants didn’t try to rush toward a fixed conclusion and were often suprised with where the story went.

Figure 57. A collaboratively decided plan for the day to start the story without a final event. This is also the character creation.

Figure 58. The second story should be in a dystopian or utopian world (The opposite of the first story, which was reflected to be good or bad) instead of adding 2 random locations.

- The character introduction through the first card was effective. Characters like “Gerda,” who had to move due to flooding, became part of the world without needing an elaborate backstory. Participants still saw the world through her eyes. This shows that a light-touch character setup allows exploration without over-defining.

Improvement needed:

- The second story was weaker. The dystopia prompt alone didn’t generate the contrast I’d hoped for. Participants weren’t sure how to begin and struggled to find a unique tone. The result was less coherent and didn’t connect to their lives as directly.
  - *Reframe the second story prompt to invite a different perspective rather than just a different tone.*
- Some unrealistic or abstract elements (a teleporting bus, radioactive seal) slipped in.
  - I allowed participants to stay in the moment to avoid breaking flow. Since they were minor and didn’t shape the world, I’ll continue to monitor for this but won’t change the method. Steering through light facilitation should be enough.
- There was still a drop in engagement during the storytelling exercise. Participants didn’t disengage entirely — no one looked at their phones, and snacks helped fill small lulls — but the energy still dipped. It had me wondering if another method would perhaps have been better suited to maintain engagement. There is a tension between giving participants things to do and equal participation, as the more inputs participants have, the more they can influence each other.
  - With only one workshop left and this structure finally producing good stories, I won’t change the format entirely. The risk of trying something untested is too high. *I can try to think of a possible improvement that fits into this workshop method that increases the engagement.* This reflects the risks of prototyping discussed in Section 4.1.3.

5.4.4 Workshop elements

Flow:

Removing the final card and character creation helped streamline the story’s start. The map’s continued presence across all phases created a natural link between exercises and grounded participants in a shared world.

Map:

The map became a central tool used not only for exploring personal places (Phase 2) but also for designing the future world (Phase 3) and referencing events during storytelling (Phase 4).

Facilitation:

Live facilitation improved outcomes. Light nudging away from irrelevant or exaggerated scenarios kept the story on track without undermining participant ownership. Having a better script gave me the confidence to guide effectively.

Engagement:

While the engagement was steady in the previous workshops, the map element pushed it a little further. Creating the future world had people drawing and actively searching for places that could be changed by the climate change.Some participants needed reminders that they could draw, but once they did, engagement increased.

The engagement drop in the final story was still present during the day. Prompting inactive participants with questions like ‘Where is this person on the map now?’ did help re-engage them without steering too strongly.

Engagement with the possible future :

This workshop showed that the method can shift how participants think about climate futures. Initially confident that “smart people would solve it,” the group began to question whether adaptation would be enough. The follow-up survey confirmed that participants became more aware of how climate change could impact their lives, suggesting that the storytelling exercise, combined with world-building, supports the workshop’s core goal.

5.4.5 Conclusion

This iteration felt coherent and complete. The tighter script gave both structure and flexibility, and the redesigned world-building phase provided a scaffold that carried through to the final story. The world-building helped tie the phases together, making each one clearer and serving as a reminder of participants' values and the future changes they imagined.

While small elements still need adjustment — such as the second story prompt and the narrative summaries — these are refinements, not major changes. The overall format worked. Participants explored a future through stories grounded in their values and surroundings, and they demonstrated a shift in how they think about water risks and urban change. For the first time, the workshop method felt not just promising, but ready. This version will be taken forward to the Terschelling session as the testable final prototype.

The final workshop was originally planned for Terschelling, where the goal was to test the method with participants directly affected by climate-related risks (3.3.12). Unlike earlier workshops with friends, these participants would not know me personally — potentially making the feedback more critical and authentic.

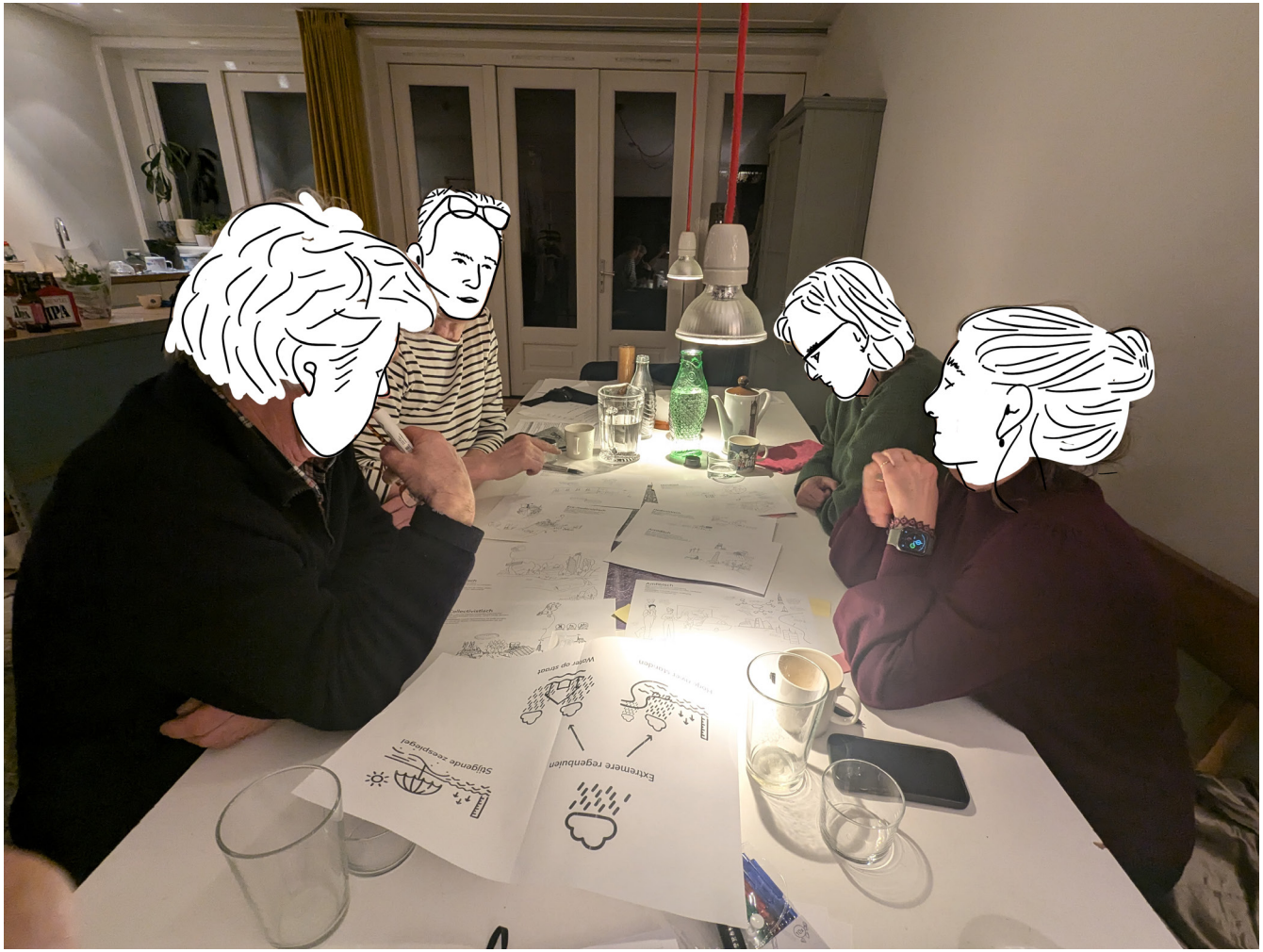
To recruit participants, I reached out through Deltares, who supported the workshop and helped me connect with their Living Lab network on the island. I pitched the workshop, demonstrated its relevance, and emphasized its value to future planning. My target group size was 4 participants, consistent with earlier sessions. 3 would also have been acceptable.

With Deltares' support, I directly reached out to over 20 locals. I also used my network by posting on LinkedIn (with 25 Terschellingers being tagged) and contacting the Zeevaartschool, local government, and local newspaper. After postponing and rescheduling the workshops three times, I was unable to secure more than two participants per session. Figure 59 shows one of the approaches I used to reach participants through the Living Lab network..

In response, I shifted focus and conducted a fourth workshop with acquaintances of my parents — people I didn't know personally, who might offer more honest or critical responses. The aim was still to get more authentic feedback while continuing efforts to recruit on Terschelling in parallel. When those efforts ultimately failed, I organized a fifth workshop with a similar older audience. While not ideal, conducting two sessions with an older demographic offered valuable contrast and broadened the insights besides to the earlier student workshops.

Figure 59. Recruitment visual send to LivingLab participants

5.6 WS4 - First final workshop Muiden



This was the first workshop with a different participant group, focused on a different living environment and an older age group. It was also the first session to be recorded for more in-depth analysis. The goal was to test whether the Collaborative Future Storytelling method could bring future water risks closer to the everyday lives of citizens outside the original Rotterdam context.

As this was a final workshop using a nearly completed version of the method, it will be analyzed more extensively later in the thesis. However, since one more workshop was still planned and there was room for improvement, this session is also reflected on and iterated upon here. The full analysis will be shown in chapters (6.2).

Results of the phases can be seen in Appendix D.4.

5.6.1 Phase 2: Meaningful location exploration

Changes

- Removed the “Relation to the area prompt“ (Figure 60)
- Printed sheets were provided with potential locations and values for inspiration. These included a wide variety to avoid steering and were generated by ChatGPT (2025) to prevent facilitator bias.
- Two maps were used: One of Muiden and one of Muiderberg. This seemed like the best option as the participants lived in separate but nearby areas (Figure 61).

Risks

- The printed values might be copied directly.
- Participants might only place values in their own town, losing the collaborative aspect.
- The small geographic scope could exclude important parts of their lives.

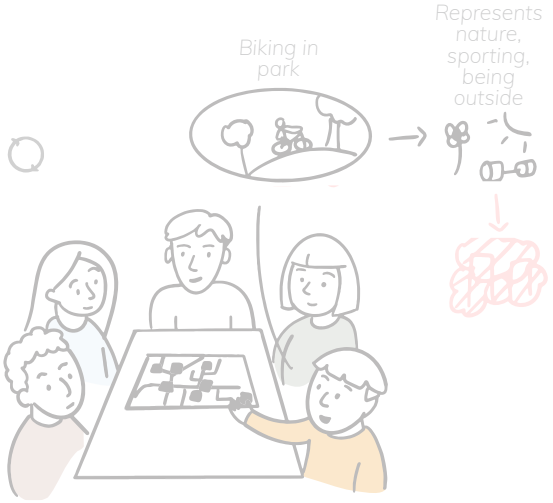


Figure 60. Removed the relation to an area from the value exploration exercise

Reflecting on the changes

Good:

- Participants placed values across both maps. While each had a preferred area, they were familiar with both towns, so the results still felt collaborative.
- The older participants could easily draw on lived experience, sharing rich stories tied to local places. Some had to be nudged to keep it brief, but this was manageable with light facilitation.
- The smaller area helped set the context of a possible future world, but did not limit them in exploring outside the area as they move to Amsterdam.

Improvement needed:

- A few participants only copied values directly from the printed sheets. *These could be introduced as inspiration, then removed before the exercise starts.*

Figure 61. Map selection process for Muiden and Muiderberg. Top left: final choice showing only the two towns. Top right: rejected for having too much empty space. Bottom right: rejected for assuming which locations would matter to participants. (Google Maps, n.d.)

5.6.2 Phase 3: Future exploration

Changes

- Removed the narrative axes entirely to reduce complexity.
- Converted narrative descriptions into bullet points (What / How / Specific solutions) to improve clarity (Figure 62).

Risks

- The narratives could be interpreted purely as technological fixes rather than also prompting mindset changes.

Reflecting on the changes

Good:

- For the first time the narratives caused absolutely no confusion. The bullet point format helped participants grasp the essence quickly.
- This understanding allowed me to later explain the broader -scape axes like “meebewegen” vs “controleren” (adapt vs control) if desired without creating an initial information dump, showing facilitator flexibility.

Improvement needed:

- Most water-related problems and solutions ended up on the Muiderberg map. Since it included the IJsselmeer, it likely made water impacts more visible. This didn’t cause issues in this group, as all participants had values linked to that area, but it’s worth keeping an eye on in future workshops to avoid skewed outcomes.
- The future world-building itself stayed limited. Only six changes were added to the map, and a few small drawings — most of which needed a prompt from the facilitator. This group seemed to prefer talking over drawing, and most of the elements that ended up in the story came from the discussion instead of the map. *It might help to add a short exercise that builds the world more clearly before moving into storytelling.*

Figure 62. Changed the narratives from text to bullet points to improve clarity

5.6.3 Phase 4: Storytelling

Changes

- Replaced the dystopia prompt for the second story with an “event + hero” structure. Inspired by the Terschelling newspaper exercise, this aimed to bring the story into a new context while keeping it personal (Figure 63).
- Asked participants to draw more during storytelling to support engagement and creativity.

Risks

- With two different towns, the story might lack a shared setting and lead to conflict.
- An “event” could push the story too far from lived experience, especially if unrealistic.

Reflecting on the changes

Good:

- There was no conflict in choosing the settings: one story started in Muiden, the other in Muiderberg, which felt natural for the group.
- Stories were still good as in the last workshop.
- The first story eventually moved to Amsterdam, which initially seemed to stray from the local map. However, this actually showed that participants were grounding the story in their real lives. They couldn’t revisit mapped places directly, but key values like sports, nightlife, and community did reappear, just in a new location.
- The hero + event prompt worked well. It helped frame the second story and gave it a different tone from the first, which helped sustain interest.
- Both stories explored the changed world and touched on personal experiences in different ways.

Improvement needed:

- Participants had to be nudged to draw, but it didn’t resonate, so I dropped it partway through. The resulting engagement was still low. Because the session had to take place in the evening, participants — especially during the second story — got tired and less focused.
- Because this session showed that the method works, the next workshop could take more risks to improve engagement. With the core approach already validated, there’s room to experiment.

Figure 63. The second story about a hero in a flood rather than the utopia/dystopia

5.6.4 Workshop elements

Flow:

The structure remained effective. Activities built logically on each other, and the transition between phases stayed smooth.

Map:

Using two maps worked, as long as both were relevant to participants. They interacted with the map during the value mapping phase, but didn't naturally return to it when imagining their future world. For some groups, *collaborative world-building on the map might not be necessary* as they still imagined rich and relevant futures through discussion alone.

Facilitation:

Light facilitator input remains necessary. Flexibility in explaining "meebewegen" vs. "controleren" during the narratives showed that small clarifications can help participants who are ready to engage with more complex ideas.

Engagement:

Strong in early phases but lower during storytelling, especially the second story. Timing and energy likely played a role. Drawing didn't resonate with this group and didn't help increase engagement.

Engagement with the Future :

- Reflections on how participants engaged with future thinking are discussed in more depth in Section 7.3.2.

5.6.5 Conclusion

This workshop confirmed that the method works with an older audience and in a less clearly framed living area. Participants engaged meaningfully with the map, placed personal values, and created stories that reflected relevant water futures. The new "hero during an event" prompt offered variety without sacrificing relevance.

However, engagement during the storytelling phase remained low. Participants didn't draw, even though it was included to help increase engagement (R5.a). Evening timing likely contributed to lower energy. With the method now validated, the next workshop can focus on testing a more engaging storytelling format without changing the requirements.

5.7 WS5 - Second final workshop Bussum

This workshop served as a second validation of the CFS method, focusing on how a probable future could be meaningfully connected to participants' lives. The previous workshop involved participants who lived near water and were already familiar with water-related risks — possibly due to their shared sailing background and the fact that they lived next to a lake. This workshop helped validate the method with a second group who might be less familiar with water issues and future thinking. Also, Since the previous workshop proved that the method works, this session tested a more experimental format to improve engagement — even if it risked a less suitable result.

Results of the phases can be seen in Appendix D.5.

5.7.1 Phase 2: Meaningful location exploration

Changes

- No changes

Reflecting

Good:

- Participants explored meaningful locations. Unlike the previous workshop, they kept their values short. With more facilitator guidance, these could have been explored in more depth.

5.7.2 Phase 3 & 4: Future exploration & Storytelling

The change:

- To improve engagement during storytelling and support cognitive engagement, the collaborative map-building activity was replaced (Figure 64, Figure 65) with an individual future-exploration exercise. After discussing the Deltares narratives and broader climate challenges, participants wrote down three future changes using the format: “Because this happened, this changed.” These were then shared with the group (Figure 66). In Phase 4, each participant was asked to integrate one of a neighbor’s future changes into their own story (Figure 67). This light constraint was expected to prompt deeper thinking about others’ imagined futures.

Why:

- The main aim was to increase engagement during storytelling. The individual writing task gives participants something to think about while others are still working, which might help maintain attention. Thinking critically about someone else’s future can support cognitive engagement, while also sparking some emotional interest — especially as participants see their own ideas taken up by others.
- Equal participation is preserved through the turn-based format. This change might even support collaboration by prompting participants to think with others’ contributions, not just their own.
- The approach builds on Workshop 2, where incorporating random values led to stronger stories and the structure was well received. Here instead of randomness, participants draw from participant created futures related to water risks.
- Adding a brief individual reflection phase may also improve workshop flow. The shift in activity type could help reset attention and increase engagement before the final phase.

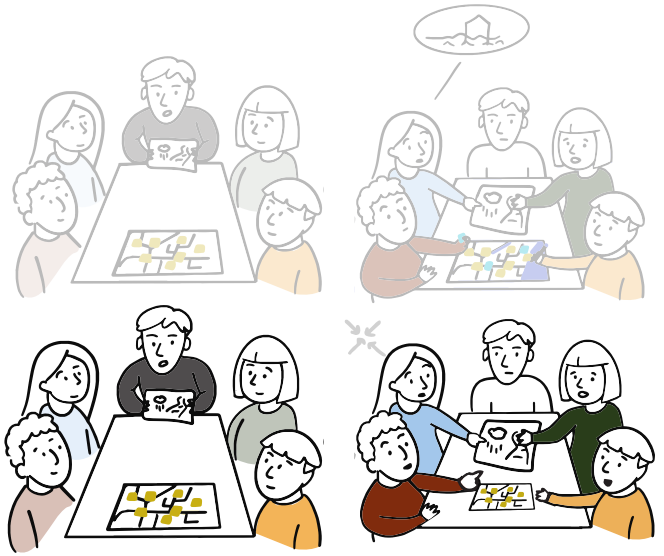


Figure 64. Phase 3.a - Still problem exploration, but removed putting changes on the map

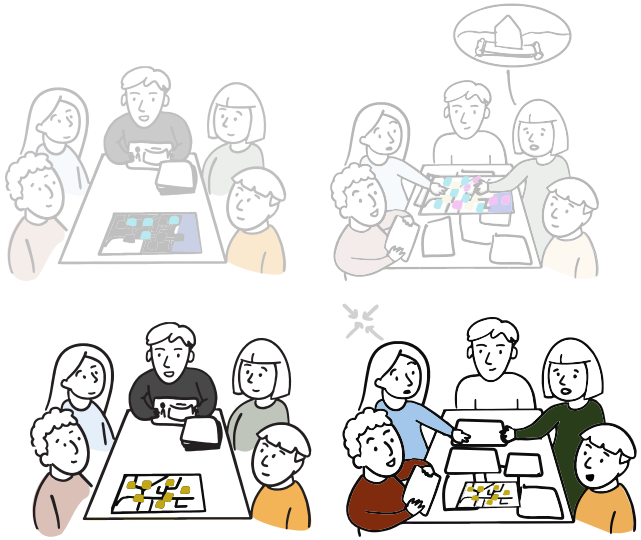


Figure 65. Phase 3.b - Still narrative exploration, but removed putting changes on the map

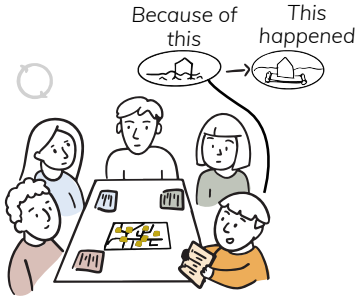


Figure 66. Phase 3.c - Write and quickly present individual changes

Figure 67. Phase 4 - In one event card participants include a change from another participant

Risks

- This change reduces the collaborative world-building aspects. However, in the previous workshop, participants engaged little with the map during this phase and most future thinking came from discussion. It may be that what worked previously wasn't the map itself, but the act of putting future ideas on paper. If so, the individual exercise may still serve that purpose. Presenting their futures to the group might recreate a sense of shared world-building, even without direct co-creation.
- Without the collaborative world-building phase, the future world isn't explicitly defined before storytelling begins. WS2 showed that world-building can be an engaging way to explore the future (4.5.2), but in practice, participants focused more on the problems than on the physical map. That was clear in Phase 3, where few post-its were added and the map remained mostly unused. A shared future can still emerge organically through the stories, much like character development did.
- There's a chance participants might have difficulty fitting another person's idea into their story. Offering three options and flexibility in where to include them should leave enough room for creativity. If it doesn't work, that's fine — the goal is to prompt reflection, not force integration.

Reflecting on the changes

Good:

- The future visions were strong and clearly linked to earlier value mapping and discussions. Participants were curious about how others imagined the future, which led to some surprising — even confronting — but relevant scenarios. This challenged their assumptions in a similar way to the dystopia prompt from WS3, but through integrating others' ideas rather than steering tone.
- Participants successfully wove these changes into their stories. It wasn't always visible during the session. I had to review the stories afterward to trace which ideas came from others showing that the integration happened naturally.
- Engagement was higher. Participants regularly checked each other's prompts while writing and enjoyed seeing their own ideas reflected in others' stories. The method clearly encouraged more active thinking.

Improvement needed:

- Without a collaboratively built world, it looked like participants were more hesitant to imagine large-scale or systemic change. In earlier workshops, shared decisions like floating villages or flood rapids created a clearer sense of a transformed world. That context was missing here, and as a result, participants tended to explore a changing future rather than a changed one. This likely made it harder to introduce transformative elements, like collapsing infrastructure in Workshop 4. While personal climate impacts were still visible, the absence of more radical change may have limited reflection — as discussed in 2.5.1, futures too close to the present don't push participants to think deeply.
- This also shaped the storytelling. The first story lacked a clear sense of change: themes like unsellable houses and growing food appeared, but felt loosely connected — more like a train of throught than a narrative. Without a shared future context, it was likely harder to ground the story in a coherent world. In contrast, the second story, centered on a flood, had a stronger setting. Although the world hadn't adapted, the flood could have created a concrete anchor that helped the story take shape.

5.7.3 Conclusion

The changes improved engagement but limited world-building, which led to a more disconnected story and a future that felt like it was still changing, rather than already changed. This confirms that world-building matters — it's not just about listing changes on paper.

In WS3 and WS4, when engagement dropped, stories often became disjointed. In ~~contrast~~, the second story here was more internally connected than the first, which helped make it more imaginable (2.1.1). This can be an indication that keeping engagement does result in better stories. However the is probably a tradeoff with value exploration. The second story here barely explored any locations or values. *Ideally, the method should be adapted to preserve world-building while still supporting engagement and equal participation.*

Despite this, the story was still relevant and connected to the lives of the participants, showing that the storytelling and general workshop progression still work.

5.8 Schematic overview of the WS itterations

The following 2 pages show a schematic overview of the workshop iterations with on the horizontal the phases and on the vertical the workshops, keeping the individual moments above each other.

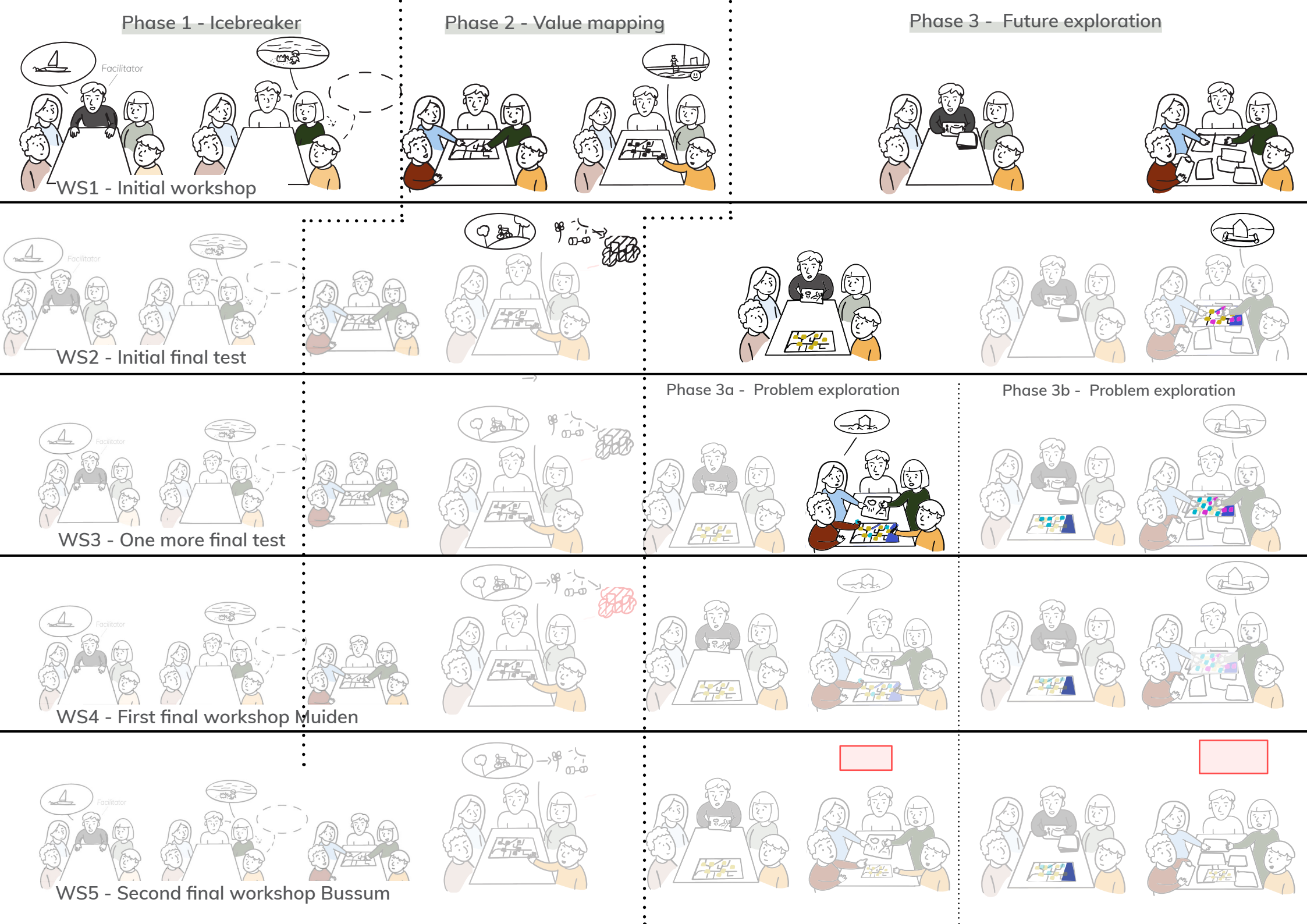
Just like the rest of the chapter, the following visual styles are given to the elements of the itterations.

Workshop elements:

- *(Light red)* = *Element removed since last iteration*
- *(Grayed)* = *Element unchanged*
- *(Black)* = *New / changed element*

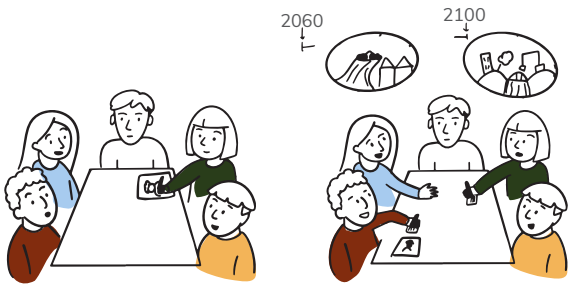
Participant / facilitator shirt:

- Muted color = Participant silent
- Full color = Participant talking / Involved in discussion
- White = Facilitator facilitating
- Gray = Facilitator explaining


Phase 1 - Icebreaker
Phase 2 - Value mapping
Phase 3 - Future exploration
Facilitator
WS1 - Initial workshop
WS2 - Initial final test
Phase 3a - Problem exploration
Phase 3b - Problem exploration
WS3 - One more final test
WS4 - First final workshop Muiden
WS5 - Second final workshop Bussum

Phase 4 - Storytelling

Story setup



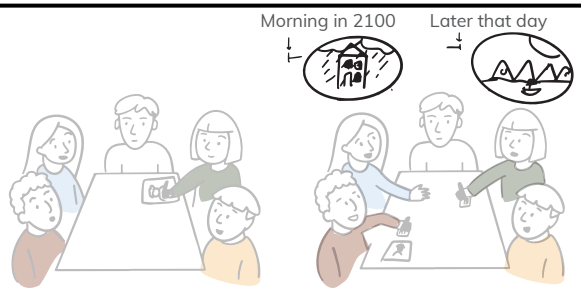
Story 1

People start demonstrating against policy

New living with water legislation is enacted

Jan joins the protest as his house was destroyed, finding help

Jan gets assigned a floating house but he can't swim

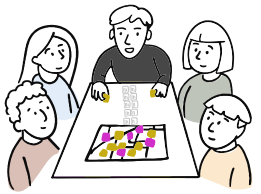


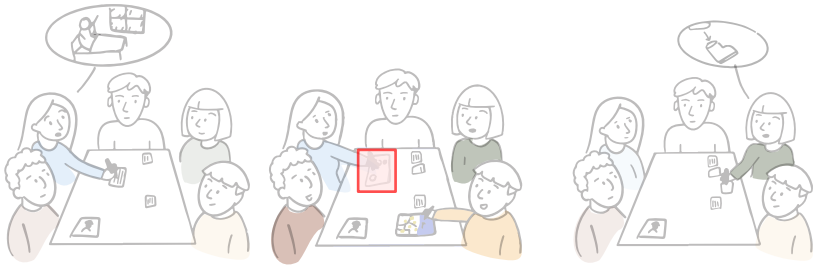
Jan wakes up with rain hitting his window

He puts on his rainboots to get food

He walks past the bar, now raised on poles to avoid water

Story 2

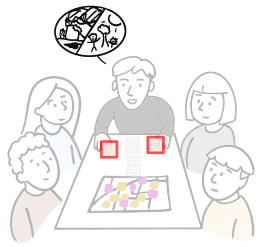


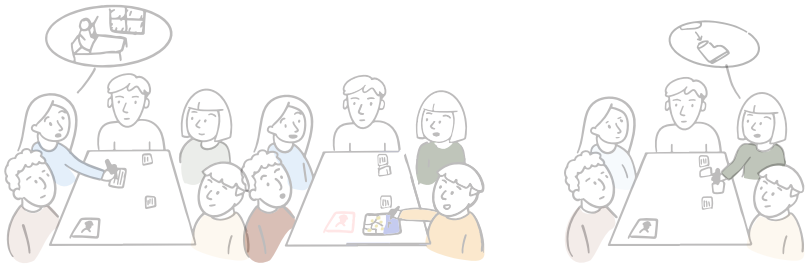


Jan wakes up with rain hitting his window

He puts on his rainboots to get food

He walks past the bar, now raised on poles to avoid water



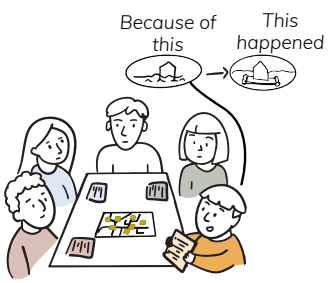


Jan wakes up with rain hitting his window

He puts on his rainboots to get food

He walks past the bar, now raised on poles to avoid water

Phase 3c - Personal futures



Jan wakes up with rain hitting his window

He gets in his boat and sails to his fathers floating home

He walks past the bar, now raised on poles to avoid water

6. Results

What are the outcomes of the project?

This chapter presents the results of the final workshops, beginning with how they were analyzed before discussing what they show. It first explores what participants created and shared during the sessions: What values, concerns, and future visions surfaced through their stories and discussions. Then it evaluates how well the method worked in practice, based on the criteria developed earlier. Together, these two parts provide insight into both the outcomes of the workshops and the method's effectiveness — which is reflected on further in the final conclusion.

6.1.1 Result analysis

To extract usable values and future assumptions — for example, for Deltares — the results need to be analyzed beyond surface-level data. The analysis is based on the framework from Sanders and Stappers' Convivial Toolbox (2012), which sees generative outputs like stories, drawings, and post-its as ways participants express personal and often unspoken knowledge. As seen in this approach, you move from:

- data (what people say, do, or make)
- to information (structured and annotated)
- to knowledge (interpretation of what matters).

to get to the big picture results rather than small pieces of information as seen in Figure 68.

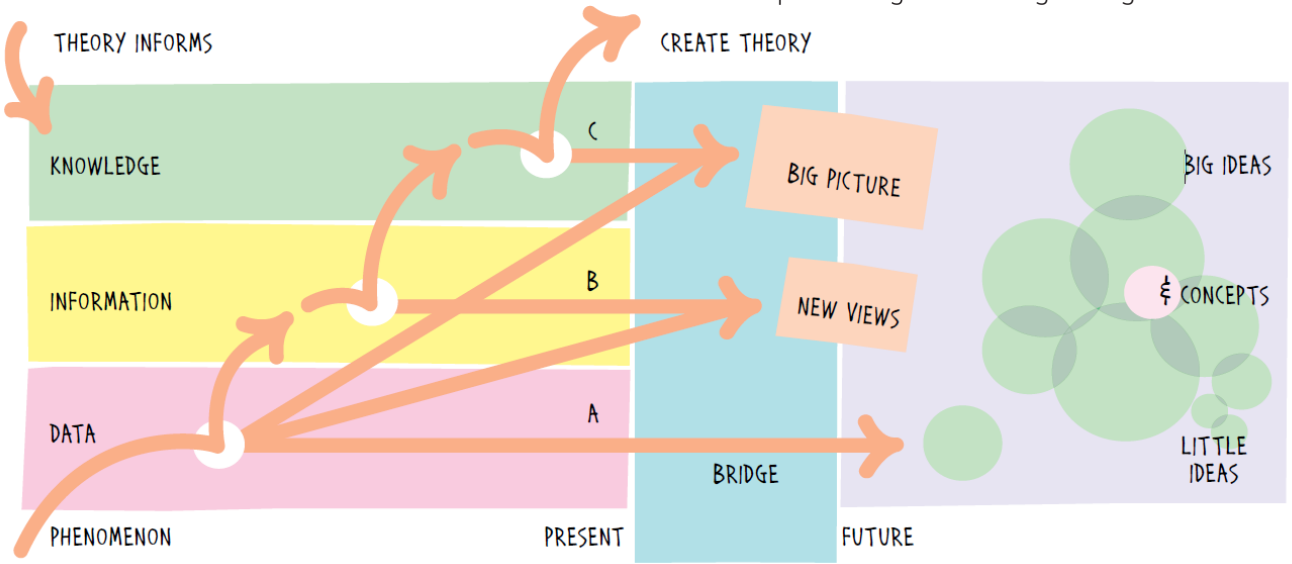


Figure 68. Bridging from research to design involves a shift from understanding the present situation to constructing possible futures (Sanders & Stappers, 2013, p. 204)

The goal is not objectivity or saturation, but to understand how people give meaning to the future. Jansen et al. (2023) support this idea by showing how short memo-style annotations and clustering can be used to surface values and concerns in co-creation sessions. Their approach also confirms the importance of being present in the session as a facilitator to understand what's really being said.

Step 1: Structuring the Data

Four types of data were collected:

- Post-its created during activity 2 (valued places) and activity 3 (scenario reflection)
- The co-created story from activity 4
- Audio recordings of the workshop
- Researcher notes and observations

Initial processing involves organizing and documenting these materials. Audio is selectively transcribed to extract key quotes and give context to the short post-its. Facilitator notes highlight moments of confusion, insight, or emotional response that may not appear in written outputs. This step sets up the structured data layer — organized and accessible without yet attaching meaning.

The story is treated as the central product of the workshop. The literature from chapter 2.2 mentions the benefits of storytelling to uncover values and make them deeper and nuanced, and as the story is the product of that, this is the most relevant. Earlier mentioned explicit values and concerns are still present and can also be interpreted, but it is not the focus.

Step 2: Data to Information

This step marks the transition from raw data to structured information, as introduced in Convivial Toolbox. Stories, quotes, and post-its are not meaningful on their own. To make sense of them, they need to be translated into short memo-style fragments that capture what is being said or suggested. These fragments, or memos form the first level of interpretation. They keep close to the participant's language but start to show how meaning is built.

Jansen et al. (2023) use a similar memoing process during live facilitation, mixing quotes with annotations to surface emerging insights. In this project, memoing is done after the session, combining story elements, post-it content, and audio-supported context, so as not to distract too much from facilitation. It helps to break down the material into parts that are easier to work with later.

An example from WS3, Story 1:

"From the hill, Gijs has a beautiful view over the city, a typical day. Gray sky, windspeed 9 and everything is under water."

This may yield:

- [Flooding is now part of daily life]
- [Still enjoying the city despite change]
- [Living with climate extremes as routine]

Memoing also enables different data types to be compared. A value written on a post-it might reappear in a story line, revealing which concerns or principles persist throughout the session.

Step 3: Analysing information through themes – clustering insights

Memoed insights are grouped using spontaneous clustering (Heijne & Van der Meer, 2019). This step organizes material into clusters named with short, descriptive phrases and tagged where relevant as values, concerns, or visions.

This process helps make sense of volume without forcing premature structure. According to Sanders and Stappers , this is where patterns emerge but interpretation is still held back. Clusters were named with short, clear phrases and tagged when they reflected a value, concern, or future vision. Patterns in the story were especially useful, as the story brings earlier reflections together.

Step 4: From themes to knowledge – interpreting values

In this final step, the researcher interprets the theme clusters to uncover what participants care about. This is where the shift from information to knowledge occurs — moving from clusters to interpreted values. Quotes, notes, and memory of the session support this process. Sanders and Stappers (2012) emphasize that knowledge is not taken from data but constructed by the researcher through presence, interpretation, and design judgement.

For example:

- [We need to be able to get around]
- [Being joyful is one of the best things]
- [Having friends around]

These may combine into a broader value: being mobile is important because it supports access to meaningful activities and social life. Some ideas are more direct like converting parking lots into overflow gardens but even these reflect underlying values like sustainability or shifting how we use public space.

Step 5. Narrative alignment and future vision

Besides values, the workshop can also show which narratives resonate with participants by comparing the story to the Deltares narrative framework from section 2.3.2 and shown on the next page. This is relevant for Deltares, who use these narratives in their public engagement work. While participants briefly discuss the narratives during the session, the real alignment often becomes visible in the story. As described in Chapter 2.2, people may give answers they think are expected, but their story shows how they actually see the future.

The story can also reveal the vision of possible futures and the concerns or assumptions that the participants have. This includes how people imagine adapting, what kind of infrastructure they think will exist, how they emotionally respond, and whether life in that future is seen as tragic, humorous, or hopeful. These visions are are shaped by story tone, choices, and what participants return to. It is the job of the researcher to see what elements surface more often, or seem more relevant in the context or what future changes uncover emotional reactions or can be discarded as a quick joke.

This analysis could be done more extensively, but for this test workshop the goal is to show what kind of insights Collaborative Future Storytelling can uncover rather than a full scale public value analysis.

Analysing in this Thesis:

After outlining the method of analysis, it is now applied to WS3, 4, and 5. WS1 and 2 were primarily used to refine the method. From Workshop 3 onward, the format enabled meaningful future engagement, making the outcomes analytically relevant. The analysis produced the following results:

The summary of the story – Summarised by me with slight interpetations by looking at what seemed relevant to the participants. Gives context to the other results. The second stories had a different prompt to incentivise divergent thinking.

Vision of the future – Interpreted from the stories as mentioned in the previous section in 6.1.5. Gives insights into assumptions and concerns of participants.

The values - Interpreted values, uncovered from thematic clusters as mentioned in 6.1.4. They describe underlying principles or ideals. These are often not explicitly stated but inferred from pattern in the stories, post-its and discussions. These emerging values are not the same as the personal values participants used to reflect on the future in 2.5.2. They are related, but these interpreted values are broader generalizations, combined from multiple values. The personal values are more numerous, and participant-specific.

Narrative alignment – Summarized below from section 2.3.2. Stories results are analyzed for narrative elements and ways of thinking and aligned on the -scape axis. Although related, the dimensions and narratives are analyzed separately: dimensions reflect broader orientations that may be harder to surface in a single workshop, while narratives surface more concrete elements which are more explicit. Separating the analysis helps avoid forcing connections by ensuring that individual narrative elements are not automatically treated as evidence of full alignment with the related dimensions, allowing a more accurate reflection of the complexity of participant thinking.

These outcomes as mentioned in 4.2.3 can be used by research institutions like Deltares to get insights into citizens in an area.

Narratives alignment

Collectivist - Manage water locally, protect heritage

Protectionist - Large scale defenses and independence

Global - International cooperation, smart technologies

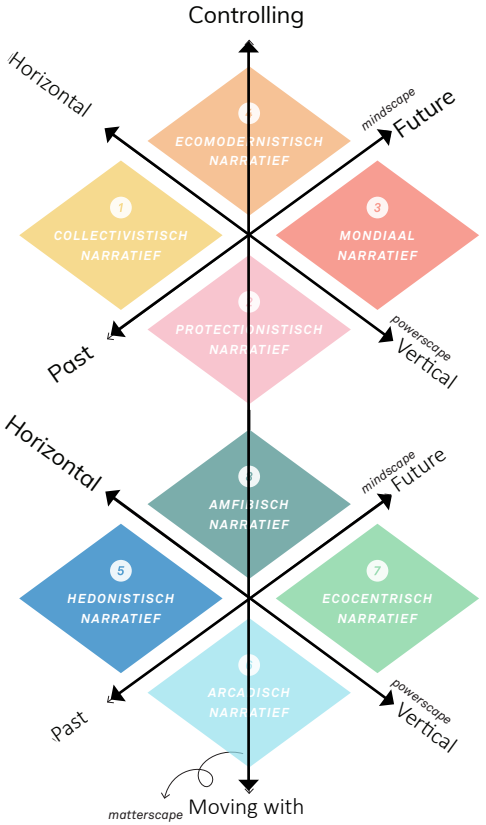
Ecomodernist - Keeping wild nature and humans apart

Hedonistic - Accepting problems will happen

Arcadian - Preserving cultural heritage

Ecocentric - Living with nature, where nature leads

Amphibian - Mobile communities moving with water



Axis alignment

Matterscape

Do participants create a future tries to control the problems (Controlling) or accepts and adapts (Moving with)

Powerscape

Is the future world controled and are problems handled by nation wide initiatives (Vertical) or do communities self organise (Horizontal)

Mindscape

Do participants create a future that holds on to the past (Past) or innovates moves with the time (Future)?

6.1.2 WS3 Analysis

Context: This workshop was done with 4 students who recently moved to Rotterdam. The workshop area is focused on Rotterdam.

Stories:

Story 1: A day in the life of someone living in 2100 in Rotterdam

Gijs wants to go for a run in his running rainboots Rotterdam is flooded again after the monthly superstorm. A house blocks the road, but the people inside just flipped their furniture and don't mind. With the road blocked, Gijs catches the local amphibian bus, SplashTours, which cruises past people on water-fatbikes. But he ends up at Blaak instead of Blijdorp. It's 2100 after all, teleportation is totally normal now. Still, he's happy about the detour and goes for a run towards Kralingse Bos. At a slow pace, he suddenly hits his biggest fear: a hill. He hasn't run in 75 years and is afraid he won't make it to the top. Luckily, there's an escalator. From the top, he overlooks his city. A typical day: gray skies, wind force 9, and everything underwater, the new Venice.

Story 2 – Make the story dystopian prompt

Gerda who wants to go "shredden (surfing)," but the metro and teleport bus are down, the streets are flooded, and a ship crashed into the Erasmusbrug. But Gerda is a survivor. She duck-dives waves, high-fiving a mutant seal from the Nuclear plant in Borssele, and surfing her way to safety with a found "vloedpakket." It ends with a shared egg and a handsome stranger on a hill at her usual after surf spot by the Kralingse Plas.

Vision of the future

Rotterdam floods regularly due to extreme weather because of climate change. Rotterdam floods regularly due to extreme weather caused by climate change. Water is now a part of life, but people adapt — using emergency kits, moving furniture, and wearing specialized running gear. Infrastructure can break down, even nuclear facilities are destroyed, but people adjust. The city changes, yet remains recognizable.

Values *(Supporting Themes and quotes found in Appendix E.1)*

i. *Experimental City Spirit:* Rotterdam is imagined as proudly practical and inventive, solving problems in its own quirky way. Infrastructure adapts with odd but effective solutions like the amphibian SplashTours bus or an underwater zoo. The city keeps its identity even as it floods.
ii. *Joy and playfulness in daily life:* Joy is essential, even in a future full of water. The stories refuse to be tragic. High-fives with mutant seals, teleporting to the wrong stop but carrying on, waves carrying flood kits. People laugh, adapt, and enjoy. A future with flooding can still be a future with love and eggs on a hill.
iii. *Physical activity and movement:* Staying active and sporty is necessary: Running and surfing are major themes. Participants want a city where you can move. Even if that means using waterproof running boots or duck-diving giant waves in the Maas.
iv. *Adaptation with emotional resilience:* We can and will adapt, but a sense of security is still missed. While people prepare well — with floating homes, moving furniture, and flood kits — there's emotional fatigue. "She still sheds a tear," the story says. It's not just about gadgets, but about stability
v. *Freedom of mobility:* Getting around must remain possible, even in a city affected by floods. Both stories are essentially journeys. Gijs gets teleported to the wrong stop but adapts. Gerda adapts to metro failures and flooded streets. Even in chaos, the ability to move freely matters to participants.

Narratives alignment

Hedonistic

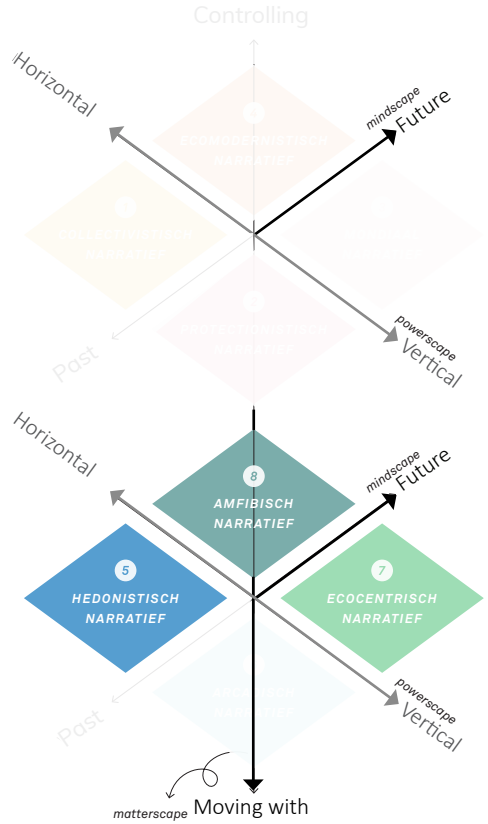
Not letting the troubles of the future affect the joy. Quick solutions and moving furniture

Ecocentric

Mentioned in the exploration through green overflow areas around the Maas and transforming parking lots into parks

Amphibian

Rotterdam adapts with floating infrastructure and transport



Axis alignment

Matterscape - Moving with water

The floods happen and the citizens does not resist but adapts through amphibian buses, surfing or running rain boots.

Powerscape - Inconclusive

The stories don't reflect clear collective action or centralized control.

Mindscape - Future-oriented

Accepted changes and imagined new systems that work with the changes, no trouble with giving up the old life.

Conclusion

The stories were sometimes surreal, playful, and even absurd, but they revealed what participants cared about: staying joyful, moving freely, and adapting without giving up what matters most. The floods themselves weren't the biggest problem, but losing connection and activity was. Even as Rotterdam faced destruction, participants could still imagine it as a new Venice: not just surviving, but finding new meaning in change. Figure 69 shows an AI interpretation of this envisioned future.

Figure 69. AI-generated illustration of a future vision of Rotterdam based on a user prompt (OpenAI, 2025)

6.1.3 WS4 Analysis

Context: 4 participants in their 50s, all avid sailors. 2 lived in Muiden, 2 in Muiderberg.

Stories:

Story 1: A day in the life of someone living in 2100 in Muiden or Muiderberg

Storm lives in Muiden, but works in a hospital in Amsterdam. He takes his boat to work but finds it too crowded at the terp where the hospital is located and cannot dock his boat. Patients have come from far away. Instead, he sails to the Zeedijk, where pubs stand on stilts to survive the floods. He drinks a beer with drunk and bored unemployed farmers and walks further, wondering where the sex workers went. They've been replaced by floating padel courts. He calls his friend to play a game and is glad that these padel courts still exists, when much of Amsterdam-Oost had disappeared. He feels guilty, returns to the hospital, and begins his three-day shift.

Story 2 – A story about a hero in a flood in Muiderberg in 2100

Robin wakes up to a storm warning on the radio. She gets dressed, prepares her rescue boat, and sails to pick up a disabled woman at the end of the street. She brings twenty vulnerable residents to her home, the highest point in the area, and gets food and water from the SRV (Rowing community) boat. She gathers volunteers to check weak spots in the reinforced dike. At the church by the sea, they repair a large breach. The rain continues, and the water keeps rising. Robin mobilizes more people with boats to secure a newly built floating neighborhood in the IJmeer with extra anchors.

Vision of the future

A future where sea level rise and extreme weather have become the norm. Amsterdam is partially flooded, hospitals lie on terps, villages float to handle the water but still have the insecurity of needing to be tied down and mobility is done by boat. The dikes need constant reinforcement and keep failing. Jobs disappear (like the farmers), people are forced to move or make do, and security remains fragile. Still, communities try to hold things together — caring for one another and keeping hospitals running through long shifts.

Values *(Supporting Themes and quotes found in Appendix E.2)*

i. *Helping others and taking responsibility when needed.* Participants showed that even in uncertain futures, helping others and stepping in when needed remains central. Whether through organizing rescue efforts, reinforcing dikes, or continuing essential jobs, people took responsibility when it mattered.

ii. *Connection to water and open spaces:* Participants valued living close to water for the sense of space, freedom, and relaxation it brings. Walking, rowing, and being outside were not just leisure activities but meaningful parts of everyday life.

iii. *Adaptability with protection of everyday life*: The stories show what it's like to live in a world that has already changed. Farmers have lost their jobs, and Amsterdam is flooded. The red-light district has vanished, and the hospital is barely reachable — now placed on a terp to rise above the water. Floods force constant rescues, and the dikes fail again and again. People adapt, but not without sacrifice.

iv. *Preservation of social connection and everyday joy:* Even in futures shaped by floods and uncertainty, participants found ways to keep social connections alive — gathering at bars, staying close as communities, and holding onto joy in difficult times

Narratives alignment

Collectivist

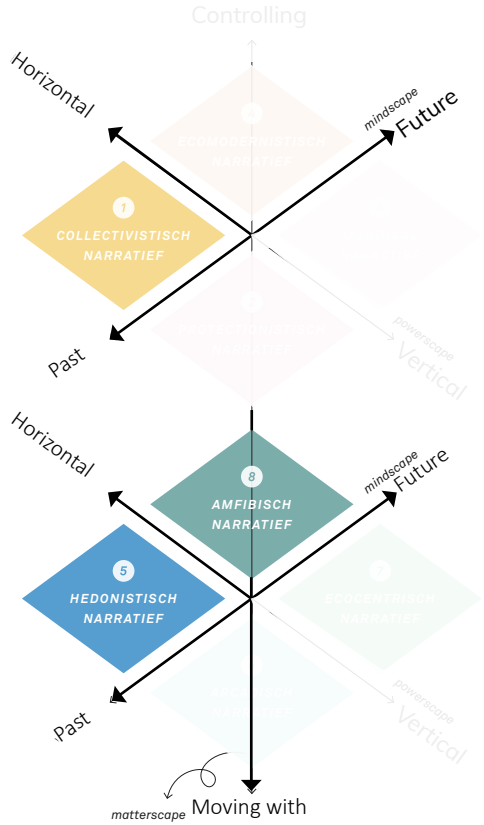
Communities care for each other and water safety has to be done by communities by strengthening the dikes and securing the villages.

Hedonistic

Muiden gets flooded and Amsterdam partially destroyed but people still live there and adapt, small moments of happiness in drinking a beer or playing padel.

Amphibian

People accepting that water is here to stay and adapting to it with boats and floating villages.



Axis alignment

Matterscape - Moving with water

Adapt with boats, putting pubs on poles and floating villages. Some protection done through dikes, but that seems more like a necessity rather than desired

Powerscape - Horizontal

Institutions like hospitals and dikes are fragile and overwelmed. Community action is needed in helping each other and surviving

Mindscape - Both ways

Future in that the world is changed and citizens have adapted through floating villages for example.

However historical aspects through traditions like terps, building on poles or dikes are still relevant, preserving the past

Conclusion

Participants offered a more realistic and grimmer view of the future. Their stories were grounded, shaped by experience and a growing sense of insecurity. People had learned to live with the water. Infrastructure was destroyed, life became more uncertain, and control was already seen as impossible.

These participants were older than the students from WS3, whose stories had been much more optimistic. They had already spent time thinking about the future and approached it with less naivety and more cynicism. Interestingly, while participants rejected the idea of moving further into the past on the mindscape axis, they still envisioned a future that preserved historic solutions — like dikes, terps, and poles — to stay dry. Figure 70 shows an AI interpretation of this envisioned future.

Figure 70. AI-generated illustration of a future vision of Muiden based on a user prompt (OpenAI, 2025)

6.1.4 WS5 Analysis

Context: Four participants from Bussum in their 50s. This workshop did not include the collaborative future world-building element, but focused instead on individually imagined changes.

Stories:

Story 1: A day in the life of someone living in 2100 in Bussum

Roos bikes to the KMS, brushing strands of hair from her face. It's a little less rainy today than the past few days. The Moutje's harvest will serve as dinner, and her kids have swim lessons this afternoon. She's dreading the parent teacher talk as the director probably saw the Te Koop sign in their garden. The school is emptying out, and in the lower area across the train tracks no one lives anymore. Trash bins float through the street. Later, she'll take the ferry to work in the watertower. The goats at the Koningslaan spot can wait until tomorrow.

At work, she checks the Future Storytelling method and picks the runaway scenario. Her eldest daughter still needs to choose a subject for school — probably something like aquatic ecology — so she checks the UVA site. Moving to Düsseldorf might also be a good fit. She can start learning German.

Story 2 – A story about a hero in a flood in Bussum in 2100 prompt

It's still dark, but the storm has calmed. Igor puts on his boots. Inflatable boats from the national Dick Schoof emergency package float aimlessly down the street. Cows from the Moutje and goats swim through the neighborhood. He spots a drifting, damaged boat with someone inside. Igor rows his fishing boat over the Landstraat, picks up the castaway, and they head to the water tower to press the giant red pumping button to drain the city — or at least that's the idea. Two fatboats race past without stopping, probably looters. Igor and his companion tie a note to a branch, a plea for help and a timestamp. Igor pulls out his electric mole gun but doesn't aim at the fatboats. Instead, he shoots at the Hilversum TV tower and hauls his boat to safety. Inside the tower, he finds radio makers and tells them people are still stranded on rooftops. They share their last protein bar and send out a call on RTV Noord-Holland. A fleet of leisure boats answers, forming a floating armada that rescues hundreds from the rooftops.

Vision of the future

The future imagined in Workshop 5 shows slow decay rather than radical transformation. Climate impacts — such as heavier rainfall, rising groundwater, and neighborhood decline — have become part of daily life but do not lead to full relocation or systemic reinvention. Life continues locally, with adaptations such as reliance on local food sources, more water-based transport, and re purposing of existing infrastructure like the water tower.

Values *(Supporting Themes and quotes found in Appendix E.3)*

i. *Local resilience and self-sufficiency:* Participants emphasized the importance of self-sufficiency through local food sources (Moutje harvest), adapting homes to floods (living on upper floors), having emergency plans (local pumps), and teaching possible future skills (swimming, boating license, learning German).

ii. *Attachment to meaningful places:* Participants showed strong emotional connections to specific local spaces. Especially local fields, but also the Watertower the Moutje. They valued beauty, memory, and freedom as important to daily life and community health.

iii. *Collective care and solidarity:* Helping others during climate impacts was seen as a key principle, both in stories (Igor rescuing people) and discussion (community-level resilience, shared coping).

iv. *Stability amid uncertainty:* Participants showed awareness that migration might become necessary, infrastructure might fail, and old centers may decay. At the same time, there was a wish to stay, adapt, and delay displacement as long as possible.

Narratives alignment

Collectivist

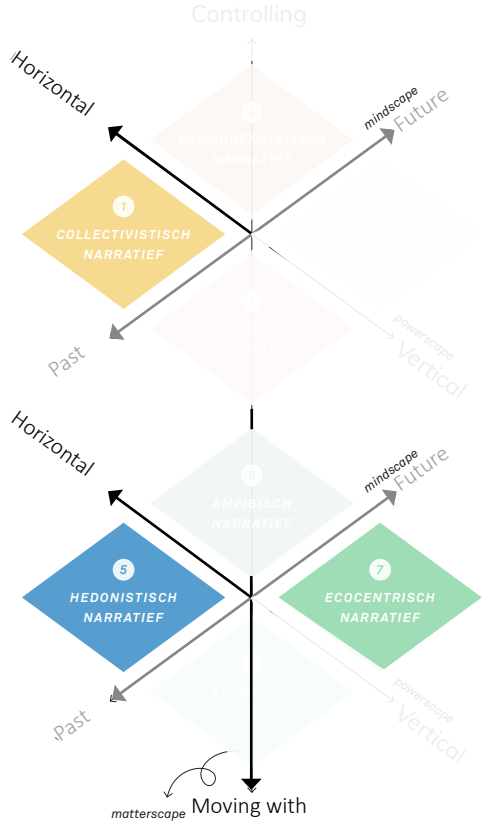
Helping each other at a local level, having community solutions for problems like the farms

Hedonistic

People accepting that water is here to stay and adapting to it with boats and floating villages.

Ecocentric

Looking towards knowledge on living with water, for aquatic ecology and the Moutje, a place of nature also turned useful through farms.



Axis alignment

Matterscape - Moving with

Elements like re purposing the water tower or ferries indicate adapting rather than controlling

Powerscape - Horizontal

People self-organise through farms and rescue efforts come from neighbors and local initiatives instead of governments or central institutions

Mindscape - Inconclusive

No systemic changes yet, a deteriorating but not changed world. The current world still stand

Conclusion

A grounded take on the future, close to the present. Climate change is happening, but participants stayed near today's world, making individual adjustments. A strong sense of insecurity emerged as people imagined moving, struggling to sell homes, and living with the constant threat of water.

Still, they stayed because life was still possible, relying on local solutions while preparing for change and helping each other when needed. All participants were parents, aware of the climate threat, and worried about how it might reshape their homes, their lives, and their children's future. Figure 71 shows an AI interpretation of this envisioned future.

Figure 71. AI-generated illustration of a future vision of Bussum based on a user prompt (OpenAI, 2025)

6.1.5 Overarching results

While values and concerns can change per area, several strong overarching themes were visible across all workshops:

Adapting: Participants focused on how life could adapt to climate change, rather than trying to prevent it. In WS4 and WS5 especially, participants rejected the controlling Matterscape as old-fashioned. They envisioned adaptation through tools like "water-running boots" and floating buses (WS3), building hospitals on elevated ground and commuting by boat (WS4), and preparing via swimming lessons and emergency kits (WS5).

Uncertainty: Participants described futures with fewer certainties including the need to move homes (WS3, WS5), job insecurity for farmers (WS4), failing infrastructure, and personally having to secure food supplies (WS5). The futures they imagined felt less stable and more precarious than the present.

Communities should help each other: Hero prompts in WS4 and WS5 showed that participants saw heroes as people helping their own communities through organizing rescues, saving the elderly, or securing homes. Smaller moments also reflected this like sharing an egg (WS3), farmers coming together and playing padel with friends (WS4), or sharing a muesli bar (WS5). Support networks mattered.

Staying active: Physical activity remained a consistent value. This surfaced in Phase 2 with mentions of running, hockey, and rowing, and reappeared in the stories through surfing and running (WS3), rowing and padel (WS4), and biking and sailing (WS5). Even in challenging conditions, participants sought out movement and activity.

Reflecting on the results

The results of the workshops were compelling to see emerge. Participants created varied futures, exploring complications like damaged infrastructure, housing shortages, and the challenges of staying active in a flooded environment. While the stories and created futures differed, they still revealed consistent themes and values that could inform development projects. Participants' openness to adaptation suggests they may be receptive to innovative solutions. Their concern about a lack of security points to a need for clearer communication and more certainty, so citizens understand what to expect and can prepare accordingly. The focus on communities helping each other indicates a need for public spaces and support for community-led responses rather than purely government-led interventions. The emphasis on staying active suggests maintaining infrastructure like bike paths, running routes, and places for exercise matters in future planning.

There was a noticeable contrast between this openness to adaptation and the assumption that Dutch citizens have too much trust in institutions as discussed in Section 1.1.2. This contrast could be explained in several ways. The participants were relatively progressive and were already against the old fashioned way of thinking. By presenting participants with alternative futures, the workshop may have helped them reflect on that narrative and begin to question whether it remains the best path forward. This shift was particularly visible in WS3 and is discussed further in Section 6.2.2 under Criterion 1.

These results are based on a small number of workshops. Broader conclusions would require testing with a larger and more diverse set of participants. The analysis reflects a personal interpretation of what may be relevant for research and what can be drawn from the outcomes. At the same time, the open-ended nature of the workshops produced a rich set of insights. Deltares may prioritize different findings or apply alternative perspectives depending on their institutional goals.

6.2 Workshop effectiveness

6.2.1 The Criteria

To assess whether the workshop achieved its intended goals and design aims, I developed a set of evaluation criteria. These are directly based on the principles introduced in Section 2.5, and are grounded in both facilitation experience and supporting literature.

While the criteria often overlap with the requirements in Section 3.4, their focus is different. The requirements guided the design by translating theory into practical workshop elements. The criteria, in contrast, evaluate the outcomes, drawing from both the theoretical foundations of CFS and the practical insights gained from the workshops.

Evaluation draws on four types of data (or evidence):

- Facilitator notes and transcription
- Participant reflections
- A post-workshop survey
- The stories created by participants

Not every item listed under a criterion must appear for the criterion to be considered met. The evidence types serve different roles:

- *Facilitator notes* act as observational indicators. They provide context and help identify whether certain outcomes or dynamics appeared to occur authentically during the session. Since each group may express ideas differently, these notes are necessarily interpretive and must be assessed in light of the specific group and workshop moment. The absence of a behavior does not necessarily indicate failure. Quotes from participants, often recorded in transcription and annotated in facilitator notes, are used throughout the evaluation to illustrate specific moments and support interpretations.
- *Participant reflections and surveys* offer more explicit feedback but must be read cautiously. As discussed in Section 2.2, participants may not always be aware of what they learned, or they may respond based on what they think is expected. As Engageli (2024) points out, participants often underestimate their own learning in active workshops. For surveys it can also be hard to give a number score to quite abstract questions. These should therefore be seen as indications or supporting evidence.
- *The final stories* are the most direct reflection of participant thinking, expressed through intuitive and creative choices. While they don't capture internal experience, they show how well the process translated into meaningful narrative outcomes. When supported by facilitator notes and reflections, these stories provide a rich combination of observable outcomes and internal engagement

The criteria are not independent. For example, a grounded, plausible future can help participants better connect the scenario to their own lives, which in turn supports deeper reflection and understanding. For clarity, each criterion is assessed separately, but overlaps are acknowledged and revisited in the final evaluation.

C1: Understand possible scientifically plausible futures

This criterion assesses whether participants explored futures that are scientifically plausible, for example, based on developments described in the Deltares narratives. As outlined in Section 2.5.1, this helps ensure that participants imagine not just any future, but one that engages meaningfully with plausible water-related risks.

The criterion is fulfilled when participants consider broader consequences, such as system failure, inequality, or adaptation limits, and when the stories include grounded elements that reflect how such futures might realistically unfold. Survey and reflection responses can provide supporting evidence of increased understanding or risk awareness

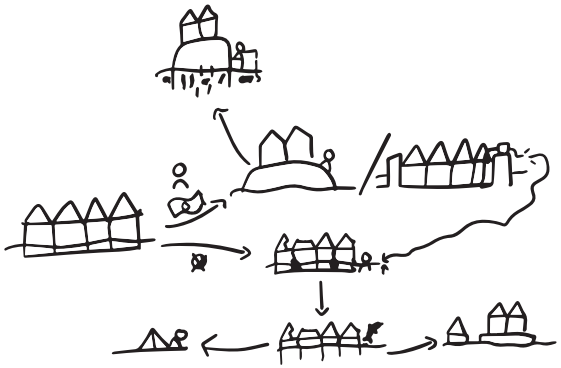


Figure 72. Visual showing an example of an interconnected world. Flooding causes wealthier citizens (social) to move to elevated neighborhoods or those equipped with advanced pumping systems (technological). These pumps displace water into lower areas where poorer citizens remain trapped (social), worsening flooding there. The increased water attracts new ecosystems (environmental), but also displaces vulnerable residents, increasing homelessness (social). In response, floating homes begin to appear (technological), which reshape settlement patterns and further reinforce spatial and social divides.

Facilitator notes:

- Did discussions about possible futures emerge?
- Did participants refer to or integrate recognizable elements from the Deltares narratives or other future scenarios?
- Did participants indicate that the scenarios felt realistic or plausible?
- Did any “aha” moments occur?
- Did discussions reflect personal discovery or shifts in understanding?
- Did participants express that they understood possible futures better?
- Were there unresolved moments of confusion about what the future might look like?

Survey questions:

- The workshop has made me more aware of how water complications due to climate change can influence my live
- The workshop makes it so that I have more trust / am more afraid for the complications of climate change
- The workshop helped me imagine the complex future of climate change
- The workshop brought me onto other ideas than I would have normally thought of

Reflection:

- Does the probable future feel realistic?
- Do you understand the possible future better?

Story outcomes:

- Do the stories feature a grounded, coherent future that aligns with plausible water-related risks?
- Is the imagined future sufficiently distinct to reveal new thinking or perspectives?
- Do the stories avoid overly fantastical or disconnected ideas (e.g., teleportation, aliens, utopias with no trade-offs)?
- Do the stories reflect an interconnected world — technologically, socially, and environmentally — as described by Liveley et al. (2021)(Figure 72)?

C2: Connect a possible future to participants' values and experiences

People engage more deeply with futures when they relate to their own lives. As outlined in Section 2.5.2, connecting stories to personal values, places, or routines makes climate impacts feel tangible and emotionally relevant.

This criterion is met when participants bring in personal concerns, relate the future to elements of their lives (either through value mapping or spontaneously), or show emotional investment in the story. Indicators include whether the stories reflect everyday life, whether characters feel familiar or relatable, and whether participants mention personal relevance in reflections.

Facilitator notes:

- Did participants express emotions or personal stakes during discussions?
- Did participants relate parts of the future exploration or story to their lives?

Survey questions:

- The workshop involved me in how the future can impact my life
- I feel personally connected to the stories that we made
- After the workshop I thought about the futures of flood resilience in my area

Reflection:

- Did you feel connected to the character?
- Did the story feel relevant to you?

Story outcomes:

- Do the stories reflect personal values or lived experiences, either drawn from the value mapping phase or added organically? (This is the central indicator for this criterion.)
- Did participants project themselves into unfamiliar perspectives (e.g. through characters) in a way that deepened personal reflection?

C3: Have the workshop be a product of the participants

This criterion assesses whether the workshop outcome — especially the story — reflected participants' own ideas rather than the facilitator's. As discussed in Section 2.5.3, meaningful engagement depends on participant ownership. The criterion is fulfilled when participants shape the story direction, introduce original content, and do not overly rely on facilitator prompts or examples.

Facilitator notes:

- Did participants take initiative in shaping the story?
- Did participants rely on facilitator suggestions, or lead the process themselves?
- To what extent did facilitator input influence the story's content or direction?

Survey questions:

- I could contribute my ideas to the workshop

Reflection:

- "Did you feel free to include what you found important?"

Story outcomes:

- Do the stories clearly reflect ideas introduced by the participants?
- Is there any visible evidence of facilitator-driven content (e.g., repetition of examples, or forced discussion points?

C4: Expand participation in future thinking by lowering the bar of engagement

The workshop aims to open up future thinking to a broad range of Dutch citizens. As described in Section 2.5.4, accessible formats and a balance of structure and freedom ("structured freedom") allow people who don't typically engage with the future to participate confidently and meaningfully.

This criterion is fulfilled when participants move through the workshop without confusion, express themselves using the provided tools, and feel their contributions matter. Indicators include clarity of format, ease of use of tools (e.g. maps, prompts), and positive feedback on accessibility.

Facilitator notes:

- Does the structure of the workshop make sense, and flow naturally?
- Did participants seem confused or stuck, and had to ask questions?
- Did explanations support understanding without overloading participants?
- Were the participants able to express themselves through a medium that they preferred?

Survey questions:

- I would recommend the workshop to others to get a better idea of the future of flood resilience in my area

Reflection:

- Did you find the workshop understandable and accessible?

Story outcomes:

- The results are what was intended through the structure
  - There are values placed on the map
  - The map is explored in a future context
  - The story makes sense and flows well

C5: Promote collaboration

As emphasized in Section 2.5.5, collaboration helps incorporate multiple perspectives and fosters shared ownership of the outcome. However, it does not happen automatically. Even in group settings, stories can remain fragmented or be dominated by the most vocal participants.

This criterion is fulfilled when participants build on each other's ideas, co-develop storylines, and interact meaningfully throughout the process. Indicators include turn-taking, constructive discussion, and stories that feel integrated rather than fragmented. As discussed earlier, fostering story-making rather than just storytelling supports this process by encouraging active negotiation and mutual shaping of the narrative. On the other end, ignored contributions, frequent interruptions, or dominance by one participant may signal weaker collaboration.

Facilitator notes:

- Did participants build on each other's ideas?
- Did the group dynamic allow equal participation?
- Were disagreements constructively discussed?
- Were quieter participants given space to contribute?

Survey questions:

- "Did you feel like you worked together on the story?"
- "Did others' ideas influence your thinking?"

Story outcomes:

- Do the stories show signs of co-construction (e.g. plot or world details introduced and expanded by different participants)?
- Do participants build on each other's contributions, rather than creating disconnected events?

C6: Keep the workshop engaging

Engagement occurs throughout the workshop via thinking, feeling, and doing — corresponding to cognitive, emotional, and behavioral engagement as discussed in Section 2.5.6.

This criterion is met when participants show signs of active contribution (e.g. moving, pointing, discussing), emotional involvement (e.g. laughing, expressing empathy), and critical thinking (e.g. asking questions, reflecting). These behaviors indicate that participants are engaged with the process, even if not all forms of engagement are visible in the final story output.

7a. Behavioral engagement

Participants should actively contribute and physically participate in the workshop activities, showing commitment and attention.

Facilitator notes:

- Did participants actively join discussions and exercises?
- Were they placing post-its, pointing to maps, role-playing, or interacting with visuals?
- Did they ask clarifying questions or initiate contributions?

7b. Emotional engagement

Emotional involvement helps participants care about both the process and its content. Emotions like curiosity, joy, and even frustration at story beats signal personal investment and support long-term engagement. As seen in the early Terschelling test (WSA), making the workshop enjoyable helped draw in participants who were initially hesitant or disengaged.

Facilitator notes:

- Did participants show enjoyment, humor, curiosity, surprise, or frustration?
- How often do they show emotions?
- Did they express empathy toward characters or emotional reactions to story elements?
- Did the atmosphere feel emotionally alive or flat?

Survey:

- I would recommend the workshop because it is fun

Participant reflection:

- “Did you enjoy the workshop?”

7c. Cognitive engagement

Participants should think critically and imaginatively about the future— asking questions, reflecting on systems, and making meaningful connections between ideas.

Facilitator notes:

- Did participants ask reflective or analytical questions to understand the materials?
- Did they challenge assumptions or seek deeper understanding?

Survey:

- “Did the workshop make you think in new ways about the future?”

Participant reflection/

- “Did you reflect on how things are connected or how your assumptions might change?”

6.2.2 C1: Understand the possible scientific futures

Participants in both final workshops showed a grounded understanding of climate futures. Their stories and discussions revealed an ability to imagine how these changes might unfold in everyday life. Rather than framing the future as a single disaster moment, participants envisioned long-term shifts in how people live.

For example, both groups discussed the impact of needing to relocate: What if you don't have the money to move (Phase 3, WS4)? Or what if you can't sell your house because no one wants to live there anymore (Story 1, WS5)? WS4's Story 2 included a floating town that had to be secured by volunteers with ropes during a storm. WS5 participants referenced community farming and emergency kits. These scenarios reflect systemic, tangible changes to peoples lives.

As noted in Section 6.1.5, uncertainty was a common theme across workshops. This is specifically highlighted by Deltares and Reframing studios (2022) as a defining aspect of life in 2100. The shown 8 narratives contain uncertain aspects, but it is not explicitly mentioned. That participants naturally embedded this uncertainty — such as instability around housing and infrastructure — suggests that they accessed a scientifically grounded mindset about how the future might unfold.

This future thinking also surfaced outside of the stories. PW5, during the reflection, stated, "*I think everyone here believes it won't happen to us. But it will,*"** and PA4 followed with, "*It's already starting...*" PG4, during Phase 3, mentioned building a house on poles, and PI4 interjected with, "*What good is a house on stilts if everything is underwater?*" These exchanges show that participants thought beyond their prompts. This is a strong indication that the workshop supported critical thinking about possible futures.

The futures remained grounded. The Deltares narratives may have helped create a perceptual bridge, as some elements returned — such as the amphibian theme of floating houses or taking a boat to reach Amsterdam in a flooded landscape (WS4, Story 1), or using a ferry to get to work (WS5, Story 2). But these elements were not copied directly. Participants took the themes and reworked them into their own plausible futures. The changes in the stories could all be explained logically and avoided sci-fi leaps or dystopian tropes. One participant, PS2, mentioned wanting to make the story more grim, but the resulting story remained grounded. This shows that the format supports realism and prevents overly abstract storytelling

It's important to note that many participants were already climate-aware. Even participants from WS5, who were expected to be less engaged, turned out to be quite knowledgeable. This could have helped participants stay grounded. However, the workshop enabled them to articulate this understanding more tangibly. Prior knowledge alone doesn't guarantee that people have imagined the personal implications of climate risks, which the workshop clearly facilitated.

Because of this existing awareness, few large group shifts occurred. This contrasts with WS3 (not part of the final analysis), where students initially believed "*the smart people will protect us,*" but began to rethink that assumption during the session. Still, WS4 and WS5 did show smaller individual shifts. In WS4, PG4 mentioned houses on poles and was confronted with their use when all other infrastructure is gone by other participants. When reflecting on Story 1 (with the pub on poles in the city) PG4 mentioned "*I find this a very realistic story.*" reflecting his thinking about the future. In WS5, PS5 clearly had a moment of realization when she said: "*I've never considered that I might have to move to the east. I think I'd find that a bit unsettling.*" The workshop, by making these futures relevant, clearly had an effect. For PS5, the realistic risks became personal and disruptive.

The survey results support the idea that the workshop can help participants understand scientifically plausible futures. The question "*The workshop made me more aware of how water complications due to climate change can impact my life*"*** (Figure 73) showed an average score of 4.9/7 across both workshops, suggesting that some awareness was gained. had an average score of 4.9/7 across both workshops, suggesting that some awareness was gained. The distribution in the figure adds nuance: some participants clearly became

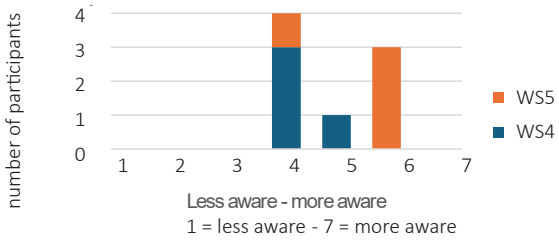


Figure 73. The workshop has made me more aware of how water complications due to climate change can influence my live

*Participant codes refer to a unique letter assigned per participant, followed by the workshop number. For example, PI4 = Participant I from Workshop 4; PA5 = Participant A from Workshop

**Participant quotes originally in Dutch, translated by author

***Survey questions originally asked in Dutch, translated by author

more aware, while others — likely those who already considered themselves knowledgeable, especially in WS4 — reported less learning. This distinction was noticeable both during the sessions and in the survey.

A similar pattern appears in the responses to "The workshop brought me onto other ideas than I would have normally thought of (Figure 74)" While not everyone felt they gained new insights, many participants did report encountering ideas they hadn't previously considered. And the survey "*The workshop helped me imagine the complex future of climate change*" (Figure 75) showed with an average of 5.9/7 that the workshop did make complex the future tangible. Even if the workshop didn't always increase awareness, it did broaden perspectives and clearly has the ability to make the future less abstract.

The goal is to help people become aware of the possible risks. If someone is already aware, that's fine. For those who aren't, the workshop clearly has the ability to make the future feel more real and personally relevant.

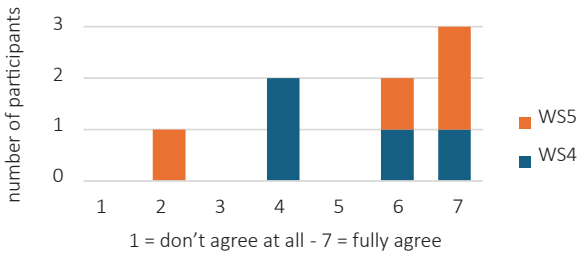


Figure 74. The workshop brought me onto other ideas than I would have normally thought of

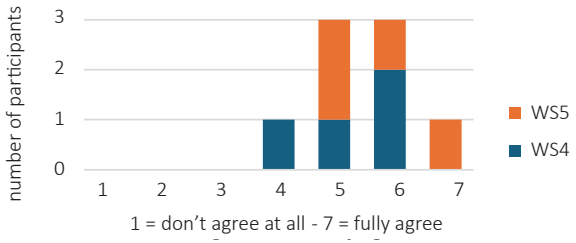


Figure 75. The workshop helped me imagine the complex future of climate change

6.2.3 C2: Connect the future to participants' values and experiences

Both final workshops showed that participants were able to connect the future scenarios to their personal values and lived experiences. The stories and discussions reflected concerns that mattered to them — including security, housing, mobility, independence, food access (WS5), and social connection (WS4). Some of these values were tied to specific locations, while others emerged organically during the storytelling process.

Phase 2 proved effective in surfacing values through meaningful locations. In WS4, PI1 placed value on the pub *De Mol*, which reappeared in Story 1 as the Amsterdam pub introduced by PG1 — tied to the idea of a place where people come together in hard times. The surfaced values in WS5 were more apparent during the workshop, for example a value of caring for children was woven throughout, uncovered in Phase 2 when discussing locations like the *hockeyclub*, *forest* or a *local themepark Oud Valkeveen* and viewed through a future lense by taking them to school to signing them up for *Aquatic Ecology* classes, preparing them for the future.

Values also naturally arose outside of Phase 2 like Story 1 of WS4 going to Amsterdam, later mentioned a place of value to the participants. The *Moutje*, a small lower-lying park that was frequently revisited in future discussions and in WS5's Story 1 as the location of the local farm. While storytelling, participants clearly explored how the future might impact and change aspects of their lives.

The future became personally relatable in outside of the specific exercise goals. During the break of WS4, where PA1 said, "*If the water really rises, then you can't get away anymore. Where are we going to go?*" showing genuine concern. In Story 2, PH1 commented on another participant's house: "*You can still go stand on the dike.*" PH1 also said during the reflection: "*It's not a time I'd like to live in.*" Similar reactions appeared in WS5. PS2, during the second story, remarked: "Terrible. Dark and cold." PA2 added during the reflection on a remark that he could just sail by PH2: "*Yeah, but if it's wind force 12 here all the time, then you'll get waves as tall as houses.*" These comments show that the workshop as a whole helped participants relate the future to their own lives and become immersed in future thinking.

As mentioned in Section 5.3.6, the future envisioned in WS5 unfolded gradually, rather than presenting a world fully reshaped by water-related complications. This carries the risk of staying too close to the present, potentially limiting participants' reflection or challenging of assumptions, as discussed in Section 2.5.1. However, the survey result for: "*The workshop makes it so that I have more trust / am more afraid for the complications*

of climate change" (Figure 76) showed more worries from WS5 participants (2.75/7) than WS4 participants (4/7). This suggests that a future closer to their lives felt even more real, showing evidence of the value of keeping the future close to everyday activities.

The survey results also show the value of connecting the future to participants' personal lives. The statement "*I feel personally connected to the stories that we made*" (Figure 77) had most participants giving it a 6/7. The low scores can be attributed to the framing of the question going from "not at all" to "fully connected". Perhap the resulting story did not reach aspects of this participants' live. The survey "*The workshop involved me in how the future can impact my live*" (Figure 78) resulted in an avarage of 5.5/7. This question is similar to the awareness measure discussed under C1. The lower score there can be an indication that participants already felt already, but the workshop still involved them.

Where the first criteria showed that the future felt real, this criteria showed that it not only felt real but connected to their lives. Participants were not thinking about abstract futures, but looking at changed lives. This demonstrates the value of CFS in connecting the future to the lives of the participants.

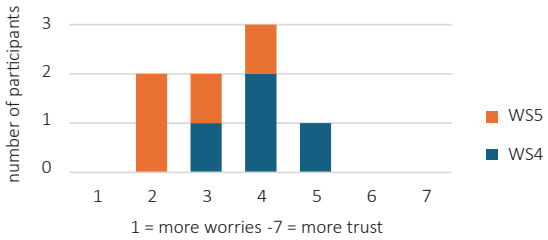


Figure 76. The workshop makes it so that I have more trust / am more afraid for the complications of climate change

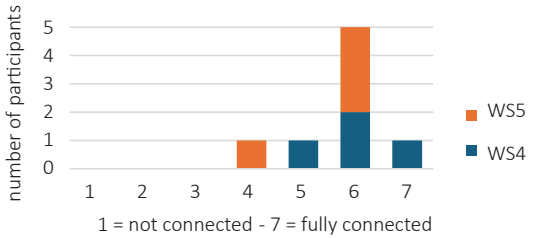


Figure 77.I feel personally connected to the stories that we made

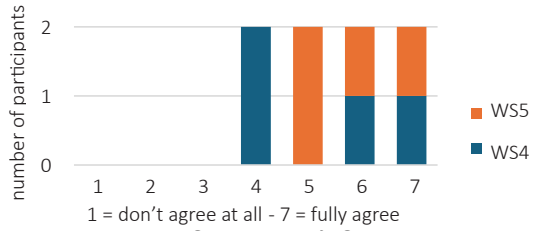


Figure 78.The workshop involved me in how the future can impact my live

6.2.4 C3 WS5: Have the workshop be a product of the participants

The stories and outcomes reflected the participants' thinking, not the facilitator's. This is largly visible in how story elements connected to personal values, as discussed in C2. For example, in WS4, moving Story 1 to Amsterdam showed that participants were not constrained by the physical map. The method allowed space for personal exploration.

Facilitator guidance mostly took the form of direct, supportive questions when participants struggled:

PH5: "So... *writer's block*"

Facilitator: "*You can draw inspiration from the elements you've added*"

Or questions that encouraged deeper reflection:

PA5: "*We're going to protect the cultural heritage. But what even is that? What counts as cultural heritage in the Netherlands*"

Facilitator: "*Why is it important to protect cultural heritage?*"

PA5: "*The alternative seems really unappealing. Just everyone in really tall flats... I feel too nostalgic for that. Our little 'kikkerland' country, riding bikes, raising our children.*"

These moments show how facilitator input helped participants think further without giving answers, which was the case most of the time. However, there were some moments where guidance could have influenced participants more directly. Because my facilitation style was natural and flexible, examples were sometimes given intuitively rather than carefully considered.

For example, in WS4 Phase 2, the example I provided was:

"*I find the old center of Muiden really beautiful. I think it's very clean, which is important to me, and I enjoy walking through it.*"

While participants' later contributions didn't repeat this, the example was closely related and may have subtly shaped how they approached the exercise. Still, their input remained authentic and personal.

A similar moment occurred in WS5, also during Phase 2, when I tried to prompt deeper reflection on the train station:

Facilitator: "*What do you like about it? Is it the speed or how close by it is*?"

While this question introduced specific value frames, the participant answered in their own way, replying "*moving away from Bussum*" as their main association. The phrasing could have guided participants, but it did not impair their own thinking.

There were a few instances where examples showed up more directly in participants' contributions, like the value and location examples in WS4 Phase 2 which were directly copied:

PG4: "*I think it's a very beautiful river. It's an original river. It's a wonderful river. Green, peaceful, anything is possible there*"

The words "*beautiful, wonderful, green, peace*" were taken directly from the value examples. However, PG4 had previously shown difficulty with coming up with ideas, and the example likely helped him express something personally meaningful. The value he shared still felt genuine.

Another instance occurred in WS5, when I gave an example of a first story prompt:

Facilitator: "*Pieter wants to bike to football practice*"

And in Story 1, PS5 opened with: "*Roos bikes to the KMS and wipes a wet strand of hair from her face*"

The example likely influenced the opening prompt. However, cycling was part of participants' everyday lives — they had biked to the workshop — and they adapted it to their own context: a rainy, future setting and biking to their children's school. The story still reflected their own routines and values.

Examples weren't always prompted by confusion. They were sometimes part of the explanation. To avoid unintentionally steering participants, such examples should be limited or made less directly relevant to participants' own lives and values.

The "hero prompt" used to start Story 2 in both workshops could also be seen as framing, as it served as the backbone of those stories. Its purpose was to prompt participants to reflect on what being a "hero" might mean in a pressured future. While the hero was central, the resulting stories still reflected participants' own ideas. Locations like the rowing club (WS4) and the broadcasting tower (WS5), as well as community volunteering actions like "*repairing the dike*" or "*rescuing people with boats*" — exploring the value of communities caring for each other — were introduced by participants, not included in the prompt.

Survey results support the conclusion that participants felt ownership over the process. The question "*I could contribute my ideas to the workshop*" (Figure 79) received an average score of 5.6/7. Two participants gave a 4, which may reflect the collaborative nature of the storytelling, where the final results are created by the group rather than individuals.

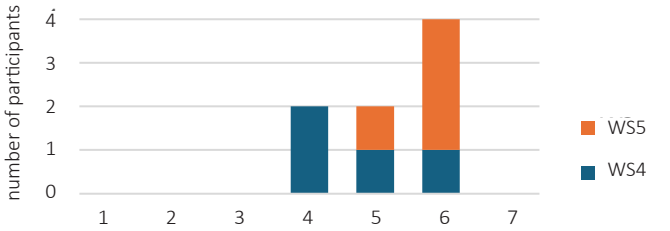


Figure 79. I could contribute my ideas to the workshop

While facilitator input may have influenced a few outcomes, these were minor instances and reflect small facilitation choices rather than limitations of the method itself. The overall outcomes were authentic and original to the participants. The results from C2 support this: a high degree of personal relevance in the workshop shows that the results were truly personal.

6.2.5 C4: Democratize future thinking by lowering the bar of engagement

The final workshops suggest that the method can lower the barrier to participation in future thinking. Both groups were able to take part without prior preparation.

The table in Figure 74 shows how often clarification or examples were needed, focusing specifically on moments of "*not understanding.*" Clarifying questions that I could answer with a simple "yes" indicate initial uncertainty, but also show that participants understood the method once it was explained. Questions answered by other participants likely reflect isolated uncertainty rather than broader confusion.

	Not understanding		Clarifying with "yes"		Answered by other participant	
Phase	WS4	WS5	WS4	WS5	WS4	WS5
1	0	2	1	0	1	0
2	1	0	2	1	1	0
3.a	0	0	1	0	0	0
3.b	2	2	1	0	0	0
4, S1	4	4	2	3	0	1
4, S2	0	2	0	0	1	0

Figure 80. Table showing question moments

Only questions that pointed to confusion about the method were counted — not questions about story content or map locations. Those are exploratory in nature and reflect a desire to understand the material more deeply. Questions about the narratives could indicate struggles with the Phase like in WS1–3, however the questions in this workshop like "*Wat is dit ookalweer?*" (PA4) or "*Maar wie is dan het collectief?*" (PW5) were limited and quickly resolved with a short reply. This suggests that participants understood the narratives well enough to proceed. Since they weren't expected to fully grasp all eight scenarios from a single explanation, this level of questioning was reasonable and acceptable.

Almost all not understanding questions resulted from incomplete explanations. For example:

PG4 before Phase 2: "*Does all of that have to fit on such a small piece of paper?*"

PA5 before Story 1: "*How collaborative is this? Are we all going to start by writing the first sentence together?*"

These questions likely wouldn't have arisen with clearer instructions. The explanation of the story game was the most complex. Between WS4 and WS5, this explanation was refined, which resulted in fewer questions. Most of the remaining questions were related to the new "individual futures" element. All questions were before the exercise started and once participants understood the process, it proved easy to follow.

The workshop results were mostly as expected: values were mapped, futures explored, and most stories were coherent and collaboratively built. During Phase 2 in WS4, participants elaborated more and included personal stories. In WS5, elaboration was more concise, likely a matter of personal preference.

In WS5, Story 1 differed slightly from the intended format. It was more reflective than action-based, resembling a day-in-the-life narrative rather than a developing plot. However it still reflected participants' values and brought them into the future effectively, perhaps even more so than the more action-focused Story 2.

Similarly, the future in WS5 depicted a world still in transition, rather than one already adapted, as in WS4. Like the story itself, this initially seemed like a less promising outcome. However, as discussed in Criterion 5, the imagined future was still confronting and thought-provoking.

As noted earlier, participants in both workshops already had some knowledge about climate change, which likely made it easier for them to engage with the future-oriented exercises. While the workshop structure flowed well and the activities built on each other, participants with less prior awareness might find some elements more challenging.

The survey response, "*I would recommend the workshop to others to get a better idea of the future of flood risks in my area,*" (Figure 81) averaged 5.9/7. While not a direct measure of accessibility, it supports that the structure made sense. There were no comments on confusion or signs of frustration during the reflecting question.

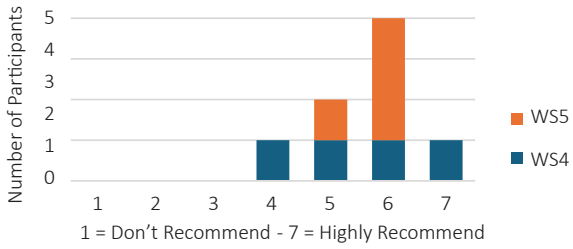


Figure 81. I would recommend the workshop to others to get a better idea of the future of flood risks in my area,

Overall, the results show that the workshop format has the potential to lower the barrier for participation. The exercises flowed clearly into one another, and any confusion that arose was minor and could be traced to explanation rather than the method itself. Some elements did not go entirely as expected but still led to meaningful results and helped make the future feel relevant.

Since participants were already relatively knowledgeable, engaging with futures may have been easier for them than for others. Further research is needed to determine whether the method can truly expand participation among broader or less familiar audience.

6.2.6 C5: Promote collaboration

Collaboration and storymaking was present throughout both workshops.

Participants frequently built on each other's values and concerns. In WS5, for example, PA4 mentioned disappearing shops in the town, and PW4 expanded on the economic cause — expressing regret about not supporting local businesses more. In WS4, PI4 added the location of a bar during Phase 2, and PG4 later included it in the story, a clear indication of collaborative storymaking.

The map also supported collaboration. Participants helped each other find locations and explored the town together:

PS5: "*And look how big this is, that perfume factory. Just look at what a complex it is.*"

PW5: "*Yes, Givaudan. Massive.*"

Or

PA4 "*Where is the dike?*"

PI4 "*Well, it runs here.*"

Collaborative discussion also appeared during future-oriented exchanges. Participants agreed, disagreed, and reflected with one another:

PA5: "*Global. I don't think we'll solve anything that way.*"

PS5: "*Yes, but what other option is there?*"

Or

PG4: "*What PA4 just said, you'll have to live with your living room flooding. So you'll live upstairs.*"

PI4: "*I hear what you're saying, and I think you're right. But I think what's characteristic here is that you're still going to safeguard central services by raising them above water.*"

Throughout the workshops participants helped each other, collaboratively discussed through agreeing and disagreeing and created meaning together. While not specifically prompted by the workshop, elements like the map and the turn based value placing and giving moments of discussions showed that the workshop setup allows for collaboration.

The story Phase 4 also clearly facilitated collaboration. Prompts built on each other and participants responded with shared ownership:

PW5: "This is 75 years from now. Then we won't be here anymore."

PS5: "But our children will."

Or PI4 during the story: "Our living environment is much bigger than just Muiden / Muiderberg."

This wasn't individualistic thinking. They discovered the effects of the future on them together.

There were some moments where prompts were ignored or cut off. PG4's "*A cow moos, a dog nearly drowns. Who's going to save them?*" being skipped by PI4. and PH4's prompt was interrupted by PW4: "*Igor thinks.*" These were met with laughter and stayed friendly, but they highlight a risk. I stepped in briefly to remind them to build on each other but let the story continue to maintain flow. These examples that facilitator support is necessary. Even more so for groups that don't already know each other, where situations like this could cause real frustration.

WS5 didn't include the collaborative world-building exercise. This didn't noticeably impair collaboration, but WS4 had more in-depth discussions during that phase. On the other hand, WS5's inclusion of individual futures created moments where participants had to respond to each other's ideas, promoting collaboration in a different way.

The workshop format supports collaboration through both structure and tools like shared maps, turn-taking, and discussion. Participants engaged with each other's input, built stories together, and explored futures collectively. It worked well here, but future research should explore how this plays out with less familiar groups.

6.2.7 C6: Keep the workshop engaging

Behavioral engagement

Behavioral engagement was clearly visible. Participants actively took part in discussions, placed notes, and interacted with the map throughout the sessions. In both workshops, during Phase 2, participants spontaneously wanted to add one more element to the value map — the bar *De Mol* in WS4 and the children's school *KMS* in WS5. These moments showed that participants wanted to contribute actively, not just follow the exercise prompts.

When the map was introduced, participants began engaging with it beyond the structured activity. They pointed out *Het Moutje* in WS5, and the *Muiderslot* and harbor in WS4. This shows that the map effectively encouraged physical interaction and supported active involvement.

In WS5, participants raced to place values in Phase 2 before understanding the turn-based system. WS4 participants told expansive stories about their values, illustrating that they enjoyed the involvement. Phase 2 was clearly a start to high engagement, and this continued through Phase 3, with participants actively discussing the narratives and possible futures—even continuing during the break in both instances.

Phase 4 was less engaging, as participants had to wait for story cards to be placed. Engagement was not gone, but there was a clear drop in energy, something I observed as the facilitator. Especially Story 2 in WS4 showed a big drop. The transcription of Story 1 had 732 words, while Story 2 dropped to 350, with much less discussion between prompts. It was late in the evening (around 21:15), which likely contributed, but the format itself invites more passive involvement. Still, moments like PI4 scratching out and rewriting his prompt showed effort and engagement.

This improved in WS5, where the story phase took place during the day and was supported by earlier individual future exercises. These factors seemed to keep energy levels higher. Story 1 had 960 words, and Story 2 had 941—a noticeable increase compared to WS4. While there were occasional signs of distraction, such as fingers tapping or brief phone glances, these were minor and didn't define the session's overall energy..

Emotional engagement

The emotional tone of both workshops was light and active, with frequent moments of laughter, curiosity, and spontaneous reactions.

For example, in WS4, PA4 said: "*Aah PI4, let me see*," when he scratched his prompt. There were also genuine reactions to story elements, like PH4 saying: "*Oh, how sweet*," in response to the hero saving the elderly, or laughing when Storm doesn't want to help his patients and goes to drink beer in Story 1.

This was also present in WS5, possibly even more so than in WS4—this could be aided by the earlier time or the more engaging story:

PW5: "*The... Bredius... hockey team... finally... won... on King's Day.*" (laughter)

PA2: "Cliffhanger!", (Reacting to a plot twist)

PH2: "Oh my god." (Reacting to the same plot twist. Likely joking but engaged)

PS5 That's so sad." (After hearing no one lives on the other side of the tracks)

Not all emotional reactions were lighthearted. For example, PW5 commented during Story 2: "*I think it would be terribly, dark and cold and wet,*". A more serious tone also appeared when participants discussed the implications of their created futures. For example, PA5 remarked "*It's really doom and gloom.*" after reflecting on the potential need to move house. These moments show that emotional engagement went beyond surface-level enjoyment and included meaningful concern about future scenarios.

Making the workshop enjoyable was also important for attracting and involving participants who might be hesitant toward active or imaginative formats. The results of the survey "*I would recommend the workshop because it is fun*" (Figure 82), suggesting that the workshop succeeded in being both emotionally engaging and enjoyable.

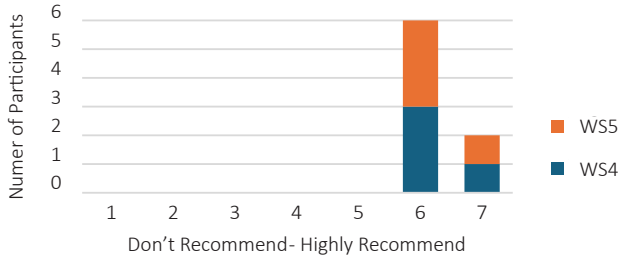


Figure 82. I would recommend the workshop to others to get a better idea of the future of flood risks in my area.

Cognitive engagement

This criterion is difficult to measure, as it reflects how actively participants tried to understand the material. While there were many discussions surrounding the narratives — for example, moving furniture or essentials to a higher floor in WS4 — most were based on participants explaining their views to one another, rather than asking deeper questions or reflecting critically. There was limited evidence of participants actively trying to better understand the future, aside from a few clarification questions about the narrative elements.

In WS5, however, there were more signs of cognitive engagement. PW5 responded to the idea of moving to the Veluwe with: "*But is that enough?*", or asking: "*But who is this 'collective', then?*" based on the narrative.

PS5 was also actively trying to understand the futures, asking: "*What are those stars?*" (referring to symbols in the narrative), or "*How do you release those? Using wind energy, I think?*"

An exchange between PW5 and PA5 during the beginning of Story 1 also showed cognitive engagement. PA5 was thinking through how the story would unfold in a future setting, rather than simply adding a prompt to follow the structure. Even when it wasn't his turn, he said: "*But I thought they had all moved to the east... Ah, you don't know that yet.*"

PS5 was also actively thinking about what the future might look like, saying: "*I'm trying to think how they're going to communicate. [in the future]*"

The individual futures increasing engagement could mean that challenging people to think about how other people's future elements fit into their vision of the future—prompting cognitive engagement through forcing participants to think—could improve the behavioral and emotional engagement.

Like mentioned, cognitive engagement is hard to measure. Especially with groups of participants who feel like they are already aware and are more exploring the futures and relating them to their own lives instead of trying to find a deeper understanding. However, moments from PW5 and PS5 show that there are interesting elements to prompt deeper thinking about the futures—especially the narratives, but also the story elements. While not all participants engaged at this level, the workshop clearly creates opportunities for deeper thinking. There may be potential to expand this further by integrating the individual future prompts more explicitly into the storytelling phase.

Engagement conclusion

Behavioral, emotional, and cognitive engagement are closely connected and reinforce one another. For example, moments of cognitive effort often led to more active participation and emotional involvement. While cognitive engagement was more difficult to observe, the consistently high levels of behavioral and emotional engagement suggest that participants were generally well engaged throughout. The workshop exercises and elements such as the shared map, turn-based interaction, and prompts tied to personal values or imaginative futures clearly contributed to this engagement.

7. Final Conclusion

What are the outcomes of the project?

This final chapter evaluates whether the project achieved its goal: exploring how Collaborative Future Storytelling (CFS) can help Dutch citizens relate to climate-related water risks. It analyzes the findings across the six evaluation criteria, discusses the method's limitations, and proposes improvements to the workshop format and its future application. The chapter closes with a reflection on the method and personal experiences of the process.

7.1 Did I succeed in meeting the goal?

The goal:

To develop and test a workshop that uses Collaborative Future Storytelling (CFS) to help bridge the gap between scientific communication and the everyday lives of Dutch citizens by making future water complications more tangible and personally relevant.

The workshops demonstrated that Collaborative Future Storytelling (CFS) can bridge the gap between abstract, scientific climate futures and people's lived experiences. Through collaboratively crafted, emotionally resonant stories, participants explored future water risks in ways that felt tangible, personal, and meaningful. These narratives translated distant, abstract futures into concrete situations grounded in personal values and everyday life—confirming the value of storytelling highlighted in the literature

By engaging with realistic, scientifically grounded futures (C1), participants could explore how such scenarios might affect their own lives—viewing them through the lens of personal values and experiences (C2 and C3). Productive collaboration supported shared storymaking (C5), enabling participants to reflect on each other's perspectives and build shared meaning, while the accessible format and high engagement levels (C4 and C6) made the process inclusive and active. .

The design of the workshop made this process work. Place-based value mapping, structured turn-taking, and layered prompts allowed participants to gradually engage with complex futures, regardless of prior knowledge or storytelling experience. These features democratized participation and helped surface deeper personal and collective insights.

While there are areas for improvement, like reducing facilitator influence by avoiding overly relevant examples or finding ways to keep engagement high, these are minor adjustments. They may have affected the individual outcomes, but they're not central to the method itself. Collaborative Future Storytelling has shown strong potential to make Dutch citizens more aware of climate risks, and the workshop has proven to be an effective way to apply the method and engage participants with these possible futures.

7.2 Limitations

While the workshop showed promising results in engaging participants with climate-related futures, there are several limitations that affect the generalizability of the findings. These relate to the participant group, the durability of effects, and constraints within the method itself. Together, they highlight the need for further testing to assess how the method performs across more diverse contexts, over time, and with different storytelling formats.

7.2.1 Limited participant group

The workshop was designed to be low-barrier and understandable for a wide range of Dutch participants. However, the participants I tested it with were all highly educated, which likely made it easier for them to engage with the material and the future thinking exercises. I had planned to run the final workshop on Terschelling, but as mentioned earlier, that was not possible. Instead, participants were drawn from my own and my parents' networks. They were already familiar with reflecting on the future through personal discussions and had little difficulty following the material.

One of the benefits of storytelling is its accessibility to help with democratizing future thinking to involve people who do not usually get to shape them (2.2). However, the participant groups in this project mostly consisted of people in relatively privileged positions—such as working in risk management, living in affluent areas, or having easy access to climate-related information. Many had already taken steps to adapt their homes and lifestyles to climate risks. To properly test the workshop's accessibility, it should be run with participants from lower-income backgrounds and with lower levels of formal education. Based on the design choices, the workshop could likely still work in these contexts, but this remains untested.

Similar to the issue of accessibility, participants in the prototyping workshops joined voluntarily and were motivated to contribute. This created a positive and cooperative atmosphere, but one that may not always reflect real-world public participation settings. In more formal or contested contexts, people may be skeptical, defensive, or attend primarily to represent specific interests.

This was visible in the Terschelling workshop (Section 4.3.2), where one participant was reluctant to engage, and in the case of the farmers who declined to join future-oriented discussions, despite having a direct stake. Pushback also emerged during the LivingLab presentation, where participants raised concerns about "talking projects" with unclear outcomes. Even within the final workshops, some skepticism was voiced—for instance, PA4 asked, "I am curious, what is the benefit of this?"

The workshop method and my facilitation are designed to build trust gradually and guide participants through the process. While it should be possible to work with more self-interested or hesitant groups, this has not yet been fully tested due to the limited and motivated participant group.

7.2.2 Longer impact is unknown

While the workshop appeared effective in the moment, raising awareness and stimulating reflection, it remains unclear whether these effects persist over time.

There are some encouraging signs. A few participants from earlier workshops mentioned still thinking about the stories days later, and one even referenced a future scenario from WS1 during an unrelated discussion. While this suggests the potential for lingering impact, it is anecdotal and insufficient to demonstrate lasting engagement or deeper change. Longer-term follow-up would be needed to assess the durability of the workshop's effects.

7.2.3 Other possible methods

One limitation of the prototyping method, as mentioned in chapter 4.1.3, is the difficulty of making substantial changes later in the process. Especially in a workshop where all elements build on each other. This became a problem in the storytelling exercise. A clear drop in engagement occurred, and while I iterated on variables like the time of day or how the map was introduced, it was too late to revise the game structure itself. Workshop 5's addition of individual futures improved engagement slightly, but participants still spent considerable time waiting due to the turn-based nature of the game. Only a small portion of the session was devoted to actively imagining or building the story. This downtime disrupted immersion..

The moments of active imagining still created good results and if only a small amount of active immersion was enough to reach the goals, what would happen if the immersion was constant? A more interactive format, like a tabletop role-playing game as mentioned by Turner and Taboada (2021) in section 5.1.6, could be worth exploring.

7.3 Further research suggestions

If this project would go on, these are the steps that I would do next:

7.3.1 Further research

The next step would be to test the workshop with a broader range of participants (7.2.1), especially with marginalized groups. This would help verify whether the method is accessible to people with lower levels of education, those less engaged with climate futures, or participants who attend primarily out of self-interest.

It would also be important to examine the workshop's long-term effects (7.2.2). Future research could incorporate improved survey and reflection methods—for instance, by measuring participants' awareness of future risks before the workshop, immediately afterward, and again several months later. This would help assess whether engagement and awareness persist over time.

7.3.2 Improving the method for Deltares

Fitting the workshop to Deltares

Recommendations for improving the current method focus on making it more accessible to researchers at Deltares, who may have less experience facilitating creative sessions or workshops. This could be supported by developing a practical facilitation manual, informed by feedback from Deltares staff after running pilot sessions with them.

The method could also be adjusted to better support research needs by for example, incorporating more participant narrative feedback. While the current analysis was based on facilitator interpretation, future iterations could more explicitly align the analysis with outcomes relevant to specific Deltares projects.

Next iteration proposal

In addition, the method could benefit from another iteration.

Personal futures + collaborative world-building

The WS5 iteration (Section 5.7) replaced collaborative world-building with individually created future elements, which other participants were then asked to revisit during the storytelling phase. This change increased engagement and helped keep energy levels high. However, it also resulted in a future world that felt less cohesive and under defined as it lacked the shared understanding of the future world. A next iteration of the method should aim to retain the engagement benefits of individual contributions, while keeping the collaborative world-building aspect.

Removing the narratives

WS5 also showed that a future closer to participants' real lives can make climate risks feel more personal and confronting. This was visible in how people reacted to the idea of maybe having to move house. While the Deltares narratives offer a clear way to think about the future and provide a helpful bridge, they still show a distant 2100 and include elements—like floating houses or nature-overgrown cities—that might feel less connected than a direct risk like losing your home. It could be worth testing the workshop without these narratives. The personal places and experiences likely already offer enough of a perceptual bridge to make the future understandable.

Changed method:

Phase 3.b will replace the narrative exploration with a new step: changed future exploration. Where Phase 3.a identifies immediate problems (e.g. flooding, dike failure), Phase 3.b helps participants explore what those changes might mean over time. This phase requires more active facilitation. The facilitator should guide participants with open-ended questions like: "So this area is flooded—what does that mean socially, technologically, and environmentally?" The goal is to help participants think about the ripple effects of the problem, beyond just the physical risk.

After this discussion, the session moves into Phase 3.c, where each participant individually writes down two to three ideas using the structure: "Because this happened, this changed." This mirrors the method used in WS5, giving participants a way to materialize insights or ideas they found interesting during the group exploration.

Participants then present their prompts and add them to the map—either using sticky notes or small drawings—to build the shared future world. These prompts can then be discussed, elaborated, or connected by the group. Participants can add secondary effects or consequences to the ideas that others shared.

Example building on insights:

- Personal future: “Groundwater has risen, causing an area to become uninhabitable.”
- Collaborative add-on 1: “The area is turned into a water funpark.”
- Collaborative add-on 2: “Residents move into another neighborhood, which becomes overcrowded.”

These prompts create a collaboratively constructed world, which then feeds directly into the storytelling phase. Participants can draw from this shared map to shape their story events. The goal is that the map stays relevant throughout the rest of the workshop—giving participants something concrete to interact with between prompts, while deepening their connection to the future world.

Risks

Removing the narratives introduces a possible trade-off. It can improve the workshop, but likely goes against the earlier suggestion to adapt the workshop to fit Deltares research needs. Deltares might prefer to keep the narratives, as they help link the workshop to their own scenario work and may offer more directly relevant insights. On the other hand, a better workshop can also provide better insights.

If Deltares prefers to retain the narratives, the new “Because this happened, this changed” prompt and expanded world-building format can still be tested. This would allow for both the structured input from the narratives and the benefits of collaborative, creative world-building.

Another risk is that without the narratives, participants will likely find it harder to explore systemic or long-term changes in the future. More facilitator support and clear prompt will be needed, especially in guiding participants from direct problems toward interconnected, social, or technological consequences.

By defining specific future events during world-building and placing them on the map, it risks impairing natural exploration during the storytelling phase. It might also improve exploration as the world is more tangible, possibly sparking more imagination. This can only be determined through testing.

Finally, having participants build on or modify each other’s individual prompts might unintentionally cause ideas to be dismissed or overshadowed. This risk should be mitigated through careful facilitation.

7.3.3 A new method

If the project would start over I would reccomend to explore alternative collaborative storytelling formats. One possible direction could be a workshop built around full immersion—for example, using a tabletop role-playing game (TTRPG) approach, as discussed in Section 7.2.3. It will need more setup, but a full imersion into a world with more elaborate character building can be interesting. This would need to be carefully balanced with the equal participation and open-ended exploration that showed to be important in this method.

Alternatively, if the goal is to maximize accessibility and reduce the need for facilitation, a game version of the method could be developed that participants can play independently. This would make the workshop format easier to scale, while still encouraging creative engagement with possible futures.

7.4 Project reflection

7.4.1 Results

I'm really satisfied with where the workshop ended up. I've created a functional and enjoyable workshop that achieved its goal. Several participants later told me they were still thinking about the workshop, and that it made them reflect more on the future of water. It's rewarding to know the project had real impact, rather than ending as just a concept which is often the case in SPD.

Not doing the workshop on Terschelling was a disappointment, but the two replacement workshops were also valuable for testing and refining the method. Even without that session, it feels like I completed the project in a meaningful way.

7.4.2 The method

The goal analysis in Section 6.1 has shown that the method works to help Dutch citizens relate climate futures to their own lives—but how does it achieve this? Below, I briefly reflect on each workshop phase.

Phase 1

The goal of Phase 1 was to break the ice, ease participants into sharing, and set up the storytelling dynamic. All groups were quite social, and I don't think any participant would have stayed quiet without this exercise. Still, it was fun to share stories. It allowed for some laughs, and even brought out new facts among friends. This part remained largely unchanged throughout the project and served its purpose well.

Phase 2

Phase 2 aimed to surface locations that mattered to participants, so that future changes would feel more personal and grounded. As the map became a more central element later in the process, this phase also introduced the world that the workshop would take place in.

The exercise worked well. Participants enjoyed exploring the map and always had one more meaningful location to contribute, which shows the activity was accessible and engaging. The short stories they told while choosing locations also helped uncover deeper values—like freedom for children or the importance of being able to move around—which often reappeared in later phases. This made the exercise effective not just in surfacing places, but also in quietly building themes for the stories that followed.

Phase 3

The goal of Phase 3 was to provide a background for the story. Its role developed over time from simply offering ideas about what might happen in the future to becoming a collaborative world-building exercise. This helped participants explore future problems and possible changes in the world, setting the stage for a grounded, plausible story

Exploring future risks and narratives led to some of the most interesting discussions in the workshop. While the story phase connected the future to participants' lives more organically, this phase surfaced specific risks. At first, participants discussed problems and scenarios in general terms, but over time they started linking them to personal values and local contexts—not just as isolated events, but as part of a larger system. The collaborative setting also encouraged participants to learn from each other, whether through debate, contrasting views, or shared expertise. In WS4, this was even mentioned as one of the most insightful parts of the session.

Many elements from these discussions reappeared in the stories, often without needing to be placed on the map. Even without a fully constructed world, this phase enabled deep and meaningful exploration of the future.

The created world allowed participants to think about how the future might affect their surroundings and places of personal value. While participants often needed reminders to add changes, making the world visible on the map supported meaningful interactions. It helped participants discover or revisit places and prompted further thinking about how they might be affected.

The world wasn't a rigid setting but functioned more like a soft background for the story. It offered inspiration without setting strict boundaries, which worked well with the storytelling format. The individual prompts allowed for creativity and flexibility, and participants were free to include areas beyond the predefined world as long as they stayed relevant.

As mentioned in Section 7.2.3, the Deltares narratives may not have been the best tool for this kind of exploration. While they enabled meaningful discussion

and likely helped participants imagine the future more vividly, the large-scale, systemic changes they depict may feel too far removed from everyday life. Smaller, more immediate risks like having to move house may feel more personally relevant than scenarios involving fully transformed floating cities. The narratives weren't ineffective, but it's worth questioning whether future versions of the method should ground exploration more closely in the personal and local.

Phase 4

The storytelling phase brought everything together. This was where the value of storytelling became clear by giving participants the chance to explore not just abstract problems, but how the future might affect their own lives, places, and values. It allowed them to look beyond direct concerns and imagine broader, systemic changes from a personal perspective.

The step-by-step unfolding of the story meant that participants were constantly navigating an uncertain world—one they were actively defining through exploration. With each turn, they had to reflect on the world, imagine what had changed, and consider how that would shape the story event they were about to contribute. In doing so, they were envisioning the future and building a more personal understanding of it.

There is still room for improvement. Giving participants something to do while waiting for others to place prompts could help maintain engagement. The stories might also become even more personally grounded by starting from more relatable everyday situations. However, these are refinements to a method that has already proven to be effective.

Facilitator's role

The workshops made it clear how important a skilled and prepared facilitator is. While I had already learned through the Creative Facilitation course that it's essential to stay active, neutral, and flexible, the sessions showed just how crucial that really is. When participants drifted into unrealistic futures or interrupted each other's prompts, I had to respond on the spot, and the way I did so could either maintain the group's trust or disrupt the workshop flow. This became especially clear in WS2, where not staying sharp led to noticeably weaker outcomes.

That experience also showed the value of preparation. In the first two sessions, I relied a lot on improvisation because I was still testing the format. It worked once, but the second time it led to confusion for both me and the participants. For WS3, I rewrote the full structure and documented each part of the workshop, including its goal, rationale, and facilitation notes. I didn't end up needing those notes much during the session, but having them helped me stay focused and manage the group's energy.

In the final workshop, I tried to reduce steering by adding more structured examples. Still, I noticed my instincts led me to improvise, and some examples may have been too directive. That's something I would change next time. Going forward, I would rely more on neutral, pre-tested prompts that support participants in shaping their own stories. While facilitation remains flexible by nature, these workshops have shown me that thoughtful preparation and intentional guidance are what really make the process work.

Analyzing results

While the surveys and reflection questions supported the method, there were areas that could be improved. Some questions were too similar in wording, and participants filling them out quickly may not have noticed the subtle distinctions I was aiming for.

Another limitation was my decision not to record WS1 to WS3. The idea was to keep early tests informal and low-pressure, so participants would feel comfortable trying out the method. That worked for iteration, but when WS3 later showed strong results, I didn't have a detailed enough record to fully analyze it. That was a missed opportunity. The WS3 group had a different background and outlook than the later workshops, and having a full transcription would have strengthened the case for the method's broader applicability.

7.4.3 Process

I had planned to take a more structured approach, but the process remained fairly chaotic. I often switched quickly from topics as something else, like a meeting or workshop had priority. This did mean that it was sometimes hard to keep an overview.

Still, this chaos had benefits. It made me flexible, which was a huge help, especially when organizing the workshops. The Terschelling workshop came together on short notice, but it was a unique opportunity I couldn't pass up. Even when I was refining the method just half an hour before the final workshop as the possibilities were changed again, that flexibility helped me make the most of what was possible. When WS2 showed

the method wasn't ready, I quickly planned WS3 to test improvements. When the Terschelling session fell through, I adapted by organizing WS4 and eventually squeezed in WS5 to validate the method and test another iteration

My original plan was to run only two prototyping workshops before a final test. As noted earlier (4.1.3), that limited how much experimentation was possible. The change from WS1 to WS2 was significant, but because WS2 was intended to be the final test and seemed nearly finished, I played it safe with WS3 and focused on refining rather than exploring new directions. WS4 tested a stable version of the method. Only with WS5 was there space to experiment again. In hindsight, I would have planned more workshops from the start. That would have allowed more room to test assumptions like whether the narratives were necessary or how Phase 4 engagement could be improved, as discussed.

What I struggled with most was the individual aspect of the project. I enjoy the collaborative side of design, such as discussing ideas, brainstorming directions, and figuring things out together. That is less present in an individual graduation project. Luckily, because the project was focused on workshops, I still got to work with people regularly. That became one of the most rewarding parts. The workshops were always highlights, not just with friends, but especially with participants I didn't know. Those sessions were more of a challenge, but also more meaningful. It was particularly satisfying to analyze the results and discover how much depth the stories actually had. Hearing back from participants who enjoyed the workshop made it even more fulfilling

The second half of the project, working toward and executing the final workshops, was much clearer and more rewarding. Surprisingly, I even enjoyed working on the report. I don't think I have ever been as productive as I was in the last few months. That part, while mentally quite taxing, turned out to be one of the most satisfying parts of the project.

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Appendices

Appendix A.1

Excerpts from Toekomstige narratieven rondom waterveiligheid elaboratie on the attitude dimensions (Deltares & Reframing Studio, 2022), pp. 48–49.

onderliggende dimensies ten opzichte van waterveiligheid

De verkenning van de onderstromen laat zien dat de wereld van 2100 wordt gekenmerkt door complexiteit en onzekerheid. Dit wordt ook wel een vloeibare wereld genoemd (Bauman, 2011). Er zijn verschillende houdingen om met deze onzekerheid om te gaan. Deze houdingen verschillen in de wijze waarop we naar het landschap kijken (*matterscape*), hoe we als samenleving omgaan met politiek en macht (*powerscape*) en hoe we omgaan met onzekerheid (*mindscape*) (Jacobs, 2006).

MATTERSCAPE
vormen wij het land
of vormt het land ons?
Leven in een laaggelegen delta betekent je aanpassen aan het water of het water beheersen. Het nadeel van een moerassige delta is in de afgelopen eeuwen omgebogen tot een van de meest welvarende gebieden van de wereld. Wie Nederland van boven bekijkt ziet een hoog georganiseerd land volgens strakke lijnen en patronen. Beheersen is het leidende paradigma geworden. We leven in een prothese die ons in staat stelt onder de zeespiegel te leven maar die heeft altijd onderhoud nodig. Onder invloed van veranderende omstandigheden kan dat onderhoud zo kostbaar worden dat het op lange termijn toch slimmer kan worden om ons gedeeltelijk terug te trekken.

beheersen
Nederland is één groot stelstel van rivieren, havens en kanalen dat georganiseerd is als een precisieuurwerk. Het is een positie die ze ook in 2100 niet zomaar zal opgeven maar zal willen verdedigen en uitbreiden. Onze drang naar controle krijgt nieuwe verschijningsvormen. We maken nieuw land, creëren nieuwe vormen van monitoring en in extreme gevallen rekken we zelfs de planetaire grenzen op.

meebewegen
Tegenover het beheersen van het water staat het meebewegen met het water. Noodgewongen omdat onderhoud te kostbaar wordt of als strategie om de weerbaarheid en ruimtelijke en ecologische kwaliteiten van de delta te herstellen. Op kleine schaal door water en bodem leidend te laten zijn in de inrichting van gebieden of door ruimte te maken voor water in lagere polders. Maar ook op grote schaal door bijvoorbeeld gebieden terug te geven aan de natuur en ons terug te trekken.

3 6 8 5

verticale macht ← *powerscape* → *horizontale macht*
top-down bottom-up

POWERSCAPE
top-down of bottom-up?
Samenlevingen op de hele wereld worden de komende eeuw geconfronteerd met ingrijpende transformaties om verdere ontwrichting van de aarde te voorkomen. De grote vraag daarbij is hoe we dat kunnen doen zonder de kernwaarden van onze democratie te ondermijnen. Want ingrijpende beslissingen gaan al snel gepaard met dwang en het vergroten van ongelijkheid. De huidige representatieve democratie in combinatie met een vrije markt economie lijkt onvoldoende in staat om de klimaatcrisis op te lossen. Er zullen in 2100 daarom nieuw vormen van democratie gebaseerd op nieuwe economische modellen ontstaan. De uiterste hiervan gaan uit van verticale versus horizontale verdeling van macht.

verticale macht
Enerzijds is er een beweging richting meer autoriteit bij een kleine groep mensen. De onzekerheid en continue verandering kan leiden tot een sterke behoefte aan veiligheid en bescherming. De massa is afhankelijk van de goede wil van een kleine elite om waarden als rechtvaardigheid en solidariteit overeind te houden en de pijn die met grote transities gepaard gaat eerlijk te delen. Daarnaast kan China als klimaatregime ook invloed hebben op onze eigen houding ten aanzien van de omgang met klimaatverandering.

horizontale macht
Nieuwe vormen van autoriteit zijn gebaseerd op het collectief en meer horizontaal georganiseerd. De controle is sterk aanwezig, maar wederzijds en in horizontale richting. De consequentie van falen is niet straf maar sociale uitsluiting. Het betekent niet dat er geen leiders meer zijn maar wel dat de rol van leiders verandert. Deze wordt meer faciliterend van aard zoals in een deliberatieve democratie.

7 11 12

verleden georiënteerd ← *mindscape* → *toekomst georiënteerd*
oude verhalen nieuwe verhalen

MINDSCAPE
kijken we achterom of vooruit?
De verkenning van de wereld van 2100 laat zien dat de wereld steeds minder begrepen kan worden in termen van vaste structuren maar steeds meer vloeibaar is (Bauman, 2011). In een vloeibare wereld is verandering de enige constante en onzekerheid de enige zekerheid. Het vraagt van mensen dat ze flexibel zijn en zich telkens weer aanpassen aan veranderende omstandigheden. Als gevolg hiervan ontstaat er een sterke cultuurfilosofische tweedeling. Om houvast te zoeken wordt enerzijds het verleden gecultiveerd omdat dat ons stabiliteit en continuïteit geeft. Anderen zoeken juist hun houvast in de toekomst en zien de wereld in termen van wat zou kunnen zijn. De houding is afhankelijk van land, cultuur of individu.

verleden georiënteerd
Een snel veranderende wereld kan leiden tot vervreemding en onbehagen. Want voor veel mensen is het landschap waarin zij opgroeiden een half mensenleven later onherkenbaar getransformeerd. Het verleden geeft ons wortels. Dat leidt tot een houding van cultiveren en behouden. Tegelijkertijd is op geen enkel ander continent het verleden zo nadrukkelijk aanwezig als in Europa. Soms lijkt er in Europa zoveel verleden te zijn dat er voor de toekomst geen plek meer is.

toekomst georiënteerd
Tegenover een houding van cultiveren staat een houding van vooruitgang en verandering. Om grote uitdagingen het hoofd te bieden moeten we ons juist sneller ontwikkelen om de mensheid door inventiviteit en vooruitgang naar een nieuw niveau te tillen en plannen voor de lange termijn.

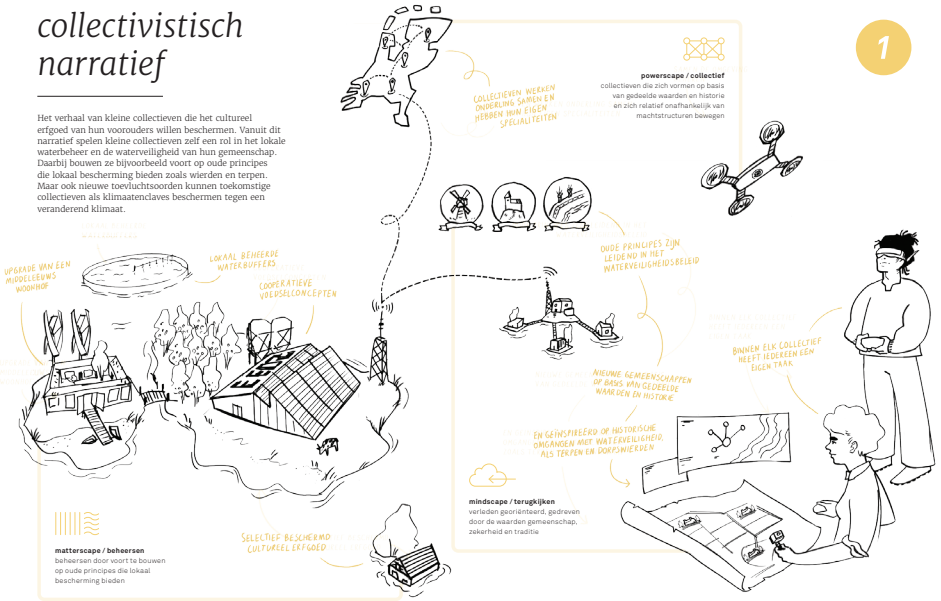
Appendix A.2

The following pages are reproduced from
Deltares & Reframing Studios (2022), pp. 49–89

collectivistisch narratief

1

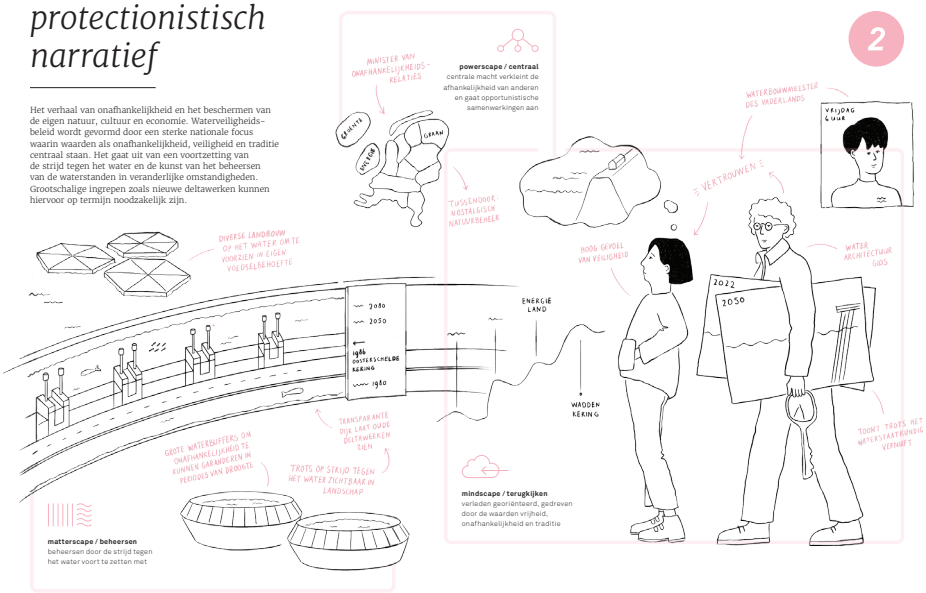
Het verhaal van kleine collectieven die het cultureel erfgoed van hun voorouders willen beschermen. Vanuit dit narratief spelen kleine collectieven zelf een rol in het lokale waterbeheer en de watervelligheid van hun gemeenschap. Daarbij bouwen ze bijvoorbeeld voort op oude principes die lokaal bescherming bieden zoals wierden en terpen. Maar ook nieuwe toevluchtsoorden kunnen toekomstige collectieven als klimaatenclaves beschermen tegen een veranderend klimaat.



protectionistisch narratief

2

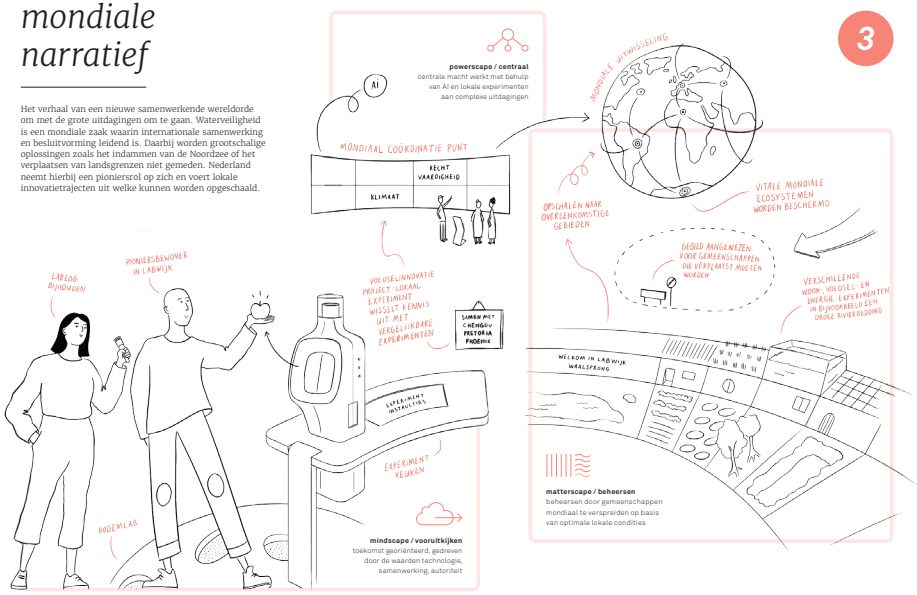
Het verhaal van onafhankelijkheid en het beschermen van de eigen natuur, cultuur en economie. Watervelligheids-beleid wordt gevormd door een sterke nationale focus waarin waarden als onafhankelijkheid, veiligheid en traditie centraal staan. Het gaat uit van een voortzetting van de strijd tegen het water en de kunst van het beheersen van de waterstanden in veranderlijke omstandigheden. Grootschalige ingrepen zoals nieuwe deltawerken kunnen hiervoor op termijn noodzakelijk zijn.



mondiale narratief

3

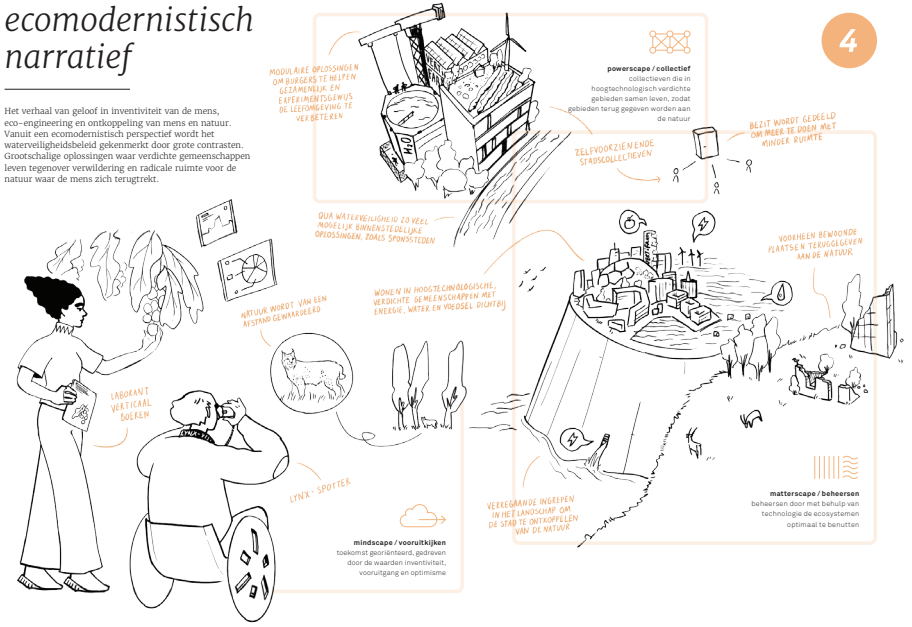
Het verhaal van een nieuwe samenwerkende wereldorde om met de grote uitdagingen om te gaan. Watervelligheid is een mondiale zaak waarin internationale samenwerking en besluitvorming leidend is. Daarbij worden grootschalige oplossingen zoals het indammen van de Noordzee of het verplaatsen van landsgrenzen niet gemeden. Nederland neemt hierbij een pioniersrol op zich en voert lokale innovatietrajecten uit welke kunnen worden opgeschaald.



ecomodernistisch narratief

4

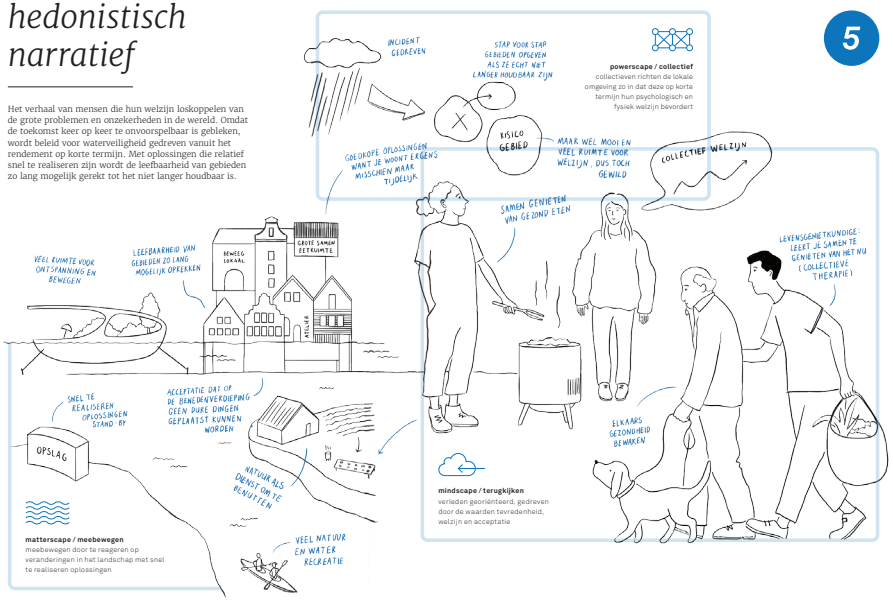
Het verhaal van geloof in inventiviteit van de mens, eco-engineering en ontkoppeling van mens en natuur. Vanuit een ecomodernistisch perspectief wordt het watervelligheidsbeleid gekenmerkt door grote contrasten. Grootschalige oplossingen waar verdichte gemeenschappen leven tegenover verwildering en radicale ruimte voor de natuur waar de mens zich terugtrekt.



hedonistisch narratief

5

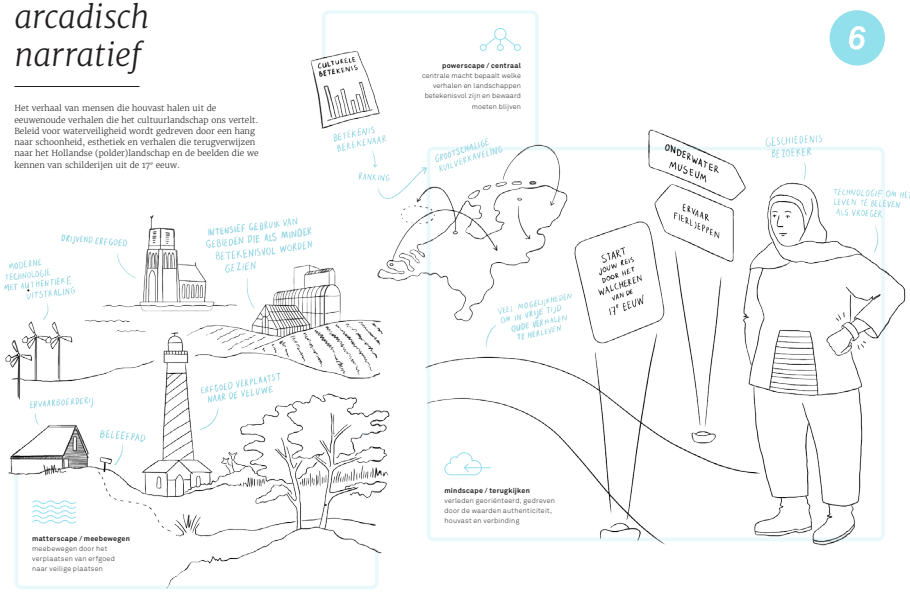
Het verhaal van mensen die hun welzijn loskoppelen van de grote problemen en onzekerheden in de wereld. Omdat de toekomst keer op keer te onvoorspelbaar is gebleken, wordt beleid voor waterveiligheid gedreven vanuit het rendement op korte termijn. Met oplossingen die relatief snel te realiseren zijn wordt de leefbaarheid van gebieden zo lang mogelijk gerekt tot het niet langer houdbaar is.



arcadisch narratief

6

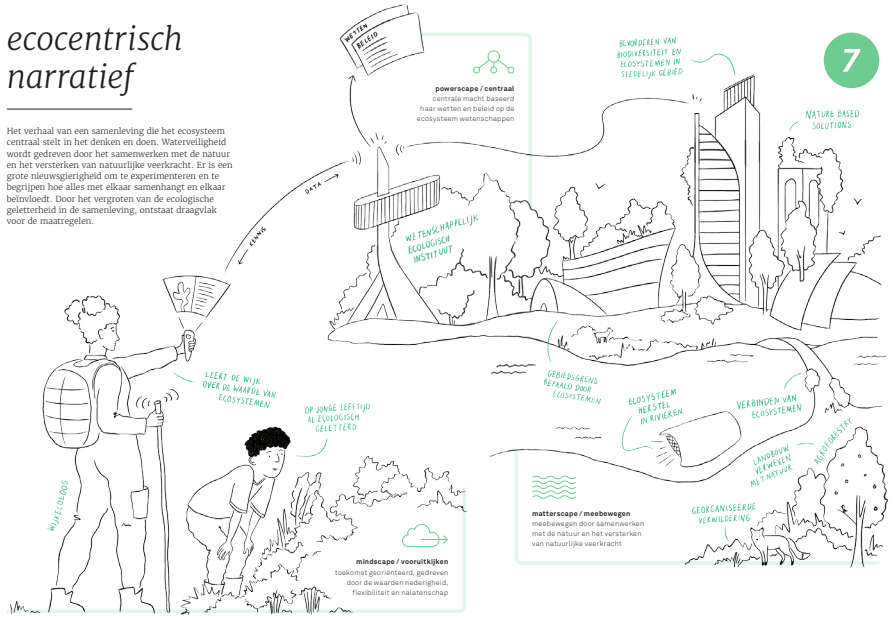
Het verhaal van mensen die houvast halen uit de eeuwenoude verhalen die het cultuurlandschap ons vertelt. Beleid voor waterveiligheid wordt gedreven door een hang naar schoonheid, esthetiek en verhalen die terugverwijzen naar het Hollandse (polder)landschap en de beelden die we kennen van schilderijen uit de 17e eeuw.



ecocentrisch narratief

7

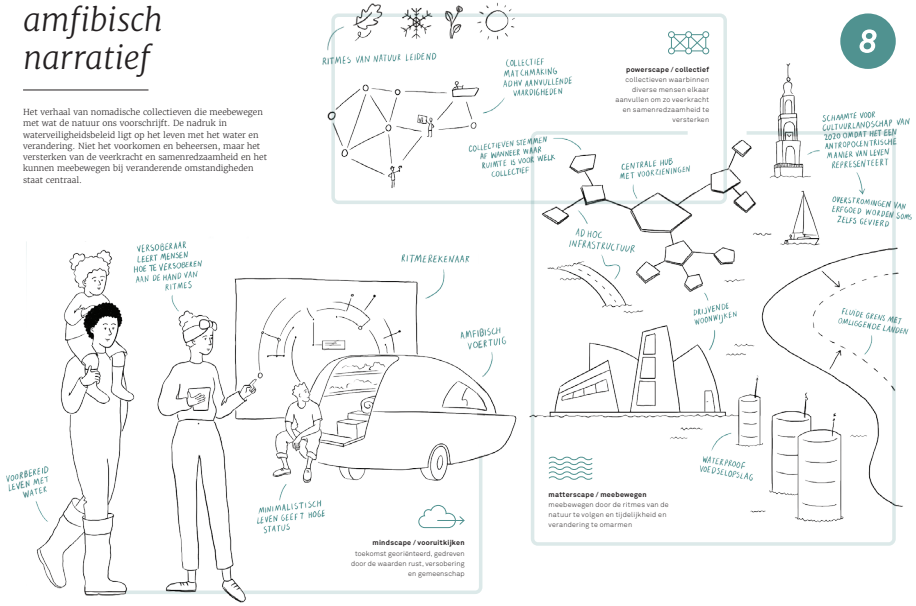
Het verhaal van een samenleving die het ecosysteem centraal stelt in het denken en doen. Waterveiligheid wordt gedreven door het samenwerken met de natuur en het versterken van natuurlijke veerkracht. Er is een grote nieuwsgierigheid om te experimenteren en te begrijpen hoe alles met elkaar samenhangt en elkaar beïnvloedt. Door het vergroten van de ecologische geletterheid in de samenleving, ontstaat draagvlak voor de maatregelen.



amfibisch narratief

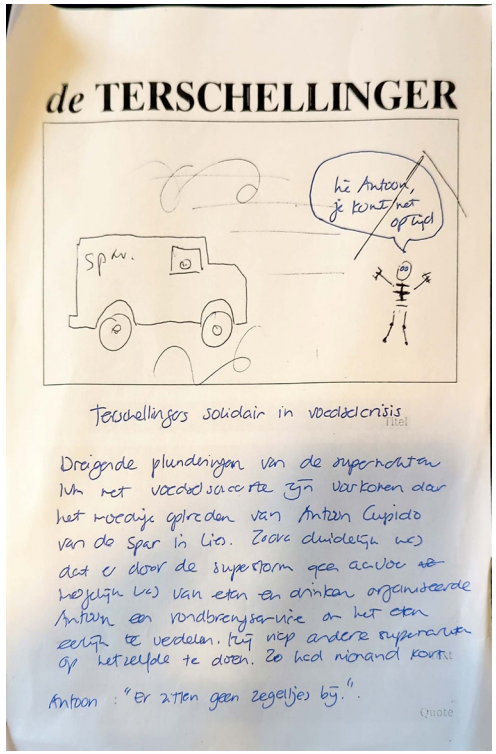
8

Het verhaal van nomadische collectieven die meebewegen met wat de natuur ons voorschrijft. De nadruk in waterveiligheidsbeleid ligt op het leven met het water en verandering. Niet het voorkomen en beheersen, maar het versterken van de veerkracht en samenredzaamheid en het kunnen meebewegen bij veranderende omstandigheden staat centraal.

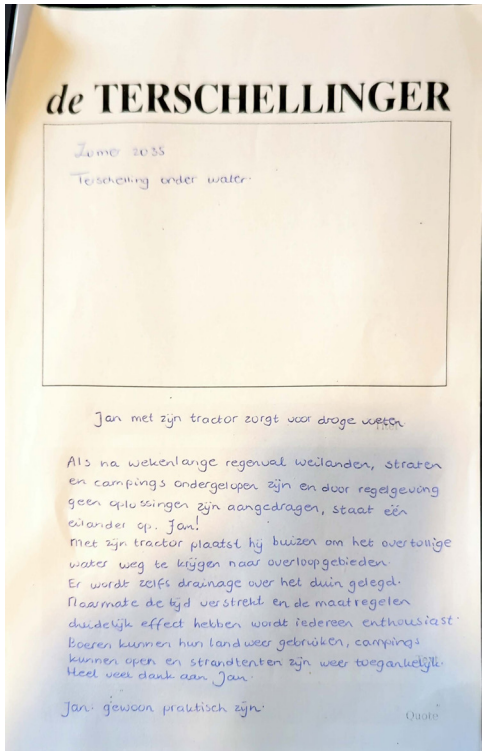


Appendix B.1

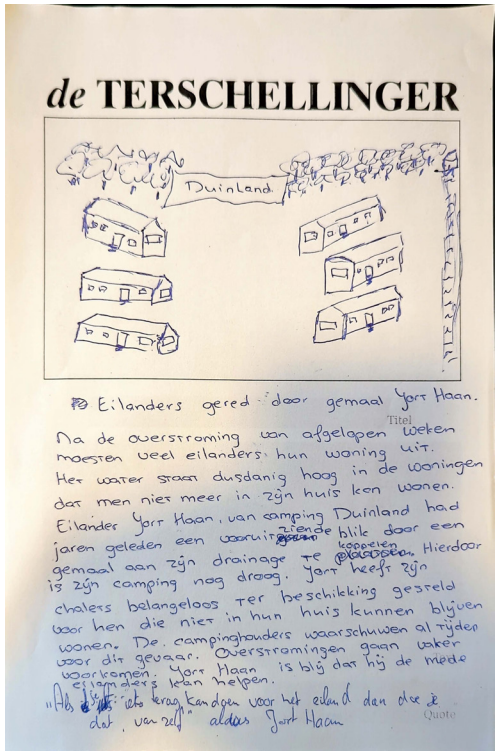
The following are the results of the exploratory workshop on Terschelling including the produced materials and the English translation done by me. These were then intuitively analysed which provided the themes seen in Appendix B.2



Terschellingers united in food crisis



Jan with his tractor ensures dry feet.



Islanders rescued by pump Jort Haan

Imminent looting of supermarkets due to food scarcity has been prevented by the brave actions of Antoon Cupido from Spar in Lies. As soon as it became clear that there was no supply of food and drink due to the superstorm, Antoon organized a delivery service to distribute the food fairly. He calls on other supermarkets to do the same. This way, no one went without food.

Antoon: “There are no stamps included”

When fields, streets, and campsites have been flooded after weeks of rain and no solutions have been provided due to regulations, an islander stands up. Jan! With his tractor, he places pipes to drain the excess water to overflow areas. Even drainage is laid over the dune. As time passes and the measures show clear effects, everyone becomes enthusiastic. Farmers can use their land again, campsites can open, and beach tents are accessible once more. Many thanks to Jan.

Jan: “Just be practical.”

After the flooding of the past weeks, many islanders had to leave their homes. The water is so high in the houses that one can no longer live in their home. Islander Jort Haan, from camping Duinland, had the foresight years ago to connect a pump to his drainage system. As a result, his campsite remains dry. Jort has selflessly made his chalets available for those who cannot stay in their homes. The campsite owners have been warning about this danger for some time. Flooding will occur more frequently. Jort Haan is happy that he can help his fellow islanders.

“If you can do something in return for the island, you do it, naturally,” said Jort Haan.

Appendix B.2

Themes that surfaced from the quick, intuitive analysis done on the results of the Terschelling workshop. As the workshop was primarily done to get insights into the process of hosting workshops, rather than with the goal of uncovering themes to use further, these were excluded from the rest of the thesis.

Values		Concerns
Solidarity	⟷	Unfairness
Practical solutions	⟷	Regulations standing in the way of solutions
Being well prepared	⟷	More frequent water complications

Relation with water

Need to adapt to it

Need to control it

Quotes

"No solutions have been provided due to regulations, an islander stands up"

"Jort had the foresight years ago to connect a pump to his drainage system."

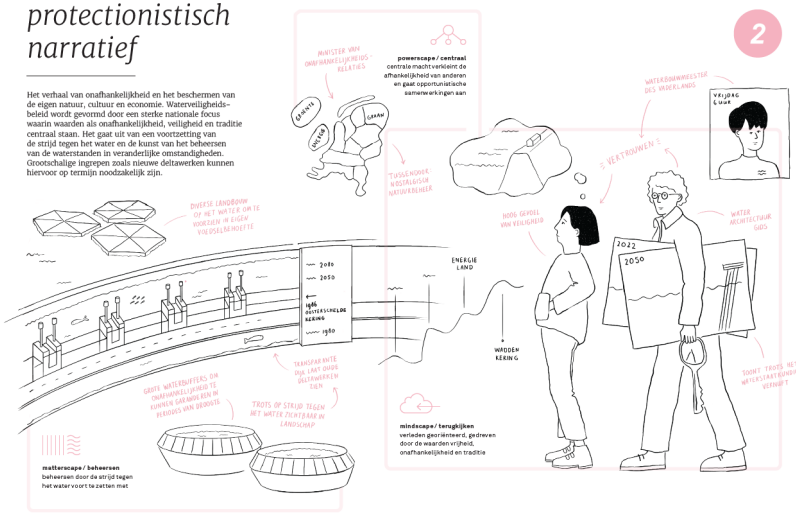
"This way, no one went without food."

"Just be practical."

Appendix C.1

Progression of the Deltares narratives shown in the workshops

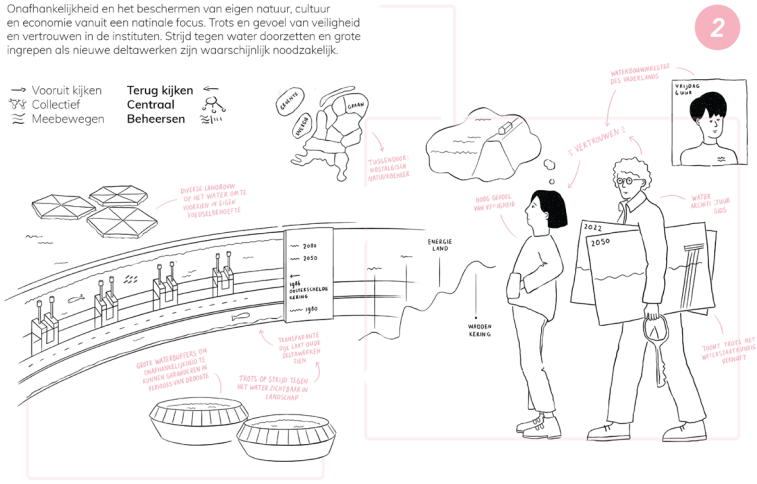
1 *protectionistisch narratief*



Narratives shown in WS1, unchanged

2 Protectionistisch

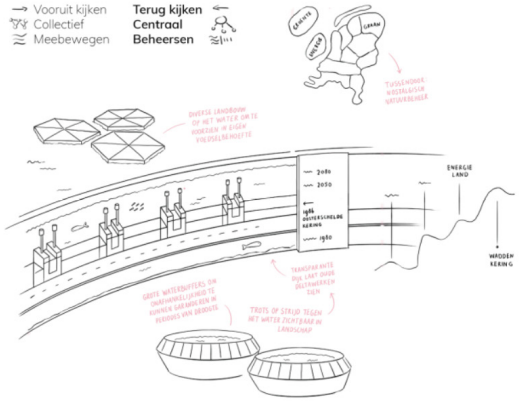
Onafhankelijkheid en het beschermen van eigen natuur, cultuur en economie vanuit een natinale focus. Trots en gevoel van veiligheid en vertrouwen in de instituten. Strijd tegen water doorzetten en grote ingrepen als nieuwe deltawerken zijn waarschijnlijk noodzakelijk.



Narratives shown in WS2, Centralised the -scape axis and removed their explanations and summarised the explanation text

3 Protectionistisch

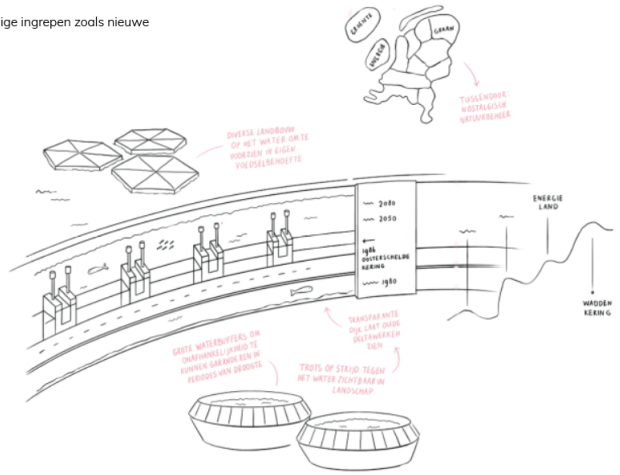
Onafhankelijkheid en het beschermen van eigen natuur, cultuur en economie vanuit een natinale focus. Trots en gevoel van veiligheid en vertrouwen in de instituten. Strijd tegen water doorzetten en grote ingrepen als nieuwe deltawerken zijn waarschijnlijk noodzakelijk.



Narratives shown in WS3, Removed social aspect only focussing on clear, physical changes

4 Protectionistisch

Wat: Onafhankelijkheid, zelf beschermen
Hoe: Strijd tegen / beheersen van water landelijk doorzetten
Oplossingen: Grootschalige ingrepen zoals nieuwe deltawerken

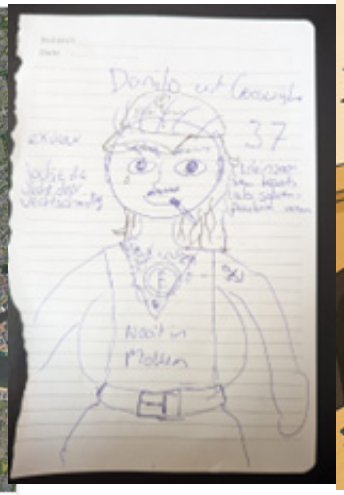


Final shown narratives in WS4 & WS5, Fully removed the axis, kept aside for later explanation and strucutred the explanation text in clear bullet points

Appendix D.1 - Results workshop 1

Themes that surfaced from the quick, intuitive analysis done on the results of the Terschelling workshop. As the workshop was primarily done to get insights into the process of hosting workshops, rather than with the goal of uncovering themes to use further, these were excluded from the rest of the thesis.

Value exploration exercise (Phase 2)



Created character at the start of Phase 4

Recreation of Workshop 1 by ChatGPT based on a photo (image generated by author using OpenAI, 2025)

Facilitator interpetation and translation of created story by participants in Workshop 1 during Phase 4

In 2048, Curaçao is completely flooded. It's all over the news, and everyone seems to be talking about it. Danilo, however, doesn't really care. He feels that too much money is being directed toward the crisis and resents the attention it receives. When protests begin in the Netherlands demanding more government action, Danilo finds the whole thing irritating and unnecessary. To him, Rotterdam no longer feels like Rotterdam, and the country's priorities seem off.

A year later, in 2049, Danilo attends a counter-protest. There, unexpectedly, he meets the woman who would become his wife. They fall in love quickly, united by a shared skepticism of the attention being given to the Curaçao situation. For the first time in a while, Danilo feels genuinely hopeful.

But in 2052, the consequences of climate change begin to reach his doorstep. Rotterdam is now at risk of flooding. As the hundredth anniversary of the 1953 Watersnoodramp approaches, parts of the French coast are already underwater, and fear begins to spread. Danilo starts to feel the pressure. He's scared, and he's stressed. The harbor where he works is becoming increasingly inaccessible, and he fears losing the job that has supported him for years.

In 2055, Kralingen is flooded. Crooswijk, where Danilo lives, is narrowly saved—thanks to the efforts of workers from Curaçao, who put down sandbags just in time. Danilo watches as his house is protected by the very people he once disregarded. His views shift. He gains respect for them, even if he still doesn't care much that Kralingen is lost.

Three years later, in 2058, the Netherlands responds to the escalating floods by investing heavily in floating housing as an emergency solution to the ongoing housing crisis. Danilo's experience in harbor construction lands him a new job building these floating homes. Crooswijk, though battered, is still standing, and he finds a new sense of purpose in his work.

Then, in 2062, Crooswijk finally succumbs to the water. Even the Kuip almost floods. Danilo's wife dies in the disaster, and he is devastated. He cries uncontrollably, broken by the loss. His income drops, and overwhelmed by grief, he begins drinking more and more. His life begins to unravel.

In 2063, Germany begins experiencing severe flooding as well and starts dumping its excess water into the Maas. Tensions escalate. The Dutch government threatens to use military force if Germany doesn't stop. Danilo is crushed by the possibility that his son—his pride and joy—might be sent to the front. The thought fills him with fear, and he cries more often. Loneliness takes hold.

A year later, in 2064, Germany still hasn't backed down, and the Netherlands officially declares war. Danilo's son is conscripted. Danilo begs to go with him but is rejected. Determined to support him in any way he can, Danilo decides to stop drinking and begins training, hoping to at least feel useful again.

In 2065, Germany bombs Dutch water defenses, flooding both nations even more severely. Danilo loses his home again. This time, instead of despairing, he takes action. He starts building his own living boat from scratch, determined to survive.

By 2067, the Netherlands has won the war against all odds. Germany is split and redistributed across Europe. Living boats have become the primary way of life in the Netherlands. Danilo launches Feyenoord Inc., quickly rising to the top of the market as a leading builder of floating homes. He earns a fortune and becomes a national figure.

In 2069, Danilo becomes what people call a "woonbootjesmelker," profiting from overpriced living boats. He's now running for president. Old and seemingly wise, he begins investing heavily in water taxi infrastructure, hoping to revolutionize transport across the flooded city.

By 2070, water traffic dominates Rotterdam. It's the city's main form of transportation, just as Danilo had envisioned. He stands at the peak of his career, reaping the rewards of his efforts.

But despite his success, Danilo is deeply unhappy.

And he drinks. A lot.

Appendix D.2 - Results workshop 2

Top: Value exploration exercise (Phase 2)
Bottom: Quick future exploration element

Created stories in Phase 4, translated by author

Story 1:

Rick wakes up from a massive storm. This feels normal to him, but something about this storm is strange. The sky is darker than usual, and all the birds are flying away. Rick starts to worry, especially about his parents. Suddenly, he looks outside and sees a flash. His neighbor's dog floats by on a drone. His portable house is already on the way to his parents, who, thankfully, are not ignoring his messages. Nothing serious seems to be wrong, although the 55G network is down. His parents are in the kitchen, cooking. Meanwhile, the storm keeps intensifying, and Rick hears distant sirens. He feels his seaweed vitamins slowly releasing energy, and, using his googles, he follows a prescribed safety route. Before this, his and his parents' houseboats had merged into one mega cool submarine. But underwater, they discover a terrifying danger: a massive sea monster. At first, it appears the Maas police are stopping him, but it turns out that all kinds of sub-river infrastructure have come loose, tangled together, and are now drifting through the water. Earlier, Rick's hologram had been deepfaked during an online auction, leading to a bankruptcy summons. As the next wave arrives, the Maas police pull him over. Rick is arrested and forced to move to the most horrible place on Earth: Capelle aan den IJssel. Rick has to move.

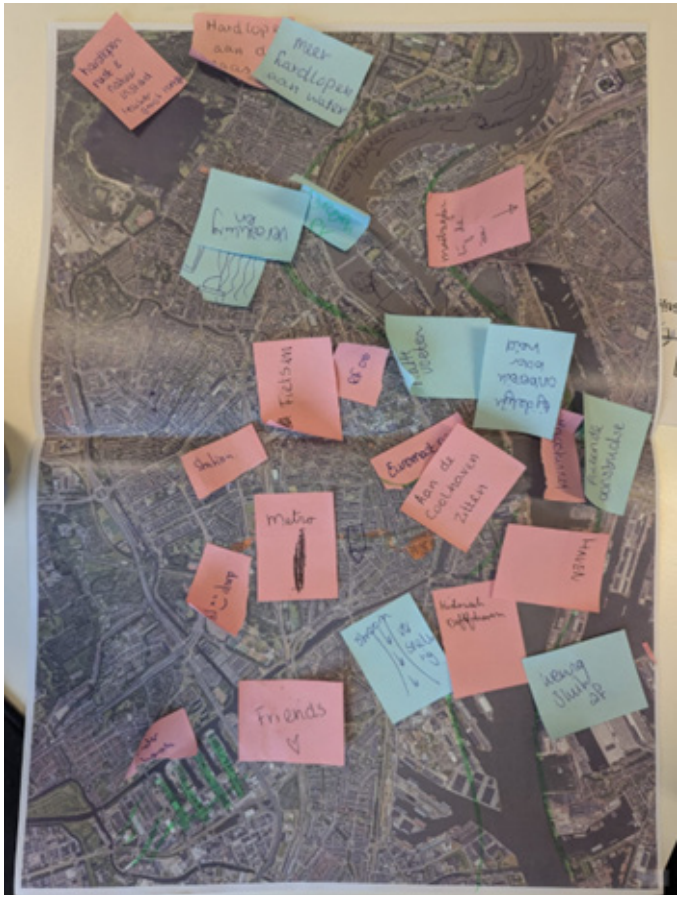
Story 2:

Anita arrives at the Rotterdam station by hyperloop. It's crowded. She is searching for her best friend from years ago. Chat AI has tracked him down for her, even though he changed his name. Anita feels her baby is almost ready to be born and has already scheduled the chip implant for her new little one. This baby is, of course, a clone of her old friend and is meant to help her locate her companion, Klaas, by using age acceleration and facial recognition. She goes to the old lock, a building that can accelerate the aging process due to its age. Riding a lime hovercraft, she travels to the lock. Her AI glasses identify Klaas within 0.22 seconds. He is a young god. Anita and Klaas exchange their lost years telepathically and vanish into his air tower. The lights dim—BUT NO—her water breaks. The storm surge barrier overflows between her legs. She is going into labor. The replica Klaas bursts from her belly, and Anita lies fulfilled between her two Klaases. And she closes her eyes in a strange bed.

Appendix D.3 - Results workshop 3

Phase 2 - Locations with facilitator recounting of extra context

- AW Running along the Maas, beautiful big city looks impressive when running towards there
- AW Hated biking through Rotterdam as it is always extremely busy and overstimulationg.
- AW mentioned sitting at the Coolhaven in the summer, enjoying the sun and chilling at the water.
- AW mentioned that their friends lived here which made living in the city a loat of fun
- SW Also talked about historisch delfshaven, basically the only place in Rotterdam thatwas not bombed in the 2nd world war. A cool and quiet piece of history in the modern city.
- SW mentioned the metro, a very practical way to get around the city
- SW Talked about the harbor, a place of extreme importance for the Netherlands and some pride that it was here in Rotterdam. It was cool
- JS Running along the Kralingse Plas, a calm and basically the only nature place in the big city (someone else did remark that it was fake)
- JS mentioned the maastunnel, a cool infrastructural project that connected the north and south of the city. Very practical
- BM added to this that the buildings on either end of it were also cool architectural pieces.
- JS talked about the Euromast park, another chill place where in the summer everyone goes and hangs out. It provides the option of relaxation and freedom in the busy city.
- BM Really enjoyed the station, it was beautiful and build by the Dutchies, in contrast to the proposed, way more expensive station and this was representative of the Rotterdam spirit to take things in your own hands
- BM Also enjoyed Riff010, a place to surf in the center of the city. Eventhough he only went there once himself, even the concept in that area of Rotterdam where it was open to testing crazy concepts and experimental buildings like the kubuswoningen or the markthal. Also representative of Rotterdam being a city where you can do whatever you want
- BM mentioned Blijdorp the Zoo. A place he sometimes visits with a lot of joy. One of the many unique places in the city. Even just biking past the beautiful characteristic old gates made him happy.



Map of value and future exploration at the end of Phase 3

Literal created stories in Phase 4

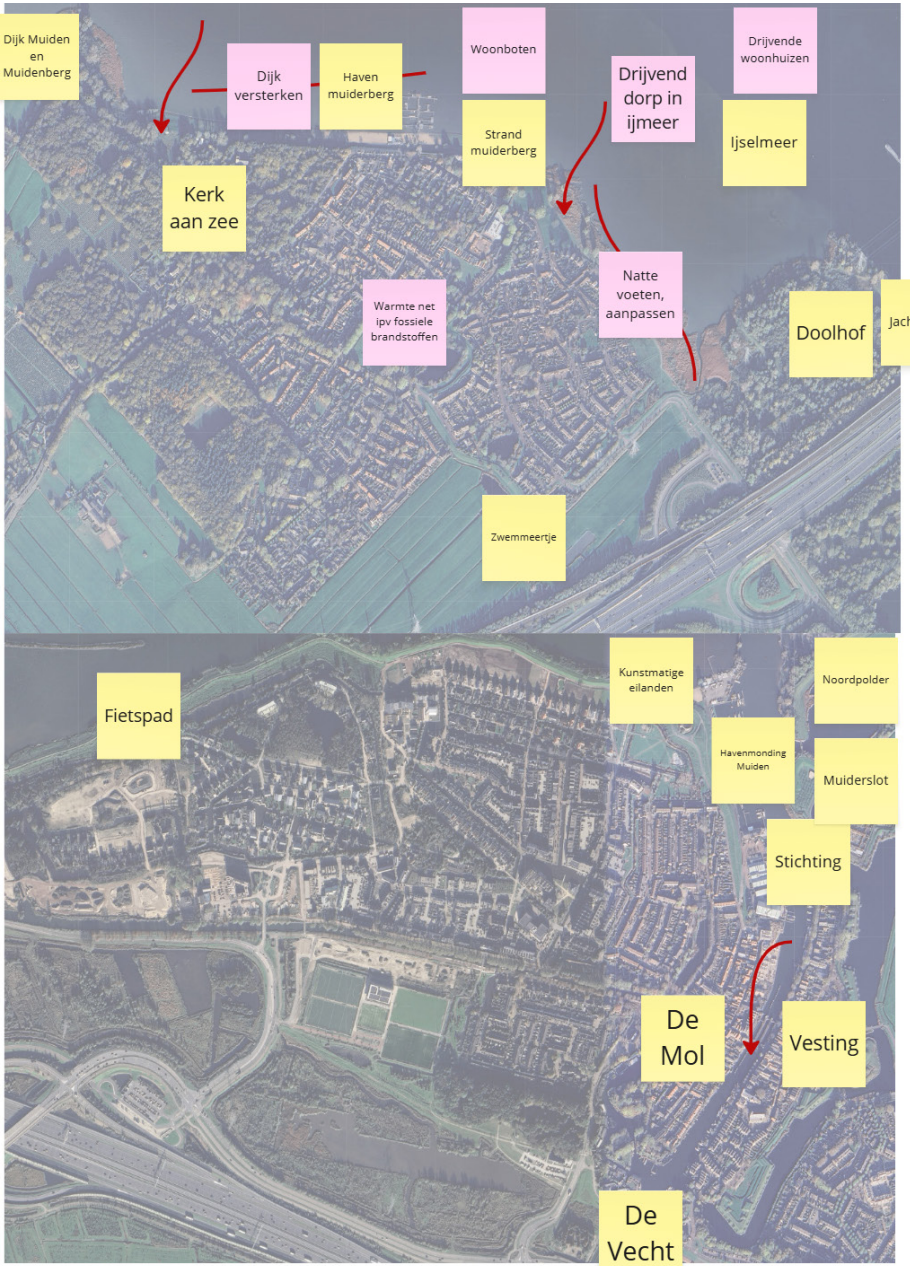
Story 1:

Gijs wil hardlopen naar Blijdorp! / Hij stapt naar buiten in zijn hardloop kaplaarzen / Hij heeft er helemaal zin in, de nieuwe onderwater dierentuin Blijdrop ontdekken / Hij begint met rennen maar er ligt een obstakel op de weg / Het opstakel is een huis! die is door de maandelijkse superstorm weggespoeld en ligt midden op de Heemraadsingel / Gelukkig kan hij de plaatselijke Amphibieeen bus (SplashTours) pakken die er langs vaart / Hij zwaait nog even naar de mensen in het huis, die vinden het namelijk helemaal niet erg want ze hebben gewoon hun inrichting omgedraaid / In de amphibie bus vaart hij langs verschillende straten waar hij mensen met water-fatbikes ziet varen tot hij aankomt bij de halte waar hij moet uitstappen / Maar de halte is niet Blijdorp! Hij is ineens bij Blaak! Dit was de verkeerde bus, het is namelijk 2100 en teleporteren is heel normaal (qwantum etc.) / Wat chill! nu kan Gijs alsnog een stukje hardlopen richting kralingse bos / Op een heel rustig tempo'tje begint Gijs en hij komt al gelijk z'n grootste angst tegen in het Kralingse Bos / Hij komt een heuvel tegen! Hij heeft al 75 jaar niet hard gelopen dus hij is bang dat hij de top niet haalt. Gelukkig is er ook een roltrap / Vanaf de heuvel heeft Gijs mooi uitzicht over zijn Stad, een typische dag. Grijze lucht, windkracht 9 en alles onder water. "het Nieuwe Venetie"

Story 2:

Gerda gaat shredden / maar het rijd niet meer door de overstroming! Zelfs de teleport bus is stuk / Ze loopt de straat op maar er staat 40cm aan water op straat dus het is nogal moeilijk om vooruit te komen / Maar Shredda zet door, ze peddelt lekker door want ze heeft haar hot girl yoga goed gedaan #gains / Ze komt alleen niet veel verder, een schip is degen de Erasmusbrug gevaren vanwege hoog water / Gelukkig is Shredra echt killleerr goed in duckdives! / Ze blijft peddelen en komt erachter dat het best wel druk is met mensen die ook willen shredden / Ze ziet een hand uit het wateroppervlak komen, wat zou dat zijn, ze pakt hem vast / Het is een gemuteerde zeehond die ontstaan is door de overstroming van de kerncentrale in Borselen / Ze geeft hem een high five en denkt aan vroeger .. toen Rotterdam nog niet overstroomd was / Ze moet een traantje laten want ze heeft al 3x moeten verhuizen maar tijdens het dagdromen klapt er een golf boven op haar / In die golf zitten wel wat hele handige items, meegesleurd door de overstroming / Een vloedpakket wat tegenwoordig ieder huis heeft en een snackie voor de tocht naar huis / Na een paar dikke waves te pakken land ze bij haar nomrale after surf spot, een heuvel bij de Kralingse plas. Daar zat ewel een heeeele knappe oude man waar ze haar eitje mee deelde.

Appendix D.4 - Results workshop 4



Map of value and future exploration at the end of Phase 3. Locations in yellow, risks and changes in red

Phase 4 stories, translated by author

Story 1 - Story of a day in the life of someone living in 2100 in Muiden or Muiderberg

Storm goes to work in Amsterdam. / He works at a hospital. / He steps into his boat. / It's cold in the wind just below Pampus. / At the mound where the hospital is located, it's crowded. / He struggles to find a place to dock his boat. / Patients have arrived from all over the region. / From afar, he can already see how busy it is as he approaches. / He thinks: I don't feel like sailing in instead of the patients. / He quits his job and sails to the Zeedijk, where there are bars built on stilts. / He orders a beer on the terrace. / The unemployed farmers are already quite drunk. / They've had no work for a long time and are bored. / He walks further along the Zeedijk. / "Where have all the prostitutes gone?" / They were driven out by the floating padel courts. / So he decides to play a game of padel. / He pings a friend to join him. / He's glad this padel court was spared after the last flood, when most of Amsterdam-East disappeared. / He feels a pang of guilt and walks to the hospital / and begins his three-day shift.

Story 2 - A storm happened and a part of Muiden/Muiderberg is flooded. The story of a hero

Robin, a girl, wakes up and hears on the radio that a storm is approaching. / She gets dressed and prepares her rescue boat. / Her house is the highest point in the area. / She sails to the end of the street, where a disabled woman lives. / She brings twenty disabled residents into her home. / At the SRV boat, she picks up food and drinks. / It will likely be a long time before the water recedes. / A cow moos, a dog nearly drowns. / Who should she save? / She gathers a group of volunteers to check all the weak points of the raised dike. / Work continues all day. / At the Church by the Sea, a huge hole is repaired. / The rain doesn't stop. / The water keeps rising. / She manages to mobilize even more people with boats. / To better secure the newly built floating village section in the IJmeer.

Appendix D.5 - Results workshop 5

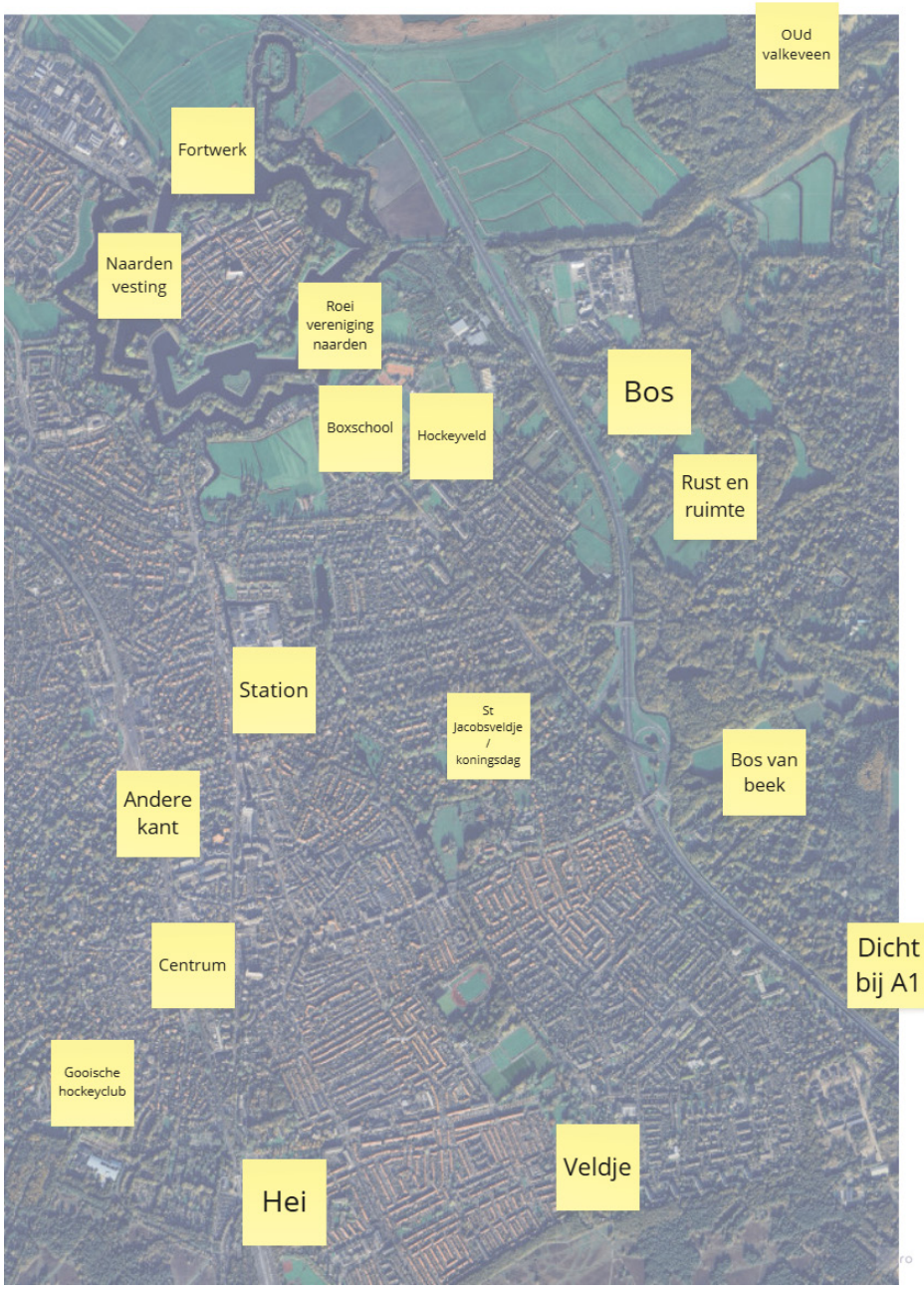


Figure 83.Map of meaningful location exploration at the end of Phase 2

Individual future exploration after Phase 3

Format:
Because this happened
This has changed in 2100

Participant 1
The Russians sabotaged the energy supply. There is no electricity.
Water in the Mouwtje has reached the field.

Heavy rain showers cause the wheelie bins to overflow through the wide drain.
We live on the first floor of the house; the ground floor serves as a garage.

The A1 motorway has flooded.
Amsterdam-Utrecht is no longer accessible from Bussum. Drones deliver groceries.

Participant 2
The money has run out.
Mass migration to the east.

Energy is free.
Pumps regulate water balance

War has devastated the west.
Population halved.

Participant 3
Groundwater levels have risen.
Spiegel has become uninhabitable. People have moved eastward.

Water levels have increased, and pumping out water is no longer effective.
Houses in low-lying areas have become unsellable.

Higher water levels.
Water board costs have become unaffordable. Polders are being abandoned.

Participant 4
The water tower near Bussum Zuid uses only the upper offices.
New buildings are constructed on stilts.

Waterways are not flowing properly due to overgrowth.
There is a greater need for aquatic ecologists to promote appropriate flora and fauna.

The fastest way from A to B is increasingly over water.
Everyone learns to row and obtains a boating license.

Phase 4 stories, translated by author

Story 1 - Story of a day in the life of someone living in Bussum in 2100

Roos cycles to the KMS. / She brushes strands of hair from her face. / Fortunately, it's slightly less rainy today than the previous days. / The harvest from the Moutje provides dinner again. / The children have swimming lessons this afternoon, so Roos has the bags with her. / Roos dreads the parent-teacher meeting. / But the principal has probably seen the 'for sale' sign in their yard. / The school's decline is palpable. / Roos hopes that people will eventually come to take a look. / No one lives across the railway anymore. / There, the wheelie bins overflow onto the street. / The Bredius hockey team finally won on King's Day. / Roos will take the ferry to her work in the water tower later. / She'll check on her goats, near where the Koningslaan used to be, tomorrow. / Upon arriving at work, Roos checks the now-proven FSTG method, Future Storytelling IJsselmeer method, and chooses the 'wegren' scenario. / Her eldest daughter from a previous marriage has to choose her subject package tomorrow. / Roos checks the University of Amsterdam's online site to see which subjects are needed for aquatic ecology. / She should learn German to study this in Düsseldorf later.

Story 2 - A storm happened and a part of Bussum is flooded. The story of a hero

It's still dark, but the storm has subsided. / Igor decides to put on his boots. / The inflatable boats from the national emergency kit float aimlessly through the neighborhood. / The cows from the Moutje and the goats are also swimming through the streets. / Igor sees a boat floating with someone in it. / "Hhhhhey," sounds the hoarse voice. / The devastation is enormous. / Igor grabs his fishing boat and sails over the Landstraat to the drowning person. / Together, they sail to the water tower and press the big red pumping button, and the basin drains. / Igor thinks. / He hears a loud buzzing and is overtaken by two fatboats. / "Hey," shouts Igor. / The fatbikers don't respond. / Igor and his companion tie a note to a tree branch. / On it, a time strip and a plea for help. / The fatboat guys are clearly looters. / Igor retrieves his electric mole catcher weapon from the hold but doesn't aim it at the fatboats. / Instead, he targets the Hilversum television tower and hoists his boat to safe land. / In the tower, he finds radio makers to whom he tells that many people are still on rooftops. / They share their last protein bar before requesting help on Radio TV Noord-Holland. / A flotilla of recreational boats ensues, rescuing hundreds of victims from the rooftops.

Appendix E.1 - Analysis WS3

Below are the themes with an excerpt of some supported quotes that lead to the values as described in 6.1.1. This workshop was not recorded so examples are mostly from direct products of the participants or facilitator recountings.

1. Rotterdam's quirky, practical spirit

Supports: Experimental City Spirit

- "De metro, een heel praktische manier om door de stad te komen." Phase 2
- "Riff010, een plek om te surfen in het centrum van de stad [...] gewoon een testplek voor gekke ideeën." Phase 2

2. Imaginative, playful futures with identity intact

Supports: Experimental City Spirit

- "Nieuwe onderwater dierentuin Blijdrop." (Story 1)
- "De plaatselijke amfibieënbus (SplashTours)." (Story 1)

3. Finding joy and absurdity in a submerged city

Supports: Joy and playfulness in daily life

- "Hij heeft helemaal zin in de nieuwe onderwater dierentuin Blijdrop." (Story 1)
- "Wat chill! nu kan Gijs alsnog een stukje hardlopen." (Story 1)

5. Humor as resistance to fear-based futures

Supports: Joy and playfulness in daily life

- "De mutante zeehond geeft een high five." (Story 2)
- "Daar zit wel een heeele knappe oude man waar ze haar eitje mee deelde" (Story 2)

5. Movement is essential

Supports: Physical activity and movement

- "Langs de maas rennen ... het ziet er indrukwekkend uit." (Phase 2)

- “Gerda gaat shredden (Surfing)..” (Story 2)

6. Sport and humor as forms of resilience

Supports: Physical activity and movement

- “Shredda zet door ze heeft haar hot girl yoga goed gedaan.” (Story 2)
- “Hij heeft al 75 jaar niet hardgelopen [...] gelukkig is er een roltrap.” (Story 1)

7. Adapting while still missing stability

Supports: Adaptation with emotional resilience

- “Ze moet een traantje laten want ze heeft al drie keer moeten verhuizen.” (Story 2)
- “Het huis ligt midden op de Heemraadsingel.” (Story 1)

8. Awareness of inequality in future cities

Supports: Adaptation with emotional resilience

- “Behalve de arme, die kunnen niet verhuizen” (Workshop reflection)

9. Creative infrastructure and partial preparedness

Supports: Adaptation with emotional resilience

- “Een vloedpakket wat tegenwoordig ieder huis heeft.” (Story 2)
- “Blaak zou een overloopzone kunnen worden.” (Workshop reflection)

10. Free movement remains essential, even in chaos

Supports: Freedom of mobility

- “Gijs komt bij de verkeerde halte aan ... teleporteren is nu normaal.” (Story 1)
- “Maastunnel en metro zouden tijdelijk kunnen overstromen ... je moet eraan wennen.” (Workshop reflection)

Appendix E.2 - Analysis WS4

Below are the themes with an excerpt of some supported quotes that lead to the values as described in 6.1.1.

1. Taking care of others, even in crisis

Supports: Helping others and taking responsibility when needed

- “Robin hoort op de radio dat er storm op komst is. Ze kleedt zich aan, brengt haar reddingsboot in gereedheid.” (Story 2)
- "Storm krijgt wroeking en gaat terug naar het ziekenhuis" (Story 1)

2. Collective action and practical solidarity

Supports: Helping others and taking responsibility when needed

- “Bij de Kerk aan Zee wordt een enorm gat hersteld.” (Story 2)
- “Om het nieuw gebouwde drijvende dorp gedeelte in het IJmeer extra vast te schoren.” (Story 2)

3. Living near water as a source of space, freedom, and pleasure

Supports: Connection to water and open spaces

- “De nabijheid van water geeft mij heel veel vrijheid, plezier en rust.” (Phase 2)
- “Je kijkt erover uit en ziet het Muiderslot, het water en het IJsselmeer. Dat vind ik een ultiem mooi landschap.”(Phase 2)

4. Water as part of everyday life and identity

Supports: Connection to water and open spaces

- “25 jaar op een woonboot op de Vecht gewoond ... je kijkt vanuit je raam zo de eendjes zwemmen onder je.” (Phase 2)
- “Op het water zijn, qua sportiviteit, intensiviteit, maar ook qua vriendschap. Mooie groep mannen dichtbij.” (Phase 2)

5. Active outdoor life as part of wellbeing

Supports: Connection to water and open spaces

- “Langs de oude kruidfabriek. Heel mooi pad. ... Lekker actief en buiten zijn.” (Phase 2)
- “Je kunt er heerlijk wandelen en fietsen. Geluk, veiligheid, duurzaamheid.” (Phase 2)

6. Responding to future risks by adapting built environments

Supports: Adaptability with protection of everyday life

- "Drijvend dorp in het IJmeer." (Phase 3 and Story 2)
- "Huizen op palen." (Phase 3 Discussion)
- "Als alternatief nog een drijvend dorp in het IJmeer." (Phase 3 Discussion)

7. Realism about flood risks and infrastructure failure

Supports: Adaptability with protection of everyday life

- "Op vijf meter onder zeespiegel bouwen, dat is niet zo handig." (Phase 3 Discussion)
- "Als het IJsselmeer volloopt en de dijken het niet meer houden, dan krijg je dat hier ook. (Phase 3 Discussion)

8. Everyday life continues even with destruction

Supports: Adaptability with protection of everyday life

- "Fijn dat deze padelbaan gespaard is gebleven na de laatste overstroming, toen het grootste deel van Amsterdam-Oost is verdwenen." (Story 1)
- "De werkloze boeren zijn al behoorlijk dronken. Ze hebben al tijden geen werk en vervelen zich." (Story 1)

9. Holding onto social rituals and connection

Supports: Preservation of social connection and everyday joy

- "Hij bestelt een bier op het terras." (Story 1)
- "De Mol is de kroeg in Muiden. Leuk al dat buitengebeuren, maar het sociale gedoe en een klein drankje zijn ook op zijn plaats." Phase 2

10. Comfort in recognisable places

Supports: Preservation of social connection and everyday joy

- "Muidenslot … Mijn kinderen hebben daar ook rondleidingen gegeven. Nu is het een museum, maar ik kan er gewoon heen." (Phase 2)

Appendix E.3 - Analysis WS5

Below are the themes with an excerpt of some supported quotes that lead to the values as described in 6.1.1.

1. Emotional ties to local landscapes and memories

Supports: Attachment to meaningful places

- “Ik had ook de vesting [...] Het is gewoon een idyllisch stukje Nederland.” (Phase 2)
- “Het veldje... een heel fijn, vrij uitzicht. En er spelen allemaal kinderen. Ik vind het belangrijk dat dat behouden blijft.” Phase 2)

2. Nostalgia

Supports: Attachment to meaningful places

- “Dat is ook een stukje nostalgie en vriendelijkheid. Het is nooit zo heel belangrijk dat ze wonnen. Alleen maar dat ze het leuk vonden.” (Hockeyclub) Phase 2)
- “Fortwerk 4 [...] daar hadden wij kooklessen. In die soort kazematten.” Phase 2)

3. Daily adaptation to climate impacts

Supports: Local resilience and self-sufficiency

- “We leven op de eerste etage van het huis. Beneden is garage.” (Personal futures)
- “De oogst van het Moutje voorziet weer het avondeten.” (Story 1)

4. Learning future survival skills

Supports: Local resilience and self-sufficiency

- “Iedereen leert roeien en haalt vaarbewijs.” (Personal futures Phase 3)
- “Ze kan beter Duits leren om dit straks in Düsseldorf te studeren.” (Story 1)

5. Neighborhood-level preparedness

Supports: Local resilience and self-sufficiency

- “In deze wijk houden we de hele wijk droog. Door een pomp in elkaar te komen.” (Phase 3 Discussion)
- “We zijn nu al met de tegelwippen acties bezig. Maar dan tegelwippen op stedenbouwkundig niveau.” (Phase 3 Discussion)

6. Caring for the children

Supports: Local resilience and self-sufficiency

- “Het veldje… een heel fijn, vrij uitzicht. En er spelen allemaal kinderen. Ik vind het belangrijk dat dat behouden blijft.” (Phase 2)
- De kinderen hebben vanmiddag zwemles dus roos heeft de tassen bij zich (Story 1)

7. Acts of care in crisis moments

Supports: Collective care and solidarity

- “Ze delen hun laatste proteinereep.” (Story 2)
- “In de toren treft hij radiomakers aan, aan wie hij vertelt dat er nog vele mensen op daken staan.” (Story 2)

8. Spontaneous organization and community improvisation

Supports: Collective care and solidarity

- “Een flotilla van recreatieboten is het gevolg waarmee honderden slachtoffers worden gered.” (Story 2)
- “Aan een boomtak knopen Igor en zijn kompaan een briefje […] met een tijdstrip en vraag om hulp.” (Story 2)

9. Decay and doubt about old centres

Supports: Stability amid uncertainty

- “De winkels verdwijnen nu omdat… ja, hoe treurig.” (Phase 2 discussion)
- “De leegloop van de school is voelbaar.” (Story 1)

10. Staying put while adapting around risk

Supports: Stability amid uncertainty

- “Amsterdam–Utrecht is vanuit Bussum niet meer bereikbaar. Drones leveren boodschappen.” (Personal futures Phase 3)
- “Huizen in lage gebieden zijn onverkoopbaar geworden.” (Personal futures Phase 3)

11. Migration is thinkable but delayed

Supports: Stability amid uncertainty

- “Grote trek naar het oosten.” (Discussion Phase 3)
- “Spiegel is onbewoonbaar geworden. De mensen zijn naar het oosten verhuisd.” (Personal futures Phase 3)

IDE Master Graduation Project

Project team, procedural checks and Personal Project Brief

In this document the agreements made between student and supervisory team about the student's IDE Master Graduation Project are set out. This document may also include involvement of an external client, however does not cover any legal matters student and client (might) agree upon. Next to that, this document facilitates the required procedural checks:

- Student defines the team, what the student is going to do/deliver and how that will come about
- Chair of the supervisory team signs, to formally approve the project's setup / Project brief
- SSC E&SA (Shared Service Centre, Education & Student Affairs) report on the student's registration and study progress
- IDE's Board of Examiners confirms the proposed supervisory team on their eligibility, and whether the student is allowed to start the Graduation Project

STUDENT DATA & MASTER PROGRAMME

Complete all fields and indicate which master(s) you are in

Family name		IDE master(s)	IPD ☐ DfI ☐ SPD ✓
Initials		2nd non-IDE master	
Given name		Individual programme *(date of approval)*	
Student number		Medisign	☐
		HPM	☐

SUPERVISORY TEAM

Fill in he required information of supervisory team members. If applicable, company mentor is added as 2nd mentor

Chair		dept./section	Human-Centered Design
mentor		dept./section	Human-Centered Design
2nd mentor			
client:	Deltares		
city:		country:	
optional comments			

! Ensure a heterogeneous team. In case you wish to include team members from the same section, explain why.

! Chair should request the IDE Board of Examiners for approval when a non-IDE mentor is proposed. Include CV and motivation letter.

! 2nd mentor only applies when a client is involved.

APPROVAL OF CHAIR on PROJECT PROPOSAL / PROJECT BRIEF -> to be filled in **by the Chair** of the supervisory team

Sign for approval (Chair)

Roy Bendor - IO

Digitally signed by Roy Bendor - IO
Date: 2024.10.11 11:44:53 +02'00'

Name Roy Bendor Date 11 Oct 2024 Signature

Project planning and key moments

*To make visible how you plan to spend your time, you must make a planning for the full project. You are advised to use a Gantt chart format to show the different phases of your project, deliverables you have in mind, meetings and in-between deadlines. Keep in mind that all activities should fit within the given run time of 100 working days. Your planning should include a **kick-off meeting**, **mid-term evaluation meeting**, **green light meeting** and **graduation ceremony**. Please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any (for instance because of holidays or parallel course activities).*

Make sure to attach the full plan to this project brief.
The four key moment dates must be filled in below

Kick off meeting	3 Oct 2024
Mid-term evaluation	11 Dec 2024
Green light meeting	19 Feb 2025
Graduation ceremony	19 Mar 2025

In exceptional cases (part of) the Graduation Project may need to be scheduled part-time. Indicate here if such applies to your project

Part of project scheduled part-time	
For how many project weeks	
Number of project days per week	

Comments:

Motivation and personal ambitions

Explain why you wish to start this project, what competencies you want to prove or develop (e.g. competencies acquired in your MSc programme, electives, extra-curricular activities or other).

Optionally, describe whether you have some personal learning ambitions which you explicitly want to address in this project, on top of the learning objectives of the Graduation Project itself. You might think of e.g. acquiring in depth knowledge on a specific subject, broadening your competencies or experimenting with a specific tool or methodology. Personal learning ambitions are limited to a maximum number of five.
(200 words max)

This project resonates with me because I enjoy exploring long-term futures. There's often no single "right" answer, which opens up space for new and interesting insights and leads to interesting discussions where you talk about your current context with a vision on how aspects and choices now can really impact the future. While I don't know much about future storytelling yet, I'm excited to learn more and deepen my understanding in this area. Besides that I noticed that I am personally also quite unaware and uninvolved with the actual effects that climate change will have on our lives, so I find the focus also really relevant.

Through the creative facilitation course I was introduced to the world of workshops. The unpredictability of workshops, where the outcome isn't always clear at the start, often leads to insightful results and engaging discussions. My favorite moments in design are when I'm interacting with others, and workshops provide a great opportunity for those interactions.

For this project, I want to focus on structure and thoroughness. In previous projects, time constraints and my tendancy to get quickly distracted by sidetangent often limited the depth we could achieve, leaving ideas partially developed. Since this project allows more time, my goal is to create a well-rounded, tested workshop rather than just a plan for a workshop that should work but is not.

Personal Project Brief – IDE Master Graduation Project

Problem Definition

What problem do you want to solve in the context described in the introduction, and within the available time frame of 100 working days? (= Master Graduation Project of 30 EC). What opportunities do you see to create added value for the described stakeholders? Substantiate your choice.
(max 200 words)

As a country that's situated in the delta of several rivers, the Netherlands is facing significant challenges in terms of water management as a consequence of climate change like floodings due to storm surges. Scientists know that this will happen and have a drastic impact on our lives, but they don't know how to connect this to the lives of citizens who are aware that climate change is happening, but are unaware of the actual risks and possible consequences this will have on their actual way of living [2].
Besides that it is rooted in Dutch culture to fight water and trust that the institutions responsible for water protection will take care of that, but given the severity of climate change this faith might be misplaced. The Dutch need to learn how to live with water rather than fight it, and learn how to deal with the consequences. This is imporant as the Dutch will be better educated for the future and are more aware of the issues to make good decisions for long term investments that are neccesesary [3].
We need to bridge the gap between the issues that will arise and the lives of Dutch people who will live these complications but are currently not quite aware and engaged. I will try to bridge this gap through future story telling and while my project will not cause this mindset shift, but it can spark a conversation.

Assignment

This is the most important part of the project brief because it will give a clear direction of what you are heading for.
Formulate an assignment to yourself regarding what you expect to deliver as result at the end of your project. (1 sentence)
As you graduate as an industrial design engineer, your assignment will start with a verb (Design/Investigate/Validate/Create), and you may use the green text format:

Create a workshop/campaign that through future storytelling engages Dutch citizens with the impact that water issues related to climate change will have on their lives in the future by reflecting on their current relationshop with water.

Then explain your project approach to carrying out your graduation project and what research and design methods you plan to use to generate your design solution (max 150 words)

First, I will conduct research to deepen my understanding of the topic and familiarize myself with future storytelling. Since I'm new to this method, studying how it has been used in similar projects will help me apply it effectively. This might also involve looking at casestudies of deltares where they currently work to engage the public with water futures.

I don't know yet what type of campaign, workshop, etc... I will create, so I will brainstorm and itterate options. To get more insights I would like to search for and interview experts who have conducted a related campaign or workshop and look for currently running campaigns or workshops for me to join get inspiration.

In my workshop/campaign I will use future storytelling to take participants into a future. We largely understand and explore our place in the world and especially in the future through stories, and through using future storytelling I can help the Dutch public with exploring and understanding what living with extreme water management complications due to climate change might be like. [4]

image / figure 1 Graduation planning

[1] Reframing Studio & Deltares. (2022). *Toekomstige narratieven rondom waterveiligheid: Als onderdeel van het Raamwerk Waterveiligheidslandschappen.*

[2] van Heel, B. F., & van den Born, R. J. G. (2020). Studying residents' flood risk perceptions and sense of place to inform public participation in a Dutch river restoration project. Journal of Integrative Environmental Sciences, 17(1), 35–55. https://doi.org/10.1080/1943815X.2020.1799826

[3] Jonge Klimaat-Beweging. (2023). *De Jonge Watervisie*.
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[4] Liveley, Genevieve & Slocombe, Will & Spiers, Emily. (2021). Futures literacy through narrative. Futures. 125. 102663. 10.1016/j.futures.2020.102663.

image / figure 2 Bibliography

Personal Project Brief – IDE Master Graduation Project

Name student Gijs Voorhoeve **Student number** 4,655,206

PROJECT TITLE, INTRODUCTION, PROBLEM DEFINITION and ASSIGNMENT

Complete all fields, keep information clear, specific and concise

Project title Water ons temoet komt in 2100 - Taking Dutch citizens into our water future

Please state the title of your graduation project (above). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

Introduction

Describe the context of your project here; What is the domain in which your project takes place? Who are the main stakeholders and what interests are at stake? Describe the opportunities (and limitations) in this domain to better serve the stakeholder interests. (max 250 words)

By 2100 the Netherlands will face significant impacts from climate change, particularly related to water management, such as rising sea levels and extreme weather. As a nation living in a river delta, the Dutch have traditionally focused on controlling water. However, the challenges ahead may be too great to control entirely. We will need to adapt and learn to live with the water. Scientists know that complications will arise, but are unable to narrow the gap between their prediction and peoples lived experience [1] and with floods being communicated by institutions as controllable situations this lack of awareness is no suprise.
To raise awareness and spark conversations, I will create a workshop/campaign that through future storytelling makes Dutch citizens aware of how our current mentality around water management might have to change in the future. I will use storytelling because it allows for the citizens to live and experience these futures, allowing them to draw their own conclusions and feel a deeper connection to what may happen, creating a lasting impact.

The primary stakeholders are Dutch citizens, especially those under 35, who will be most affected by climate change. On a larger scale, government bodies and municipalities, responsible for implementing long-term policies, will also benefit from having informed and supportive citizens. Deltares, a water knowledge institution, being involved in Dutch public engagement with water futures is also a stakeholder as this project will support their efforts.
The key interest at stake is the resilience of the Dutch population. By starting the conversation, my project will encoure citizens to become more critical of our mindset and think more proactive about the future. Citizens being critical of the current approach may also inspire institutions to do the same and while the workshop won't instantly change public awareness, it can plant ideas encouraging people to think more about these futures [1]

➔ *space available for images / figures on next page*

CHECK ON STUDY PROGRESS

To be filled in **by SSC E&SA** (Shared Service Centre, Education & Student Affairs), after approval of the project brief by the chair. The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total _____ EC

Of which, taking conditional requirements into account, can be part of the exam programme _____ EC

	YES	all 1st year master courses passed
	NO	missing 1st year courses

Comments:

Sign for approval (SSC E&SA)

Name _____ Date _____ Signature _____

APPROVAL OF BOARD OF EXAMINERS IDE on SUPERVISORY TEAM -> to be checked and filled in by IDE's Board of Examiners

Does the composition of the Supervisory Team comply with regulations?

YES		Supervisory Team approved
NO		Supervisory Team not approved

Comments:

Based on study progress, students is …

	ALLOWED to start the graduation project
	NOT allowed to start the graduation project

Comments:

Sign for approval (BoEx)

Name _____ Date _____ Signature _____