

LET IT FLOOD!

By Karoliine Karu, Ivanna Sandyk & Argo Tamm

According to the NDA, floods are the most common environmental disaster across the globe. With extreme weather becoming more frequent, we must push back and look to solutions that expand our options (and land).

Our Earth is changing - in fact, it has been rapidly changing since the Industrial Revolution. With it change the lives we live. We cannot tell you what life will look like 50 years from now, but based on the situation we find ourselves in today, we can surely make a pretty good guess.

In the last century, global sea levels have risen a whopping 20 cm, whilst heavy precipitation frequency has been also steadily growing. In the year 2020, the United States reported 201 flood events which is 38 more than the average amount of occurrences from 2000 to 2019 (United Nations Office for Disaster Risk Reduction).

Higher rainstorm activity and rising sea levels predict a quite “Waterworld”-esque future. I guess, life really does imitate art. Examples of this new and looming dystopia can be found all over the world - ranging from ruined everyday routines to losing your home. No loss is small, some are just bigger.

Can you imagine being afraid of the rain? What would it be like to wake up after a storm and wonder if your home has become a boat while you slept? To analyze this problem, we start small - we start from Kuressaare.

Kuressaare is the only city on the island of Saaremaa in Estonia. It is a place where people know each other and say hi to each other on the street (very unusual for Estonia, trust me). The city has around 14 000 locals with a significant amount of tourists visiting each season (Wikipedia). The island is known for its windmills, the sea, and a funny Estonian dialect. However, each storm season brings something much more ominous to the otherwise magical island.

A quick talk to the locals reveals a sad trend - every year, the only city on the island and its beautiful old town, is flooded by seasonal rains. Although, the floods are not enough

to wash away whole houses or enact

large scale destruction,

it is enough to make locals scared for their safety and wellbeing.

Most of the businesses in the city center risk their livelihoods, people need to take a boat to get supplies and hundreds are stuck in their homes. Heavy rains and floods cause electricity and water outages across the whole island.

You might find yourself asking - why hasn't anyone done anything? And you are entirely right to do so, but it seems that the problem itself is more complex than that. At first, it seems that Kuressaare's problem lies in excessive rainfall and a sewage system that cannot handle the amount of water that is released during the storm season.

This creates bottlenecks that prevent the outflow of water and a situation where the water collects on the streets. "Rebuild the sewage system!" - you might protest. It truly seems the most effective solution, but it comes with its limitations. Changing the architecture of the current system would require significant resources and planning and would lead to the creation of an optimal sewage system. Which in turn needs us to define "optimal". You see, "optimal" today is not "optimal" tomorrow and definitely not "optimal" in a few years.

With governments being notoriously slow, locals have started to fund their own protection against these floods.

Businesses that line the center square of Kuressaare have started putting

out bags of sand to prevent the water from coming in and causing destruction, people own plastic boats in their homes and know when to start hoarding water and food. Outside of the city, the same problems occur - to the extent that people have started buying plots to dig drainage ditches to keep their homes dry.

This might seem like a solution to some, but what happens when bigger cities start to flood. What happens when millions are confined to their homes because they are welcomed by knee-deep water as soon as they step out? Should we start collecting sandbags and shoveling?

No loss is small, some are just bigger.



Kuressaare Center by Stefan Hienurm

We found ourselves asking the same questions. Turns out that it is surprisingly hard to not propose a rebirth to the whole sewage system. A brain vomit of already existing ideas continued - an emergency service, floodlights on the streets, converting Kuressaare into Amsterdam by building canals throughout the whole city. We conducted multiple interviews with locals, the local government, and even the National Rescue Board to find possible solutions to the problems they presented. As it turns out, these three entities exist

in totally different timelines

and realities when it comes to defining and dealing with floods. The main problem turned out to be the definition of a flood. What the locals perceive a flood to be is lightyears different from what the authorities deem it to be.

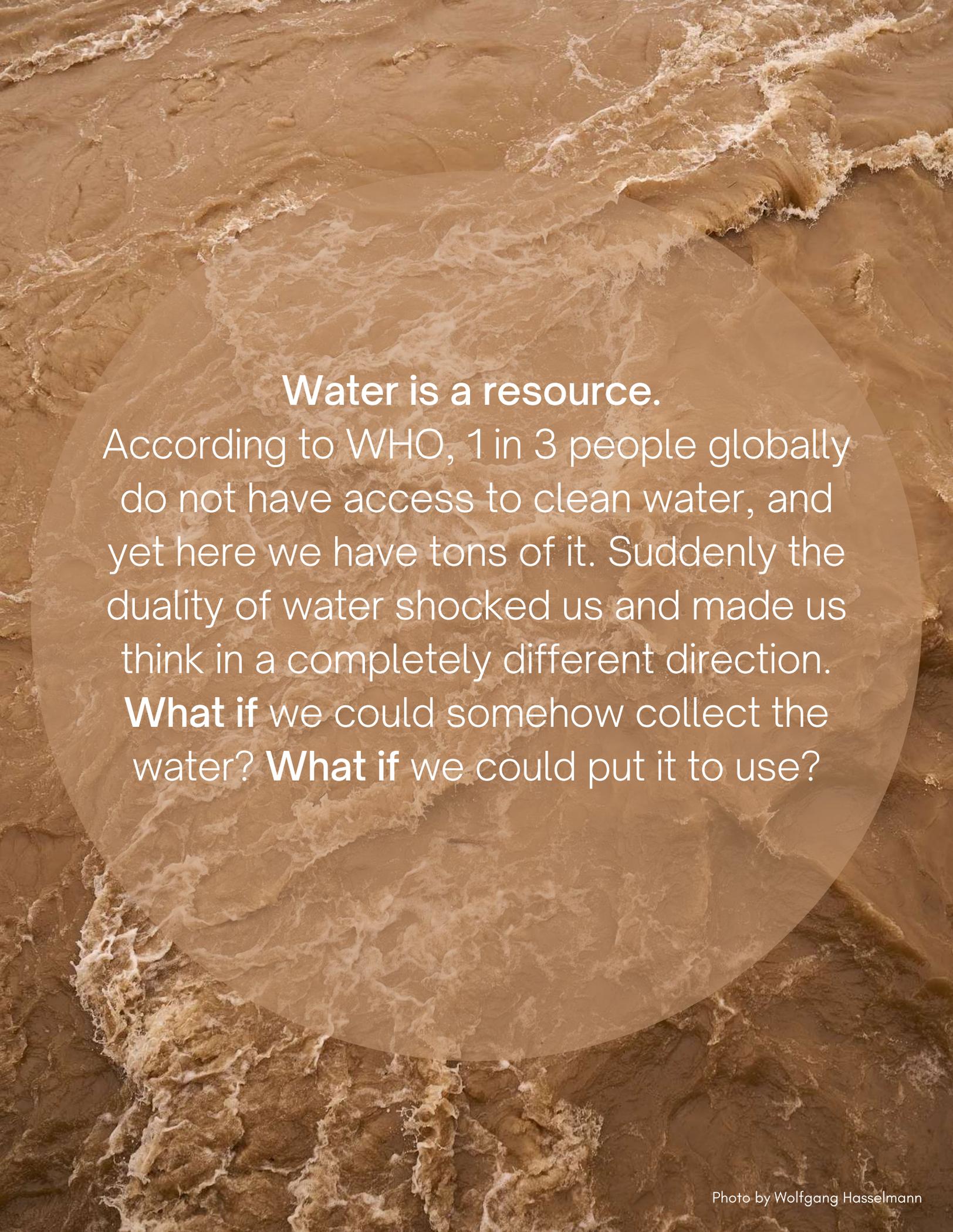
flood

(n.) a large amount of water covering an area that is usually dry

For people living in Kuressaare, floods are exactly what the Cambridge Dictionary dictates - a large amount of water covering an area that is usually dry. For everyone on the governmental level, floods are situations where that large amount of water is of great danger to human lives or property. We can clearly see a line between the two - the government does not see their current solution as serious enough so it is discarded as such. The problem is that whilst it is not regarded as a serious

enough issue, serious damages are still being inflicted.

We quickly discovered that in order to find something even close to a possible solution, we would have to draw inspiration from Jules Verne and go completely out of the box with it.



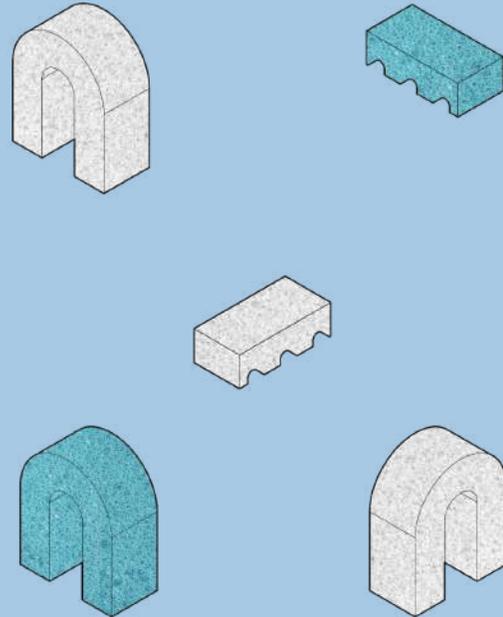
Water is a resource.

According to WHO, 1 in 3 people globally do not have access to clean water, and yet here we have tons of it. Suddenly the duality of water shocked us and made us think in a completely different direction.

What if we could somehow collect the water? **What if** we could put it to use?

Any city in the world needs clean water to grow parks, encourage city farming, or just keep the streets clean. The idea is to take water in its destructive form, which is heavy rainfall, and turn it into something useful. You can collect water in various ways, but we decided to lean into something more creative and fun.

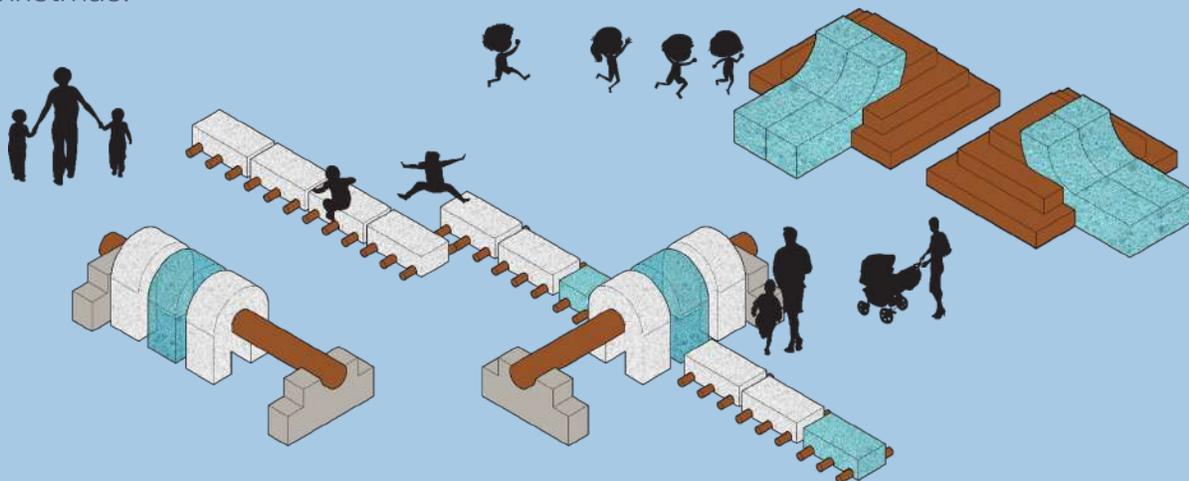
This is how the idea of KÄSN came to be. KÄSN means sponge in Estonian and it is quite literally what it says it is. KÄSN is a series of outdoor structures combined with wood and sponge that offer seating and open-ended play opportunities in the cityscape. It is made out of AES Industries Super Absorbent Wonder Sponge that can absorb 8 times its weight. During the storm season, the sponges in the structures absorb the water from the street, alleviating some pressure from the sewage system.



KÄSN - Sponge components

The idea is to use the excess water as a resource and change it from being destructive to being a construction material

When the sponges reach their limits, they are transported away to be cleaned and all the absorbed water gets collected. The sponges are then taken back and they can continue with helping the city deal with floods. When it gets cold during winter, the sponges freeze and can be used to construct different structures. Imagine ice castles on the street for kids to play with or creating a winter wonderland experience during Christmas.





KÄSN in Kuressaare City center

Can you believe that this collection of structures can absorb **15 200 liters** of water from the street? This alone could help the Kuressaare city center eliminate most of the water that falls during a storm. And when it's not raining or storming? For adults of any size, KÄSN offers a modern seating solution in the city and for children, it inspires open-ended play. Open-ended play allows children to be more imaginative and use what they have to create a world for themselves. It encourages children to crawl, jump, climb, and create a unique experience each time. During the winter, the frozen blocks can be arranged into different shapes as illustrated around the Kuressaare Castle.



KÄSN - Ice castles in Kuressaare Castle

The ice castles and structures can be used to show people how much water could be on the streets. Slogans like “30 000 liters of water built this castle” emphasize the meaning behind the whole concept. Even the wooden structures during storm season could have messages printed across them to remind locals why they exist in the first place. Not only would KÄSN solve a problem for a community, but it would serve as a reminder of the effects of global warming if we continue down the same path. We can paint a picture of an ugly anti-utopian future using beautiful yet haunting ice castles that tell a story using facts and the past.



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When introducing this concept to people, we got a variety of different emotions. A typical Estonian would chuckle (which is equivalent to laughter here for all the non-Estonians reading) at first but then consider the idea again. Once we explained that this is in no way a finished product and something designed using the speculative design method, they eased and took another look. “This looks fun. My kids would love it. If it actually works, then even better!”

KÄSN was also met with a fair share of skepticism which was to be expected. Questions like “How is it supposed to absorb all the rain? Rain does not fall only in one place,” and “How do you know when it’s full?” are only a few examples. However, we met these questions with light humor and never took them to heart. After all, great ideas are not born perfect as we have already experienced when taking on this project.



Finding a balance between real solutions and something that could provide help for the foreseeable future is definitely a hard nut to crack. As it was in this case. When starting research into this issue, we would have never guessed the many stories we would hear and how something so small could affect lives this greatly. Of course, the example we described in this article and the people we talked to are only a raindrop in this sea of issues that have arisen around global warming, but we hope to be at least a raindrop in a sea of solutions.

The topics around global warming are not strangers to today's citizens of the world - many of us are affected by it, many of us know someone who is affected by it and many of us just read about it. Floods are a serious problem in most areas around the world and are becoming more and more frequent. In fact, floodings are the most common out of all natural disasters. So, taking action against these changes is only logical. Our research and interviews led us to search for solutions that have not been previously considered and we found

ourselves envisioning a set of structures that would help control rainwater amounts on city streets. Ideally, this concept could be used differently in different areas. Why not construct a bus stop or a small kiosk inspired by KÄSN? Whatever floats your boat (pun intended). Even though this is only a concept and far from perfect, our wish is that this inspires solutions of all kinds that might help when dealing with floodings on a larger scale. We should not limit ourselves to the imaginations of others and find ways of fighting this global extinction event by going beyond typical solutions. We say let it flood, so we can find a way to stay out of the rain!