The Future Learns Today:
Bridging Generations and Global Perspectives on Food and Water Waste

INDIVIDUAL PORTFOLIO IN SUSTAINABLE DEVELOPMENT

Nienke de Rijk
0783751
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KU LEUVEN

The Future Learns Today: Bridging Generations and Global Perspectives on Food and Water Waste

A portfolio exploring how youth-centered learning can foster sustainable thinking across cultures and generations and how this can raise awareness on food and water waste.

Learning goal and preparatory resources

A. Learning goal

To deepen my understanding of water and food waste by comparing Belgium and Indonesia, analyze differences and shared challenges, and communicate these sustainability issues in an accessible way, especially to children, while critically reflecting on my own position and developing professional skills.

B. Preparatory resources

Resource 1: Interviews with Belgian Companies a) with Manager Belgian Food Company 'Huppa' around Food Waste b) with Retired founder of 'Euro Industries', a water waste treatment company
The interview with Huppa revealed that food waste is minimal in this company thanks to several prevention strategies. Damaged or spoiled products are collected in a bio-container, while near-expiry items are sold to staff at reduced prices. Remaining surplus is collected twice a week by OCMW for redistribution. Despite overall efficiency, overproduction still leads to waste, though initiatives like Too Good To Go help mitigate this. Multiple companies in Belgium have the same workflow. The interview about wastewater treatment highlighted that wastewater treatment faces divers challenges across sectors, from slaughterhouse waste to industrial residues. Continuous innovation remains essential, and while global context differ, ensuring equitable access to clean freshwater was emphasized as a universal priority. I gained personal, but professional recommendations on how we could possibly move forward in the future, stressing that 'clean water' is a product that has to be made. However, the last 40 years, the Global North made a lot of progression in treating waste water.
Huppa: 7/10/2025 (Webcam, Online) Euro Industries: 8/10/2025 (Phone call)
Resource 2: Documentary about Water Waste in Belgium (Pano)
The documentary offered insight into the existing gaps in Belgium's water management system. While neighboring countries like the Netherlands have achieved (nearly) 100% sewage network coverage, Belgium still faces challenges in connecting all households and communities to proper wastewater infrastructure. The documentary showed that progress is being made, yet substantial improvement is still required to ensure sustainable water treatment. I also learned about the complexity of the issue, involving multiple actors such as local authorities, regional governments, water companies and environmental organizations. Their overlapping responsibilities and differing priorities make coordinate action difficult. There is no accountability and many people living in these 'unconnected' areas don't even know they are not connected to the sewage network. Achieving sustainability in water is not only a technical task, but also a matter of governance & collaboration.

VRT NWS. (2020, 4 November). Pano: Riolering, nu [Video]. VRT. https://www.vrt.be/vrtnws/nl/2020/11/04/live-pano/

Resource 3: Academic Papers

The papers collectively offered a comprehensive view of Indonesia's water and food waste management systems. Leeuwerik (2025) explored how governance frameworks shape wastewater policies, revealing the top-down nature of knowledge flows and limited local participation. Widyarani et al. (2022) provided detailed data on domestic wastewater composition and inadequate treatment coverage, stressing urgent infrastructure needs. Susilo et al. (2021) examined public perceptions, showing that many Indonesians lack awareness about sustainable food practices, emphasizing the role of education and communication. Waluyo & Kharisma (2023) discussed the circular economy model, comparing Indonesia's policies with leading countries and identifying policy gaps in implementation. Together, these studies highlighted that while innovation and awareness are growing, coordination between institutions, citizens, and industries remains fragmented-leaving significant room for improvement.

Paper 1: Food Waste in Indonesia

Susilo, D., De Leon, M. V., Putranto, T. D., & Hartati, F. K. (2021). Food waste handling perception in Indonesia: communicating the sustainability of Food and environment. IOP Conference Series Earth And Environmental Science, 892(1), 012109. https://doi.org/10.1088/1755-1315/892/1/012109

Paper 2: Food Waste in Indonesia

Waluyo, & Kharisma, D. B. (2023). Circular economy and food waste problems in Indonesia: Lessons from the policies of leading Countries. Cogent Social Sciences, 9(1). https://doi.org/10.1080/23311886.2023.2202938

Paper 3: Water Waste in Indonesia

Leeuwerik, R. N. C. (2025). Tracing Prescribed Knowledge Flows in Wastewater Management Policies: An AI-Assisted, Governmentality-Informed Framework with Insights from Indonesia. Environmental Management. https://doi.org/10.1007/s00267-025-02277-0

Paper 4: Water Waste in Indonesia

Widyarani, N., Wulan, D. R., Hamidah, U., Komarulzaman, A., Rosmalina, R. T., & Sintawardani, N. (2022). Domestic wastewater in Indonesia: generation, characteristics and treatment. Environmental Science And Pollution Research, 29(22), 32397–32414. https://doi.org/10.1007/s11356-022-19057-6

Resource 4: Webinars to gain insights in Food & Water waste in South-East Asia

1) About Food waste
2) About water waste

Through the webinars, I gained a deeper understanding of how different stakeholders (scientists, policymakers, and private actors) collaborate to address food and water waste challenges. The sessions provided valuable insights into the economic and political dimensions of sustainability, particularly within the Indonesian and Southeast Asian contexts. Indonesia is highly aware of the environmental and social implications of these issues and is actively developing innovative solutions (donation systems, action plans for companies, water meters, 4R system, etc.) often in collaboration with international partners such as the Netherlands and Denmark. The webinars offered concrete data on current trends, policy changes, and future innovations in waste management. Both highlighted the growing urgency of addressing food and water waste in relation to climate change, underlining that adaptive strategies and cross-sector cooperation are essential for long-term sustainability.

Webinar 1: About Water Waste GWP Southeast Asia Official. (2025, September 2). Webinar Road to Water Indonesia 2025 – Water Security for Indonesia: From Scarcity to Solutions [Video]. Youtube. https://youtu.be/LCMWsF136O0?feature=shared Webinar 2: About Food Waste Food Nation Denmark. (2024, October 2). Webinar: Limiting food loss and waste in South-East Asia throughout the value-chain [Video]. Youtube. https://youtu.be/-yk3u0QaUV8?si=9YP5VhNhUp9vQgn2
Resource 5: Focus Group with Indonesian Students from Universitas Brawijaya (Malang, Indonesia) to Gain Knowledge about the Difference in Water & Food Waste Between Belgium and a Global South Country (Indonesia).
The discussion revealed insights into how younger generations perceive and engage with sustainability challenges in Indonesia. While older generations tend to be less concerned about sustainability, younger people are increasingly educated on how to reduce food and water waste thorough school & community initiatives. Social media plays a dual role: raising awareness, but also promoting 'Western' consumption patterns that influence higher social classes to waste more. Religion and culture, particularly Islam, encourage respect for resources and discourage waste, contributing to mindful domestic practices! The students expressed strong motivation to innovate and proposed practical solutions. Surprisingly, they were unaware of national initiatives such as Water in Indonesia (See Webinar), revealing a communication gap between policymakers and the communities. They also highlighted ongoing university projects promoting sustainability and student-led environmental engagement.
Interview, Focus Group (9/10/2025)

C. Contribution of preparatory resources

Through a diverse combination of learning activities, including interviews, webinars, academic papers, and a documentary, I tried to build a multidimensional understanding of sustainability challenges related to food and water waste in both Belgium & Indonesia (South-East Asia). Each format offered a different perspective: interviews provided firsthand insights from professionals and students; webinars highlighted international collaborations and current innovations; academic papers gave theoretical depth and policy analysis; and the documentary illustrated gaps within Belgium's water management. By engaging with sources from both the Global North and South, I developed a comparative awareness of how cultural, economic, and institutional contexts shape sustainability efforts. This variety of perspectives and formats enabled me to critically reflect on global inequalities, local actions, and the importance of communication and education in fostering sustainable behavior. I liked the interviews the most, because of the personal insights I could gain!

The interviews (Resource 1) ultimately informed my work the most strongly, as they provided concrete, first-hand insights into real-world challenges and solutions in both food waste management and industrial wastewater treatment. These professional perspectives helped me understand how companies operate, which I then cross-checked with academic papers, documentaries, and webinars to ensure accuracy and broader contextual relevance (e.g., links to Resource 2 on Belgian water systems, Resource 3 on Indonesian food and water waste, and Resource 4 on Southeast Asian policy developments). The combination of personal expertise from interviews and verified data from the other sources shaped both elements of my project: the educational game and the magazine. In the game, these insights were transformed into accessible "Did You Know?" cards, simplifying complex sustainability issues for younger audiences. Meanwhile, the magazine presented the same information in a scientific yet understandable format, supported by data and theoretical frameworks.

Documentation of the knowledge-sharing activity and academic output

A. Title

The Future Learns Today: Bridging Generations and Global Perspectives on Food and Water Waste

A portfolio exploring how youth-centered learning can foster sustainable thinking across cultures and generations and how this can raise awareness on food and water waste.

B. Format

Part I: Educational game for children

An interactive game is designed to introduce children to the themes of water and food waste in an accessible yet meaningful way. The activity is piloted within a Belgian scouting group (KSA Weelde), but it is constructed as a universal tool that can easily be adapted to different contexts and audiences, including in the Global South. The outcomes of the activity are captured through photographs and through the children's own creative outputs (drawings, poems, comics, etc.), which provide insights into how young audiences perceive and engage with sustainability challenges.

Part II: Community magazine

Building on the outcomes of the game, a digital magazine was produced. This publication integrates the children's contributions with contextual information on water and food waste learned from the learning activities, drawing on a comparative perspective between Belgium (Global North) and Indonesia (Global South). The aim of the magazine is to combine playful learning outcomes with critical insights from sustainability debates. The magazine will be published online on the website of the local community where the game is conducted, ensuring that the results are accessible not only to direct participants but also to parents, community members, and potentially wider audiences.

Together, these two formats combine hands-on educational practice with knowledge-sharing. They also align with my goal to communicate sustainability issues in an accessible way to children while situating the topic within broader global discussions.

C. Description

The game is a hybrid of *The Game of Life* and *Operation (Dokter Bibber)*. There are two gameboards that need to be used. Players move a pawn along a life-path board from Belgium to Indonesia and back. The Operation-style characters display “bad” habits (red) that are gradually replaced with “good” habits (green) by completing missions. Landing on food or water spaces on the gameboard triggers explanations, activities, and “did-you-know” cards about food and water waste. Through active play, children learn about everyday habits and become more aware of sustainability challenges. More explanation can be found in “Outcome part I: Educational Game”. The magazine complements the game by deepening learning beyond play. It includes drawings and creative outputs made by the children after the game, capturing their interpretations, ideas, and solutions related to food and water waste. By displaying their work, the magazine gives children a voice, reinforces reflection, and helps translate playful learning into lasting awareness.

D. Target audience

The educational game was played by KSA Weelde (Antwerp) on 15 November 2025, between 14:00 and 16:30. KSA Weelde is a youth scouting organisation for children aged 4 to 18, and this activity was played by the age group of 9 to 12 years old. The game is an active, educational game. It is designed for youth organisations, schools, and working groups that have access to an outdoor space and the necessary materials. The active games are linked to the central problem and offer a fun activity for children. The aim of the game is to learn in a playful and accessible way. The game can also be played in a non-active version in a small indoor space. The digital magazine is published on the KSA Weelde website and the local community website (RAWEPO News). This ensures that the results are not only accessible to the participating children, but also to parents, community members, and potentially a much wider audience. Besides the magazine is also published on LinkedIn in order to reach a more critical audience.

E. Collaborators

This project was developed in collaboration with KSA Weelde, who supported the testing and implementation of the game with children. In addition, RAWEPO, the local digital news platform, published the magazine and wrote a short article about the project, helping to share the outcomes with the wider local community.

F. Outcomes and impact

The project generated early impact by increasing children’s awareness of food and water waste through active and playful learning. Participants demonstrated their knowledge by recalling facts, correcting each other and reflecting on their daily habit during the game. Beyond individual learning, the collaboration with KSA Weelde and the publication through RAWEPO extended the project’s reach, contributing to broader community awareness around sustainability.

Outcome part I: Educational Game

On a Mission with Crumble, Berry & their dog Splash!

For whom?

This game is an active, educational game. It is designed for youth organisations, schools, and working groups that have access to an outdoor space and the necessary materials. The active games are linked to the central problem and offer a fun activity for children. The aim of the game is to learn in a playful and accessible way.

The game can also be played in a non-active version in a small indoor space (there is a separate manual for this option, not included in the portfolio, but in option for future plans). The young participants in the game will be referred to as "members" or "participants."

Story

Crumble, Berry and their dog Splash were sitting together watching the news. But what they heard was almost unbelievable! The man on the screen said that every single day a huge amount of food and water is wasted all around the world. "That's strange," thought Crumble. "There are so many children and adults who are hungry! And so many places where people don't have enough drinking water!" Splash barked in agreement, "woof!", because he also thought it was unfair.

That's why Crumble, Berry and Splash decided to go on an adventure! But first, they realised that change starts with themselves. Every small step helps, so they would learn all the ways to waste less, one by one. Their journey takes them from Belgium to Indonesia and back again, where they discover how people around the world deal with food and water. What an adventure, and how excited they are to begin!

The game is inspired and a combination of "Dokter Bibber" (Hasbro Gaming) and "The Game of Life" (Hasbro Gaming). The "Dokter Bibber" part will look like Crumble, Berry and their dog Splash. The body shows "bad" things or habits. Throughout the game, these will be replaced by new, "good" things that the participants learn after completing a mission or task. A small version of Crumble, Berry and their dog Splash can be moved across the game board (the "life path"). Every place where they stop is an important moment in their discovery of food and water waste. A short explanation follows, and then the matching game or activity begins.

About half an hour to three quarters before the end of the activity, the game will be wrapped up. The members may now creatively show everything they have learned. They are completely free to choose what they make: a drawing, a painting, a comic strip, a poem, etc. At the end, a photo is taken of their creative output. All creations will be included in a magazine to let the members' voices be heard as well.

Announcement/ Newsletter

Nibble Nibble Slurp Slurp dear Joros (Participants of this group, KSA Weelde)! Crumble, Berry and their dog Splash are setting off on a big adventure! They couldn't believe their ears when they heard on the news how much food and water is wasted every single day. *That must change*, they thought! Together they are travelling from Belgium all the way to Indonesia, discovering clever tips and fun facts along the way. Will you join Crumble, Berry and Splash on their mission for a more sustainable world? Pack your travel bag, because on Saturday we're diving right in! See you soon! Your scout leaders.

Game instructions

General explanation

The game is a combination of *The Game of Life* and *Dokter Bibber*. The "Dokter Bibber" part is designed to look like Crumble, Berry and Splash. Their body shows "bad" things or habits (images with a red frame). Throughout the game, these will be replaced by new "good" things (images with a green frame) that the members learn after completing a mission or task. A small figure of Crumble, Berry and Splash is used as a pawn and can be moved across the game board (the "life path"). The board contains spaces with water drops, food plates, and empty spaces. Every space where Crumble, Berry and Splash stop, even an empty one, is an important moment in their journey of learning about food and water waste. When the participants land on a water drop or a plate, they receive a short explanation, followed by the matching activity or game. After completing an activity, one red frame may be replaced with a green frame. Every steppingstone contains a number that correlates to a did-you-know card, which will provide the participants information about food- and/or water waste.

The number rolled on the die determines the number of steps moved on the game board. When the pawn lands on a space with a water drop or a plate with food scraps, an active game is played. Several activities are provided, each linked to water and/or food waste. The game leaders may choose freely from the list which activity to play. There are more activities available than can be completed in the given time, and that's perfectly fine. The goal is to travel from Belgium, across the game board, all the way to Indonesia and back again. Along the way, we learn all kinds of things about food and water waste and become more aware of the problem.

Activities

Duration: 1.5 h

WATER-RELATED

1. **Pang pang**
   Game introduction:

Imagine this: you live in a village where it almost never rains anymore. Water is so scarce that the villagers start fighting over the very last drops! The player in the middle represents the burning sun, drying everything out. When the sun suddenly stops turning, the villager being pointed at must quickly duck to protect themselves from the heat! The two neighbours then try to "grab water" as fast as possible by shouting **"PANG PANG!"** and eliminating the other player. Only the smartest and fastest villagers survive… and keep water for their village!

Game:

Everyone stands in a large circle with about two meters of space between each player. One player stands in the middle, eyes closed, arms straight forward with fingers pointed like a pretend pistol. This player slowly turns around. When they stop, their finger points at someone in the circle: that player must duck as fast as possible! The two players standing next to the ducking player spin around once and then try to "hit" each other by shouting **"PANG PANG!"** while pointing with their finger. Whoever shouts **"PANG PANG!"** first hits the other. The player who is hit sits down and is out of the game.

The game continues with a new round: the player in the middle turns again, chooses someone, and the next duel begins. Play continues until only two players remain. The final duel: The last two players stand back-to-back. The leader counts loudly: "1, 2, 3..." and suddenly makes a mistake (for example: after 7 comes 10). When the mistake is made, both players turn around and shout **"PANG PANG!"** The fastest player wins!

2. **Flagpole**
   Game introduction:

Who can reach the water source first? In many countries, water is difficult to get, especially after long periods without rain. Sometimes nothing comes out of the tap, and people have to walk or run all the way to the water source.

Game:

Everyone stands in a large circle with about one meter between players. In the middle of the circle lies a water bottle, representing the water source. One player walks around the outside of the circle and stops between two players. This person spread their legs; this is the start signal! The two players on either side run in opposite directions around the circle. The first player to return to their spot crawls under the legs of the person standing there and then runs to the centre to grab the bottle. Whoever reaches the water source first and touches the bottle wins the round and becomes the next walker around the circle.

3. **Three in a Row**
   Game introduction:

Imagine you are water engineers trying to build a smart water network. In some places there is plenty of water, and in others far too little. That's why we must cooperate to distribute water fairly, not too much in one place, not too little in another. Your water drops (the fluorescent vests) represent parts of the network. Each time you place a vest, you bring water to an area. But be careful: the water only flows properly when you get three water points in a row. If you manage that, you save the village from drought!

Game:

Place a 3×3 grid on the ground using 9 hula hoops or round markers. Each team receives 3 orange or yellow, fluorescent vests (or different colors), these act as their "game pieces." Both teams stand in separate lines. At the whistle, the first player runs with a vest and places it in one of the spaces. They run back and tag the next player, who places the second vest. Then the third player places the third vest. If no team has three in a row yet, the following players simply move one of their team's vests to a different spot. The first team to get three in a row wins.

4. **Musical Chairs**
   Game introduction:

Everyone is searching for a place where water can still be found, the chairs represent water wells. As long as the music plays, you are wandering around, looking for water. But the moment the music stops, you must run as fast as you can to reach a water spot to survive! There's only one problem... there aren't enough water spots for everyone. Only the smartest and fastest players manage to grab a drop of water each round, and the last person standing saves the village from thirst!

Game:

Place the chairs in a circle. There is always one chair fewer than the number of players. When the music starts, everyone walks happily around the chairs. When the music stops, all players must sit down as quickly as possible! Whoever doesn't find a chair unfortunately couldn't find water and is out. One chair is removed each round. The game continues until only one player remains, this player is the winner!

5. **Tag under ther legs**
   Game introduction:

Imagine you are all water droplets flowing freely through a river. But beware! The tagger is a giant dam trying to block the river. Each time the tagger touches someone, a new dam forms: that player must stop, and no water can pass. Luckily, other droplets can make the river flow again by crawling under the "dam's" legs. This breaks the dam open and lets the water continue its journey!

Game:

One player is the tagger. All other participants run freely around the field. When someone is tagged, they must freeze and spread their legs, forming a "dam." A player can only be freed when someone crawls under their legs; this means the river can flow again. The game continues until everyone has had a turn as tagger or until the tagger manages to block the entire river by turning all players into dams.

6. **Human knot**
   Game introduction:

You are all water droplets in a river. But oh no, pollution has tangled everything up! Plastic, branches, and debris have caused a huge mess, and the water can no longer flow. The water engineer's mission is to clean and untangle the river so the water can move freely again.

Game:

All players stand close together in a circle. Everyone reaches out both hands and grabs the hands of two different people, but not the ones standing next to them. Once everyone is holding hands, the river is officially tangled! One player, the water engineer (the only person not part of the knot), must now try to untangle the group without anyone letting go of their hands. This might mean turning, stepping over arms, ducking under arms, twisting around, until the group forms a nice, open circle again.

FOOD-RELATED

1. **Chair Tipping**
   Game introduction:

Each team has a chair filled with food... but sometimes those chairs get knocked over because food is being wasted or spoiled. Your mission is to make sure your team's food chair stands upright again, so no food is lost! If you tip over the other team's chair, it means you've spotted waste happening. If you stand your own chair back up, you save the food!

Game:

Each team stands in a line. A few meters in front of each team is a chair. At the whistle, the first player from each team runs forward, tries to tip over the other team's chair (this represents food waste or contamination), and then rushes back to stand their own chair upright again to show the food has been saved. Once the chair is upright, the player runs back and tags the next teammate, who repeats the task. The game continues until one player succeeds in sitting down on their own team's chair: this means the food has officially been rescued, and their team wins!

2. **Capture the Scarf**
   Game introduction:

You are all pieces of fruit and vegetables waiting to be harvested in time. In the middle lies a scarf, this is your basket of fresh produce. But beware! If the food stays out too long, it spoils and is lost. Whenever your fruit or vegetable name is called, you must sprint to the basket to rescue the fresh harvest and bring it safely back to your team. Whoever returns the food without being caught prevents food waste and earns a point for their team! The team that saves the most harvest by the end wins

Game:

The participants are divided into two groups. Each team forms a long line facing the opposing team. Leave about 14 meters between the teams. Place a scarf or cloth exactly in the middle (about 7 meters from each side). Every player receives the name of a fruit or vegetable (e.g., apple, banana, kiwi, orange, strawberry, grape, cucumber, carrot, broccoli, cauliflower, lemon, melon, spinach, pineapple, bean, etc.). A leader calls out one of these names. The two matching players, one from each team, run toward the scarf. Whoever grabs it and returns safely to their own side scores a point for their team. You can play as many rounds as you wish. The team with the highest score wins!

3. **Ha-stji-ba**
   Game introduction:

You are all standing in a busy kitchen where fruits, vegetables, and chefs work together to prepare a delicious meal. But to get the food ready in time, you must stay alert and react quickly, otherwise something might burn, spill, or get wasted! Anyone who hesitates or makes the wrong movement has caused a little "mess in the kitchen" and must step out. Stay sharp, work as a team, and keep the meal from burning, because only then can we prevent food waste together!

Game:

That player points with both arms to someone in the circle. The chosen player must raise both arms in the air and shout **"HA!"** Meanwhile, the players to the left and right of the chosen person "slice" toward this person with both arms while shouting **"TSHI!"** As a response, the chosen player lowers their arms, points to someone new, and shouts **"BA!"** Anyone who reacts too slowly or makes a mistake is out of the circle. The game continues until only one player remains, that player is the winner!

4. **Tasty Land – Trashy Land**
   Game introduction:

In Tasty Land live people who take good care of their food: they don't waste anything and they eat healthy meals. In Trashy Land lives food waste, where food ends up in the bin and people don't take care of what they eat. Today, you will help bring each food item to the right place! When the game leader calls out something, a banana, a chocolate bar, or a thrown-away apple, you must quickly decide where it belongs. Run fast, choose wisely, and help fill Tasty Land with healthy choices!

   Game:

The playing field is divided into two areas: one side is Tasty Land, the other side is Trashy Land. On the Tasty Land side, healthy or non-wasted foods are placed (such as fruit, vegetables, whole-grain bread, water, yoghurt). On the Trashy Land side, unhealthy or wasted foods are placed (such as candy, soda, chips, food in the bin, a rotten banana). Players start on a starting line. The game leader calls out the name of a food. If the food is healthy or not wasted, the children must run to Tasty Land. If it is unhealthy or wasted, they must run to Trashy Land. Anyone who gets tagged while crossing joins the taggers in the middle. The last player left in the game is the winner!

5. **Fox, Come Out of Your Den**
   Game introduction:

You are all farmers and gardeners trying to save the food growing in your fields! But there is a clever fox hiding in its den, who sneaks out at night to steal food and let it spoil! When you shout, "Fox, come out of your den!", you sneak closer to check if there is any food left to save. But when the fox turns around, you must run back as fast as you can and try again the next round! Whoever stays in the game the longest has saved the most food from being wasted and wins!

   Game:

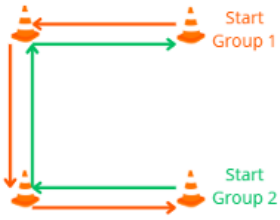
All children stand on one line. On the opposite side of the playing field stands the fox, facing away from the children, just like in "1, 2, 3 piano." The children shout together: "Fox, come out of your den!" Then they start walking carefully toward the fox. Suddenly, the fox turns around and tries to tag as many children as possible! Everyone must run back to the starting line. Whoever gets tagged by the fox (or by the fox's helpers) becomes a helper and stands in the middle to help tag players in the next rounds. The game continues until everyone has been tagged. The last remaining player wins!

6. **Rock–Paper–Scissors Race**
   Game introduction:

This is the "Race Against Food Waste"! You might think food waste is easy to solve, but sadly it isn't. Imagine food that is still perfectly good: bread that is still tasty, fruit that can still be saved, and much more. But some big companies or "lobbies" don't want to help. They prefer to throw food away or create rules that make saving food harder. Today, we will show that we are stronger than these lobbies in the race against waste!

Game:

Players form two teams. Each team lines up behind a starting line, with a path marked out in the middle of the field. At different points along the path stand players from both teams who face each other. When two players meet, they play rock–paper–scissors. The winner continues running forward, trying to advance further in the race. The loser goes back to their team and is replaced by the next player in line. The goal is to reach the end of the path before the other team. The first team to reach the end wins the race against food waste!



Fun facts: Did-you-know cards

There are 36 fun facts; these numbers match the spaces on the game board. After rolling the die, the pawn is moved forward. The space you land on determines which card is read. It is most fun when the members read the card themselves, but a leader can always assist or give extra explanation if needed. The fun facts are there for educational purposes. The goal is to help the members learn in an enjoyable way about food and water waste! And adults can learn something too. 😉

Image number of the habits/characteristics (Green = food-related, Blue = water-related):

	Bad Habits	**Good Habits**
1	Buy random and too much food	Plan meals and groceries to reduce waste
2	Let food spoil due to improper storage	Store food properly
3	Pour oil, paint, or waste down the drain	Protect clean water and avoid dumping waste into drains or rivers
4	Throw food scraps in the trash	Compost food scraps or feed them to chickens
5	Waste water by leaving the tap running	Use water consciously
6	Shower for too long	Take shorter showers
7	Eat everything, no matter the season or traveling distance	Eat what is in season
8	Throw everything away after the date without checking	Learn to understand expiration dates correctly
9	Waste indirect water through overconsumption	Eat and buy products with a low water footprint
10	Use drinking water for everything	Use rainwater or collected water for plants or flushing the toilet

Closing

Duration: 1h

The game ends on time so that participants have the chance to show, in a creative way, what they have learned. The goal is for them to reflect on the activity: What did I find interesting, or how would I solve a problem related to water and food waste? Participants have complete freedom. They may write a poem, make a drawing, paint, create a comic, etc. After the activity, all creative output will be photographed, shared, and processed into a magazine. It's not guaranteed that all creations will appear in the magazine, but we will do our best!

Group division

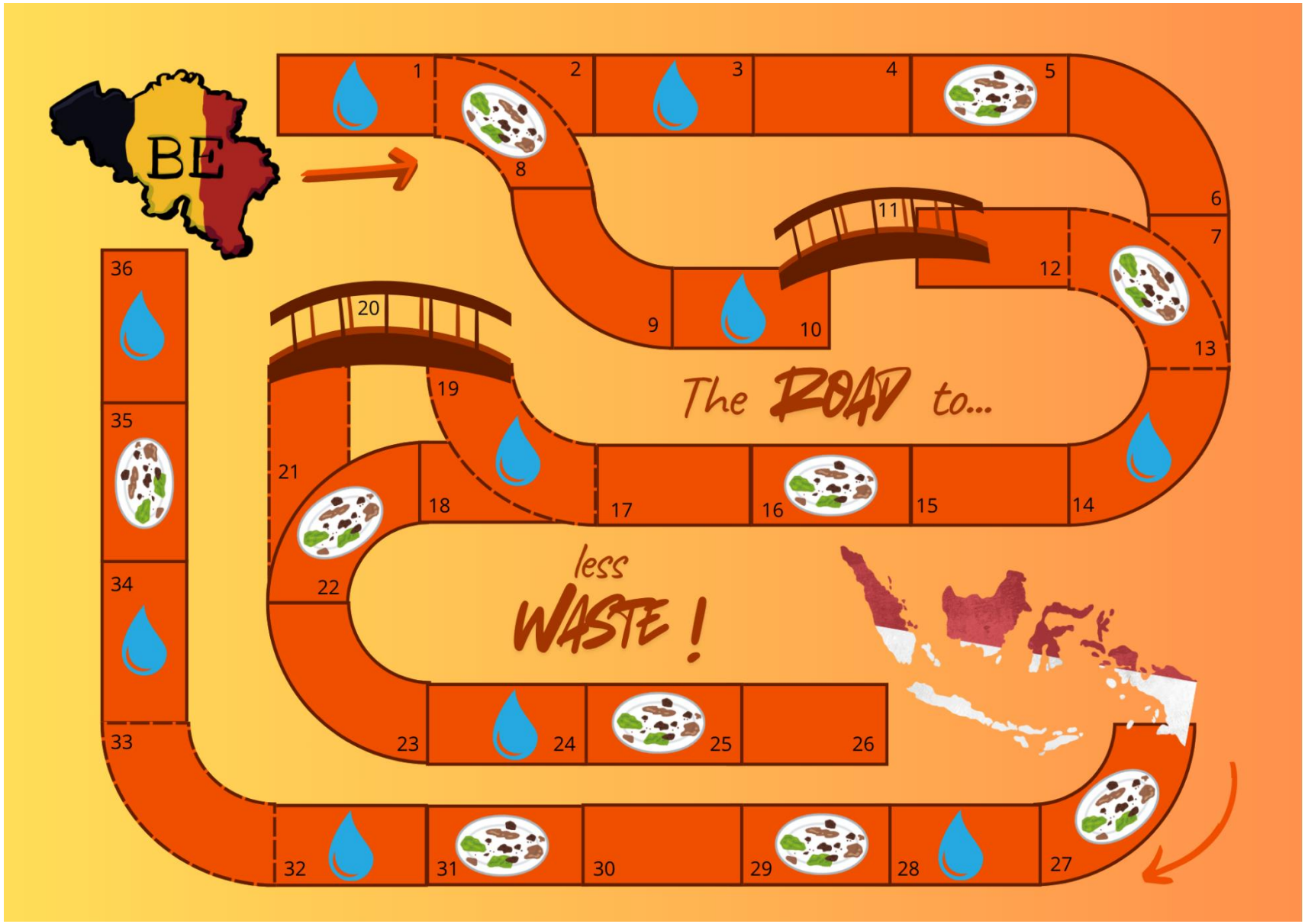
Most games are played in two teams. These teams may change each time, so everyone gets the chance to play with and against each other! The "fight against waste" takes place as a group effort. Everyone is involved in rolling the dice and replacing bad habits with good ones!

Materials

- ✓ Printed "Dokter Bibber"-style game
- ✓ Printed game board
- ✓ Printed small versions (game pieces) of Kruimeltje & Spetter
- ✓ Dice
- ✓ Water bottle
- ✓ 10 fluorescent vests in two different colours (5–5)
- ✓ Chairs
- ✓ Music & speaker
- ✓ Two old(er) chairs
- ✓ Scarf
- ✓ Four cones
- ✓ Craft materials for the final part of the game: paper, pencils, paint, markers, pens, etc.

Preparation

- ✓ Cut out the game pieces of Kruimeltje, Besje & Spetter
- ✓ Cut out the "Did you know?" cards (optionally laminate with the front for a more beautiful design)
- ✓ Prepare the craft materials for the final part of the game
- ✓ Lay out the game boards (game board + "Dokter Bibber" version of Crumble, Berry and Splash)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The ROAD to...
less
WASTE !


CRUMBLE, BERRY
& SPLASH

Good qualities corresponding to the bad qualities: Cut out the good ones to stick or place onto the bad ones:

1. Did you know...

Did you know that in Belgium not all houses are connected to the sewage system? One in eight houses in Flanders! That's a big problem, because all this wastewater ends up directly in nature. That can be very unhealthy for people and animals! Shall we try to lay some pipes together?

2. Did you know...

A big part of water pollution comes from food? This happens because growing plants and keeping animals can cause a lot of manure, chemicals and wastewater to end up in rivers and groundwater!

3. Did you know...

For adults it can also be really hard to make and follow rules? Sometimes it's difficult because of money, the plans, or who is actually responsible! In Belgium, the town must take care of the sewage system, but the region takes care of the purification! How can we work together better?

4. Did you know...

A lot of food gets thrown away because it's not "pretty" enough for the store? But bent cucumbers and small apples taste just as good! Such a shame, right?

5. Did you know...

Some food companies in Belgium sell food that is almost at its date to their staff with a discount of 30% or more? And if there is still some left? Then it is often picked up by the Public Social Welfare Centre, so other people can still be made happy with it. Food that is close to its date does not always mean it is bad!

6. Did you know...

Not all wastewater is the same? The water from the shower has different substances than the water from the kitchen or the toilet! That's why different machines and filters must work together to clean it well!

7. Did you know...

There is something called a "CIRCULAR ECONOMY"? That means that what now looks like waste can be used again later. It doesn't have to be waste! For example, old bread can be turned into biogas, and that gas can be used to make electricity or heat! Smart, right?

8. Did you know...

There is more and more food waste because more is made than before, and so there is also more leftover? Luckily, there are actions like "Too Good To Go," which people in Belgium use a lot! This didn't exist in the past!

9. Did you know...

Food you throw away doesn't just disappear? When food lies on the dump, it starts to rot. This creates a gas called methane. Just like carbon dioxide or CO_2, which you may have heard of, this gas rises into the air and makes the Earth warmer!

10. Did you know...

A lot of wastewater is created for the piece of meat on your plate? A chicken "only" needs 20 liters to be cleaned, and a cow needs 600 liters! A cow gives more meat, but the chicken is still more environmentally friendly. This is because cows drink and eat more and live longer!

11. Did you know...

In Belgium we waste 3 times more food per person than in Indonesia? Indonesia wastes 7 times more in total than Belgium, but per person Belgium wastes more! Of course, this is because many more people live in Indonesia, so in total more is wasted.

12. Did you know...

Many people in Indonesia do not have a shower? They use a small tub and a bucket to pour water over their body. This way, much less water is used while washing! The water only "runs" when it is really needed!

13. Did you know...

Researchers discovered that many people don't really know what food waste means? Sometimes people throw food away without thinking! That's why learning and talking about food is so important!

14. Did you know...

Wastewater becomes clear again after purification, but you still can't drink it? There are still tiny, dangerous particles inside that are hard to remove! This water is safe to release into nature, because Mother Nature can clean it completely by herself!

15. Did you know...

More and more AI (artificial intelligence) is being used to discover how countries like Indonesia can clean their water better? Computers can predict where water is wasted and how it can be shared more wisely!

16. Did you know...

Indonesian families often throw away less food? That is because in their culture and religion, wasting food is seen as something bad. Children learn early on that you must show respect for food and nature by eating everything you are given!

17. Did you know...

In comparison to Belgium, only a small part of all household wastewater in Indonesia (like from the shower or doing the dishes) goes to a water treatment plant. The rest often flows straight into nature. Luckily, scientists are working on solutions to treat this better!

18. Did you know...

In Indonesia, it is very normal to share your food with your friends or other families. Is there food left over? It is absolutely not thrown away, but shared with other people!

19. Did you know...

It is very important to learn about water waste. It is important to know that clean water has to be MADE and that it is not so easy to get! In Belgium you can simply drink water from the tap, but in other countries like Indonesia you can get very sick from tap water!

20. Did you know...

Many companies in different countries, just like in Belgium, are thinking more and more about sustainability. More and more companies want to invest in sustainable growth and sustainable relationships. Sustainability is not only good for the environment, but also for the wallet!

21. Did you know...

People in villages in Indonesia often collect and filter rainwater to use it. In some areas, clean water is hard to find, especially in the dry season. By collecting rainwater in big tanks and filtering it, families can use it for cooking or washing!

22. Did you know...

Many farmers in Indonesia make their own compost from food scraps, leaves and manure from, for example, their goats. This natural fertilizer makes the soil richer and healthier, so plants can grow better without chemical products that can pollute the environment!

23. Did you know...

Cooperation between different countries is super important. Indonesia learns from the Netherlands and Denmark how to deal better with water and food. And the other way around, knowledge is shared too! Smart ideas travel around the world! And let's be honest... working together is much more fun!

24. Did you know...

Water is becoming harder to get in warm countries because of climate change. It rains less there, or a lot all at once, which means the water cannot be absorbed by the ground.

25. Did you know...

Many villages in Indonesia have a kind of "waste bank." People bring plastic bottles and other waste there and receive money or points for it. That waste is then recycled as well as possible. This keeps the village clean and teaches people that waste still has value!

26. Did you know...

There is something called "Nature-based solutions." This means that nature itself can help solve water problems! It can be as simple as planting trees. Trees help rainwater sink into the ground and help keep rivers cleaner!

27. Did you know...

Students in Indonesia work together with villagers on sustainable farming projects. They make compost from food scraps, use rainwater on their fields, and teach farmers how to protect nature. This way, enough food can grow without exhausting the Earth!

28. Did you know...

Children and young people play a very important role in creating a future with change. The world can change because of you! Maybe you already learned at school how to take better care of food and water. Or you can start talking about it yourself with your teacher!

29. Did you know...

Some stores in Indonesia give discounts on food that is almost at its date. This also happens in Belgium! This way, stores throw away less food and people can buy groceries cheaper! Good for the environment and for people!

30. Did you know...

There are often two different dates on packages. The "Best Before" date means that the food is usually still good after that day. Just taste and smell it, and you can still eat it! The "Use By" date means you are not allowed to eat it after that day!

31. Did you know...

Social media and advertising often make people buy more food than they need. That leads to more waste! By shopping smart, you can reduce waste, or maybe even stop wasting completely!

32. Did you know...

There is a new way to pump water. A solar pump can lift water using only the energy of the sun! This helps people get water without electricity.

33. Did you know...

All research shows that everything starts with ourselves. Wasting less food, using rainwater, turning off the tap, and so on! If everyone does a little bit, the world becomes much cleaner and fairer!

34. Did you know...

We can also make drinking water from seawater. With special machines, all the salt is taken out. The only problem is that these cool machines are also very expensive!

35. Did you know...

Many people throw away food because they think it is “not good anymore” or because they bought too much. Researchers discovered that good communication and education can really help people waste less food!

36. Did you know...

In Indonesia, bamboo is used to protect water sources. The strong roots of the bamboo hold the soil tightly in place. This prevents the ground from washing away during rain and helps rainwater sink better into the soil.


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Outcome part II: Magazine (not yet finished: add creative output)

THIS PORTFOLIO ONLY INCLUDES THE ENGLISH VERSION. The Dutch version can be found following the links under “Evidence of public dissemination”.

About the editor

Nienke is an enthusiastic master's student in Sustainable Development at KU Leuven. Driven by her passion for bridging scientific insights and society, she looks for ways in which people and nature can strengthen one another. With a warm heart for sustainability, she believes that real change begins with awareness and that small, achievable actions can make a big difference.

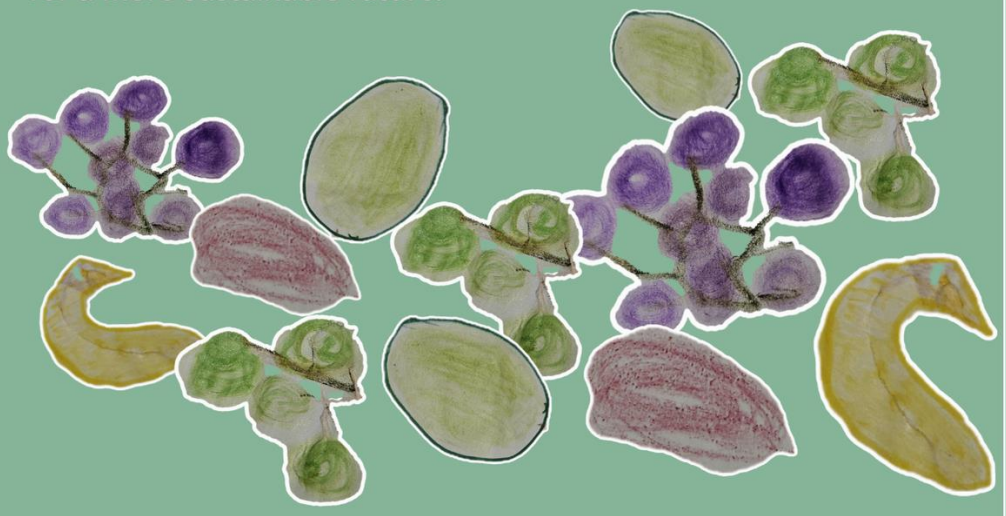
As a leader at KSA Weelde (active till 2021), Nienke learned how valuable it is to work with children and teach them in a playful, creative way. We now use that experience to make complex environmental issues tangible and understandable for both young and old.

CONTENT

INTRODUCTION

How we deal with water and food says a lot about who we are. It reflects our habits, our values, and our connection with the world around us. In Belgium, we fill a glass of tap water without a second thought, while elsewhere people walk kilometers each day to fill a bucket or must boil water before they can use it. And while full plates sometimes end up in the bin here, food is shared and cherished with care in other parts of the world. The contrasts are significant, but the challenges are universal.

From that fascination for differences and connections, we delve into the themes of water and food waste. Inspired by my grandfather, who worked in water purification, my curiosity grew about how science and society can work together to find solutions for a more sustainable future.



-Fruits drawn by Nore, Joro KSA Weelde

INTRODUCTION

Children can convey a powerful message, and their young perspective can be truly refreshing. They ask questions that adults often overlook, and their creativity opens up new possibilities. Their drawings, ideas, and stories show not only how they see the world, but also how we can learn from them.

With an open view of both Belgium and Indonesia, the Global North and South, this work brings together insights on waste, care, and cooperation. It invites us to reflect on our daily choices, on what we take for granted, and on how every drop, every bite, and every gesture can help build a future in which less is wasted. It is true: those who start small achieve more than those who never start at all.

Together with KSA Weelde, we tested an educational game. Through it, we learned more about food and water waste around the world. At the end of the game, all the children shared their ideas and thoughts in a creative way: What did you learn about food and/or water waste? Do you think of any solutions? Their contributions are spread throughout this edition.

-Sorting is important! Drawn by Liv, Joro KSA Weelde

DISCOVER EVERYTHING ABOUT WATER PURIFICATION

A water purification expert speaks: How does a water purification system work, and what are the challenges?

In the production of food, such as meat processing, dairy, or even oil and chemical products, there is much more involved than just the final product that ends up on our plate. One often invisible but crucial part of this chain is the wastewater generated during the production process. The meat industry in particular plays a major role: slaughtering and cleaning a single chicken requires an average of 20 liters of water, while for cattle that number can rise to 600 liters per animal. That water does not simply disappear: it becomes contaminated with fats, solid particles, and dissolved substances that place significant pressure on our ecosystems.

"Water purification is therefore not a magical process, but an ingenious interplay of technology, biology, and nature."

This wastewater contains three main components that cause pollution: suspended solids (TSS, Total Suspended Solids), fats, and dissolved substances. These are measured through COD (Chemical Oxygen Demand) and BOD (Biological Oxygen Demand). These indicators show how much oxygen is needed to biologically break down the pollution. The higher these values, the more heavily contaminated the water is.

To make that water usable again or safe to discharge, several purification steps are required. The first step is relatively simple: a sand filter or a sieve is used to remove the largest particles.

Next, a coagulant is added, a substance that causes small particles to clump together into “flocs.” These flocs are then separated from the water, either through a settling tank, where they sink to the bottom, or through flotation, where they rise to the surface and can be removed as a foam layer.

After these three steps, the water may appear clear, but appearances can be deceiving: dissolved substances still remain.

To break these down, a biological treatment is needed. In large tanks, the water is aerated for four to five days, allowing bacteria to degrade the remaining contamination. This process significantly reduces the COD and BOD values, leaving the water clear and clean. Still, caution is necessary. It still contains bacteria and is therefore not drinkable, but it is safe enough to discharge onto land or into surface water.

The story does not end here.

During the purification process, a new residual product is created: organic sludge. And that too must be treated. The best method is to dewater the sludge first, after which it enters a digester. In this digester, microorganisms further break down the organic material, resulting in two valuable end products: biogas, which can be used as an energy source, and fertilizer, which can return to agriculture. In this way, a waste product becomes part of the natural cycle again.

-"Turn off the tap when you are not using it."
Written by Lena V., Joro KSA Weelde

Water purification is therefore not a magical process, but an ingenious interplay of technology, biology, and nature. It shows how even the most polluted water can be turned into something valuable again, and how every step in the chain, from producer to consumer, contributes to a more circular and sustainable future.

TIPS FROM JOHN:

Which strategies or solutions do you believe have the greatest impact in reducing waste?

The demand for (purified) water is increasing worldwide. Small savings can be achieved through price incentives, but the greatest impact lies with companies. By encouraging water reuse and implementing more efficient purification systems, waste can be significantly reduced. In less densely populated regions, where water extraction is easier and cheaper, waste is often taken less seriously: awareness and regulation therefore remain crucial.

Which innovations do you believe are most urgently needed today in wastewater treatment?

Water recovery and energy consumption. The next steps that need to be taken are ultrafiltration, reverse osmosis, and nanofiltration for even more advanced purification. This is necessary due to, among other things, medication residues and substances such as PFAS.

What advice would you give to the next generation wanting to work on sustainability?

My advice to the next generation is to keep looking for ways to do things better and more sustainably. The need for sustainable solutions will only continue to grow. This requires commitment from both the commercial sector, which must work on affordable and accessible systems, and the academic world, which must continue to develop new knowledge and innovations. Stay curious, collaborate across sectors, and remember: real progress emerges when ideals and practical solutions reinforce one another.

FOOD TRANSPORT IN BELGIUM

A conversation with the manager at Huppa: food transport and food waste in Belgium. How does it really work when it comes to efficiency, responsibility, and sustainability?

Within the Belgian food sector, increasing efforts are being made to reduce food waste, both during production and transport. The interview with Huppa, a leading Belgian fresh-food platform, shows how innovative business strategies can make a tangible difference.

"Yet overproduction remains a challenge. Today's consumer society encourages the constant availability of fresh products, which leads to surpluses throughout the chain."

At Huppa, food loss is kept to a minimum thanks to a series of preventive measures. Products damaged during transport or processing are carefully separated and collected in bio-containers for further treatment. Items nearing their expiration date are sold internally to employees at a reduced price, which not only prevents waste but also contributes to a sustainable company culture. Surplus items are collected twice a week by the Public Social Welfare Center (OCMW), which redistributes them to people in need. In this way, food that would otherwise be thrown away gains a second life within the community.

Yet overproduction remains a challenge. Today's consumer society encourages the constant availability of fresh products, which leads to surpluses throughout the chain. Initiatives like Too Good To Go help reduce this waste by directly connecting consumers with businesses offering their surplus products at significantly reduced prices. Such digital solutions fit within a broader trend in Belgium, where technology and awareness come together to encourage sustainable behavior.

Another aspect of food waste lies in the aesthetic standards applied to food. Many products are rejected from the market because they do not meet the "perfect" appearance consumers expect. Crooked cucumbers or smaller apples taste just as good, yet often never make it onto store shelves. This shows that food waste is not only a logistical issue, but also a cultural one!

Huppa positions itself not merely as a wholesaler but as a sustainable and innovative platform that collaborates with customers, suppliers, and partners for the long term. With a family-driven long-term vision, the company invests in both sustainable growth and sustainable relationships. This approach reflects a broader shift within the Belgian food sector: the ambition to combine economic activity with social responsibility.

Through efficient management, redistribution of surplus, and a strong emphasis on cooperation within the chain, Huppa shows that sustainability in food transport and distribution does not have to be a distant future ideal, but a feasible reality: today and tomorrow.

STORIES FROM AROUND THE WORLD: FROM BELGIUM TO INDONESIA

The challenges surrounding water management and waste differ greatly between Belgium and Indonesia, yet both countries face the same urgent task: ensuring access to clean water in a context of population growth, industrialization, and climate change.

In Belgium, wastewater treatment has undergone a remarkable evolution in recent decades. Whereas wastewater was once discharged directly into rivers or streams, strict purification standards are now in place. Especially within the food industry, such as slaughterhouses, multi-stage purification systems are used: filtration, flotation with coagulants, biological treatment, and pH correction. The purified water is now more often reused within the company, for example to clean transport vehicles. This progress is the result of strong regulation: the government sets standards, conducts inspections, and applies the principle "the polluter pays."

-Interview with Euro Industries (personal communication, 8 October 2025)

"Large companies are increasingly required to take responsibility for treating their own process water. Drinking water utilities also carry a heavy responsibility as enterprises. The government does not produce water, but must safeguard public health and the quality of our water resources through strict enforcement and monitoring."

Still, Belgian water management is not without challenges. Responsibilities are spread across different levels of governance: municipalities handle sewage systems, while the regions are responsible for water purification. This fragmented system can sometimes hinder a coordinated approach. In addition, the costs of discharge and reuse are rising, which encourages companies to purify water internally but at the same time places economic pressure on smaller enterprises.

-Interview with Euro Industries (personal communication, 8 October 2025)
-VRT NWS. (2020, 4 November). Pano: Riolering, nu [Video]. VRT.

Belgium exemplifies a global trend: water reuse and recovery are becoming increasingly important, both to reduce costs and to minimize the ecological footprint. Nevertheless, infrastructure remains outdated in some regions, where certain homes are still not connected to the sewer network.

-"Don't just let the shower run." Drawn and written by Lauren, Joro KSA Weelde

"The increasing standards and costs surrounding water discharge and reuse have pushed Western companies to purify their own water and use it in a circular way. This evolution will continue worldwide: a necessary and commercial step toward sustainable water management."

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In Indonesia, the situation is more complex. Although the country holds about 4.7% of the world's freshwater reserves, clean water is far from guaranteed. Availability is unevenly distributed across the archipelago, and urban growth, pollution, and climate change put increasing pressure on existing infrastructure (GWP Southeast Asia Official, 2025). According to Widyarani et al. (2022), only a small portion of household wastewater reaches a treatment facility; most of it flows untreated into the environment. This has major consequences for public health and ecosystems. Leeuwerik (2025) also points to the top-down structure of Indonesia's water policy, where decisions and knowledge flows often originate at government level, without sufficient local participation. This limits the effectiveness of policy and creates a gap between regulations and the reality in villages. Institutional complexity and limited funding present an additional obstacle to sustainable wastewater management.

-Drawn by Liene, Joro KSA Weelde

Yet innovative solutions are emerging at the local level. In rural areas, families collect rainwater in large tanks and filter it for household use: a practice that is not only efficient but also culturally rooted. In addition, nature-based solutions are being implemented, such as planting bamboo around water sources to reduce erosion and improve infiltration. New technologies, including artificial intelligence (AI), are being tested to better monitor waste and optimize water distribution (GWP Southeast Asia Official, 2025).

-"The tap is turned on, you can see the water run."
Drawn and written by Marie, Joro KSA Weelde

Both Belgium and Indonesia are confronted with the consequences of climate change. In Belgium, extreme rainfall and recent flooding put increasing pressure on sewage systems, while Indonesia faces both drought and flooding. In both contexts, awareness is growing that sustainable water management is not only a technical challenge, but also a social and governance challenge.

While Belgium focuses primarily on technological refinement and regulation, Indonesia emphasizes accessibility, decentralization, and awareness. The exchange of knowledge and technology between the Global North and South offers opportunities: treatment techniques from Belgium and elsewhere can support the development of small-scale facilities in Indonesia, while local initiatives from Indonesia—such as rainwater harvesting and natural filtration—can inspire community-oriented projects in the West.

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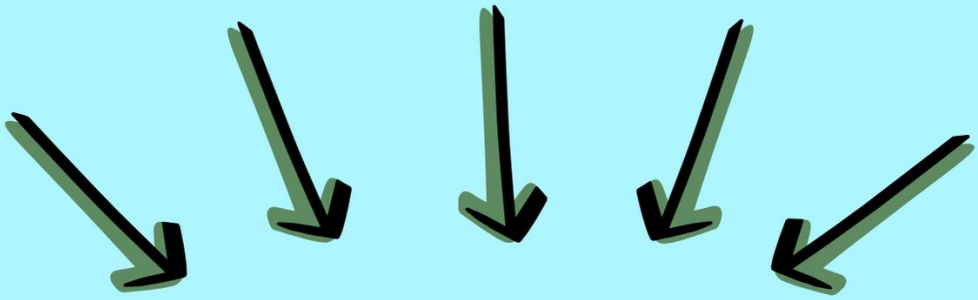


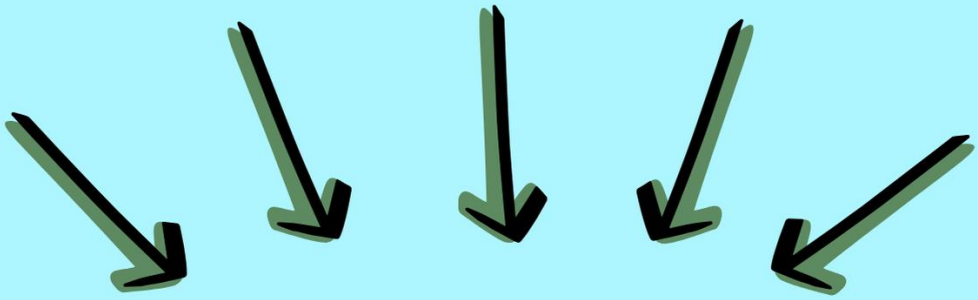
Water: Insights and challenges in a changing world

Water is an essential yet often vulnerable resource. Although Belgium has a well-developed water system, not every household is connected to the sewage network. In Flanders, this concerns roughly one in eight homes. This means that a significant portion of wastewater flows directly into nature, posing potential risks to ecosystems, animals, and public health. This situation highlights the importance of infrastructure and cooperation across different levels of governance: municipalities are responsible for constructing sewage systems, while the regions handle wastewater treatment. Coordinating these responsibilities remains a complex challenge, especially when financial or spatial limitations come into play.

-VRT NWS. (2020, 4 November). Pano: Riolering, nu [Video]. VRT.

At the same time, the global context shows how climate change further complicates access to water. In warmer regions, rainfall is becoming increasingly irregular: either less frequent or occurring in short, intense bursts. As a result, the soil cannot absorb the water properly, leading to periods of drought alternating with flooding. Managing rainwater and strengthening natural water cycles are therefore becoming increasingly important.

-Road to Water Indonesia 2025 (GWP Southeast Asia Official, 2025)



Nature-based solutions are receiving increasing attention as an innovative approach. These solutions rely on nature itself to address water-related challenges. Planting trees is a simple but effective example: trees help rainfall infiltrate the soil, reduce erosion, and contribute to cleaner rivers. In Indonesia, bamboo is used to protect water sources. The deep and strong roots of bamboo keep the soil in place and improve the absorption of rainwater into the ground, thereby strengthening natural water reserves.
-Road to Water Indonesia 2025 (GWP Southeast Asia Official, 2025)
-Focus group with Indonesian students (personal communication, 9 October 2025)

Technological innovation also plays a crucial role. New techniques, such as solar-powered pumps, make it possible to extract water using solar energy, offering a sustainable alternative especially in rural or remote areas without access to electricity. Desalination, which removes salt from seawater to produce drinking water, is also gaining importance in regions facing chronic water scarcity. However, the process remains costly and energy-intensive, making it applicable only on a limited scale for now.
-Road to Water Indonesia 2025 (GWP Southeast Asia Official, 2025)

The combination of technological innovation, policy collaboration, and nature-based solutions shows that the future of water management does not lie in a single direction. Sustainable water use requires integrated thinking, where science, policy, and local communities work together toward one shared goal: securing clean water for people and nature, today and in the future.

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Although Belgium and Indonesia may seem like two completely different contexts at first glance, both countries face the same fundamental challenge: how can we use food more efficiently in a world where waste is still the norm?

Research shows that Belgians waste on average three times more food per person than Indonesians. However, total food waste is higher in Indonesia simply because the country has far more inhabitants. According to recent estimates, more than 21.6 million tons of food are lost annually in Indonesia during production, storage, and processing, and another 26.4 million tons at the consumer level, of which 19 million tons come from households.

-Food Nation Denmark. (2 oktober, 2024)

-"Big big big chomp chomp chomp, wasting food is really wrong". Written by Amya, Joro KSA Weelde.

-"Big big big chomp chomp chomp, don't take to much of that porridge clump". Written by Loic, Joro KSA Weelde.

In Belgium, the problem lies mainly in overconsumption and the misinterpretation of expiration dates. Many people throw food away because they believe it is no longer safe to eat, even though it is often still perfectly edible. The difference between "best before" (THT) and "use by" (TGT) is not always clear. Education and awareness play a crucial role here (Susilo et al., 2021). Campaigns and apps such as Too Good To Go have already made significant progress in Belgium by offering products at reduced prices, similar to initiatives in Indonesian supermarkets.

-Interview with Huppa (personal communication, 7 October 2025)

In Indonesia, food waste is strongly influenced by cultural norms. Sharing food with neighbours and family is an ingrained habit, and religious values teach children from a young age that food should not be wasted. Surpluses are often shared rather than thrown away. Composting is also common in rural areas: farmers create natural fertilizer from food scraps and animal faeces, enriching the soil without chemical additives.

-Focus group with Indonesian students (personal communication, 9 October 2025)

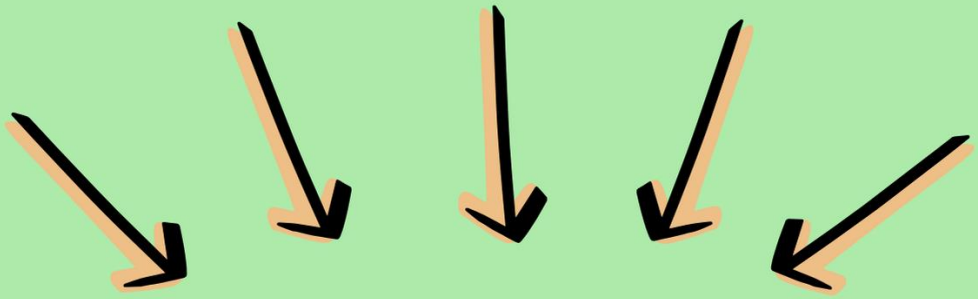
Yet Indonesia, like Belgium, faces structural challenges within the food chain. A lack of storage facilities, poor planning, limited knowledge of expiration dates, and insufficient infrastructure lead to major losses before food even reaches consumers. For this reason, Indonesia developed a “Circular Economy Roadmap,” aiming for a 45% reduction in food loss and waste by 2045. This strategy emphasizes collaboration between government, businesses, citizens, and international partners such as Denmark, which supports Indonesia in developing sustainable solutions.

-Food Nation Denmark. (2 October, 2024)

-Plan your grocery shopping so you don't buy too many unnecessary things. Drawn by Amya, Joro KSA Weelde

In Belgium, companies are also taking responsibility. Increasingly, organizations follow the example of Scandinavian countries by measuring their own food waste, allowing them to take targeted action within their production and distribution chains. **“Companies must have the courage to ask themselves: how much food are we actually wasting?”**, a question that forms the basis for real change.

-Food Nation Denmark. (2 October, 2024)



Food: Insights and challenges in a changing world

Food waste is more than an ethical or economic issue: it is an ecological problem deeply intertwined with climate change, inequality, and consumption patterns. When food ends up in dumps, it decomposes and releases methane, a powerful greenhouse gas that, like CO_2, contributes to global warming. Reducing waste therefore directly reduces emissions.

Education and communication play a key role worldwide in addressing this issue. Research by Susilo et al. (2021) shows that many Indonesians still lack a clear understanding of what food waste actually entails, and that targeted awareness campaigns can effectively lead to behavioural change. In Belgium, knowledge sharing remains equally important, for example through schools, companies, and social media. Those same social media and marketing channels are also part of the problem: they stimulate overconsumption by constantly promoting new products and trends.

-Food Nation Denmark (2 October 2024)
-Focus group with Indonesian students (personal communication, 9 October 2025)
-Interview with Huppa (personal communication, 7 October 2025)

-Leaving the tap open is "not good".
Drawn by Lore, Joro KSA Weelde

At the same time, attention to the circular economy is growing—an approach in which waste is no longer the end of the chain, but the beginning of something new. What appears to be residual waste today can become a resource tomorrow: think of stale bread converted into biogas or food scraps turned into compost. In both Belgium and Indonesia, more and more local initiatives are emerging that put this vision into practice.

International cooperation is essential in this process. Countries such as Denmark, the Netherlands, Belgium, and Indonesia exchange knowledge on circular strategies, technological innovation, and education. The key to success lies in partnership—between companies, universities, NGOs, and governments.
-Food Nation Denmark (2 October 2024)

In my opinion, involving children and young people is especially crucial, because sustainable habits start early.

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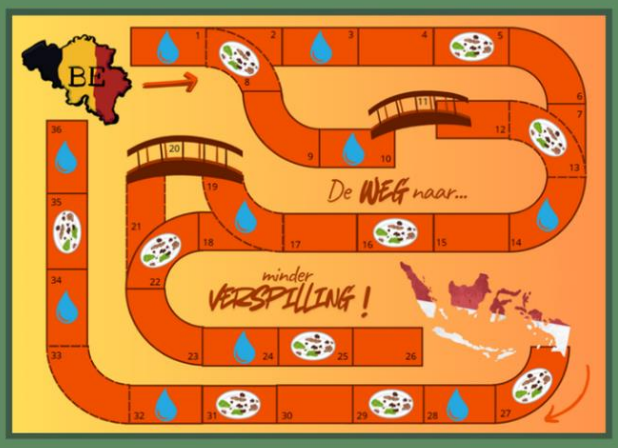
EDUCATIONAL GAME: THE YOUNG PERSPECTIVE



The Future Learns Today: Connecting Generations and Worlds Around Food and Water Waste!

With KSA Weelde, we played an educational game that introduces children to the themes of food and water waste in a playful, active, and meaningful way. On a large game board, they follow three main characters (Crumble, Berry, and their dog Splash) who guide them through familiar everyday situations. Each square reveals a new fact about food or water, while other squares show good and bad habits that influence waste. On special squares, marked with a sign or a drop, the children complete small tasks to turn a "bad habit" into a good one. In this way, they learn through play how even small choices can make a big difference.

"Education is about raising awareness of our own actions. We need to understand that clean water is not a given: it has to be 'produced.' And when we do that, we must also be able to trust that it is truly clean."

- John

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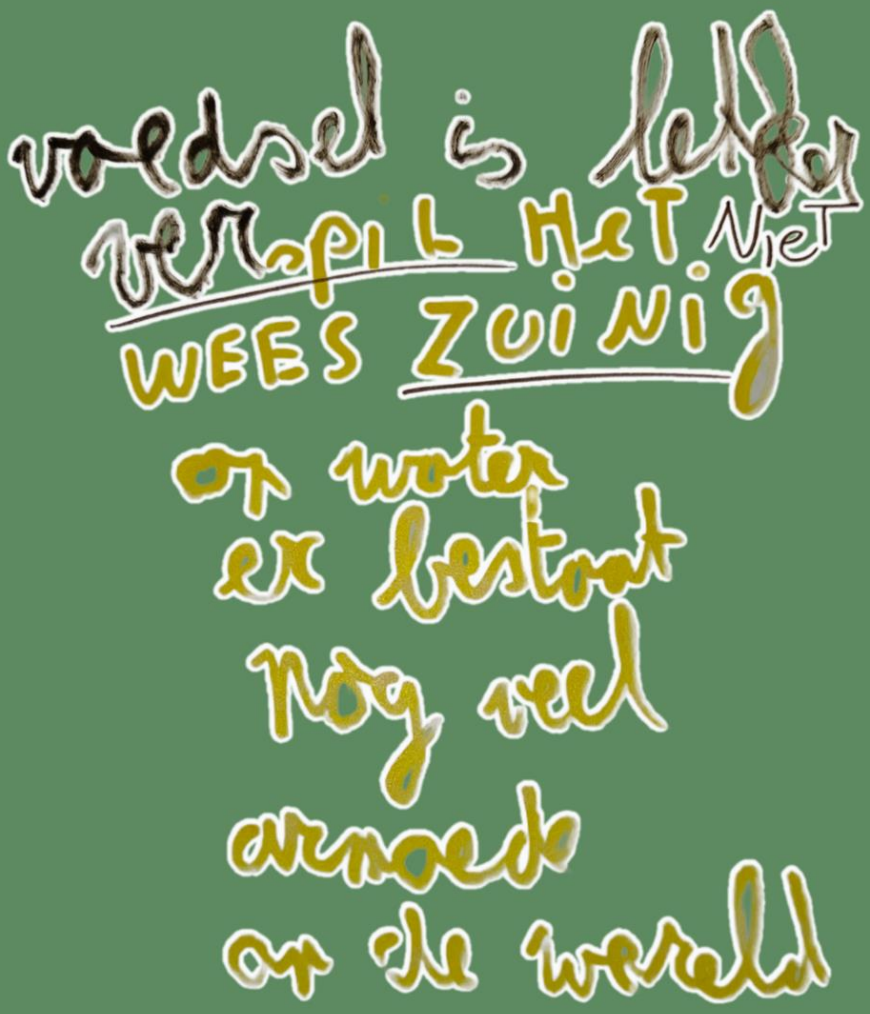
Throughout the game, participants play various mini-games: races, reaction games, team-building challenges, and other activities, each demonstrating how food or water can be lost, and how it can be easily prevented. Movement, play, and teamwork help children naturally learn that they themselves can play a role in preventing waste.



-"Food is good, so don't waste it. Be frugal with water. There is still a lot of poverty in the world. Written by Lauren, Joro KSA Weelde

The game was played on 15 November 2025 with KSA Weelde, involving children from 4th, 5th, and 6th grade (ages 9 to 12). Their experiences, ideas, and creative outputs form an important part of this magazine.

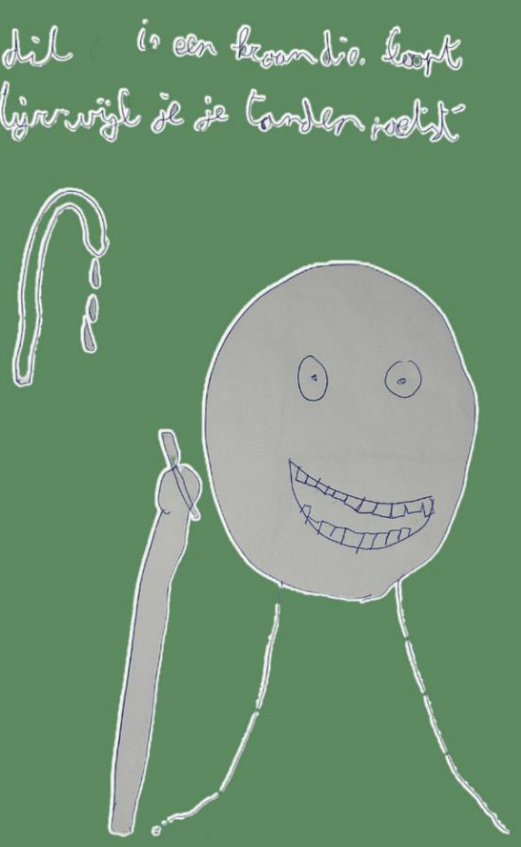
Purpose and Learning Objectives of the Game

The game was designed to:

1. Teach children about food and water waste in an accessible way, through a playful and active learning process.
2. Encourage critical thinking: what causes waste, and how can we change it? Raise awareness of the link between water and food: how wasting one often leads to wasting the other.
3. Strengthen teamwork, communication, and problem-solving skills, as many activities are played in teams.
4. Promote creative expression: after the game, children could translate what they learned into drawings, poems, comics, paintings, and more.
5. Foster intergenerational dialogue by bringing children's ideas home and making them discussable within their communities.

-Don't shower for too long.
Drawn by Lies, Joro KSA Weelde

-"This is a faucet that runs while you brush your teeth!" Drawn by Gus, Joro KSA Weelde



The members of this group are well attuned to one another, as they have been playing together since September, and in some cases even earlier. Nevertheless, during the game we observed several differences between younger and older participants. Children around the age of 9 responded most enthusiastically to the physical challenges and the characters. The interactive nature of the game made learning fun for them. Older children (11–12 years old) more often engaged in conversations about the choices presented in the game and were better able to explain why certain habits are good or bad for the environment. For them, the game also became a moment of reflection and discussion.

"Het leukste spelletje vond ik waar we moesten doen alsof we fruitjes waren. Als we niet snel genoeg waren, zouden we rot worden en dat is verspilling." (9 jaar)

"I didn't know that water gets wasted so quickly when you leave the tap running." (10 years old)

"I was really shocked to learn that so many people around the world live in poverty." (12 years old)

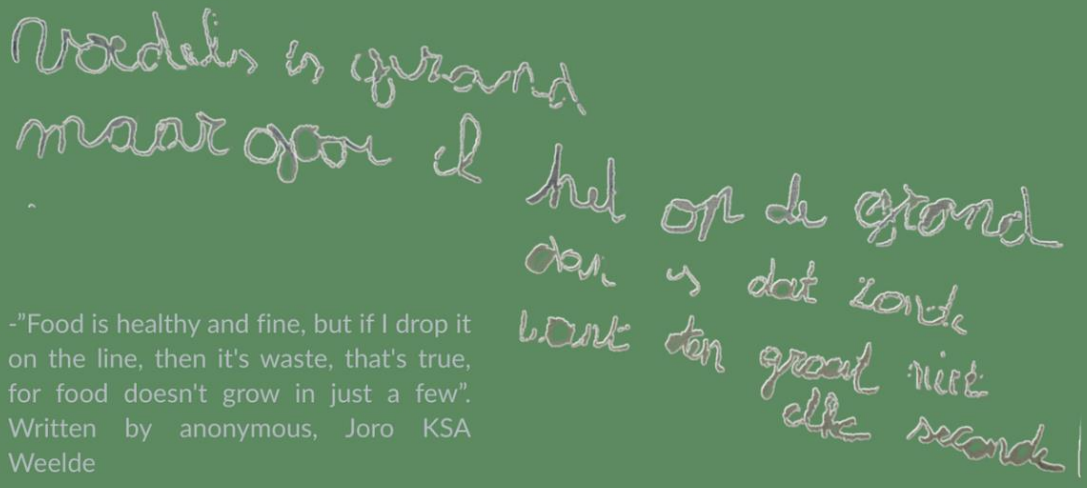
"Now I tell my family at home that we should save food instead of throwing it away." (12 years old)

During the game, children began correcting one another when someone attempted to carry out a “bad habit.” They also spontaneously used terms from the game, such as “that’s food waste” or “that costs a lot of water.” These reactions show that the message was not only understood, but also actively applied.

-”He leaves the tap open, but he's already finished!”
Drawn and written by Sietske, Joro KSA Weelde

Although this version of the game was developed and played in Belgium, the concept is universally applicable. The challenges of food and water waste exist in Belgium, Indonesia, and many other countries. Children everywhere can recognize similar situations: food being thrown away too quickly, water left running, or food spoiling due to poor storage.

By adapting examples to local habits, foods, water issues, and culture, the game can be easily tailored to different contexts. The game aims not only to convey knowledge but also to encourage children everywhere to think about possible solutions.



-"Food is healthy and fine, but if I drop it on the line, then it's waste, that's true, for food doesn't grow in just a few". Written by anonymous, Joro KSA Weelde

Learning through play encourages children to understand sustainability issues before habits become fixed. Activities like this make sustainability understandable, fun, collaborative, and practically applicable.

The children's creations, which you can see throughout this magazine, show that young voices not only understand how waste occurs but also how it can be avoided. Their ideas demonstrate that the future is already learning today, and that both local and global communities can work alongside them to reduce food and water waste.

WHAT CAN YOU DO?

Everyone can do their part to create a more sustainable world. These small, achievable actions help you use food and water more consciously!

1. Plan your meals and make a shopping list to reduce the amount of food you throw away.

2. Store food properly: check which products belong in the fridge and which do not.

3. Use water consciously: take shorter showers and turn off the tap while brushing your teeth.

4. Eat seasonal foods: they are fresher, cheaper, and more environmentally friendly.

5. Understand expiration dates correctly: “best before” usually means the food is still good after that date.

WHAT CAN YOU DO?

6 Compost your food scraps or give them to chickens: this way nothing goes to waste.

7 Use rainwater or collected water to water plants or flush the toilet. See what's possible with your plumber!

8 Protect our water: do not pour waste or oil into the sewer or rivers.

9 Choose products with a low water footprint, such as seasonal vegetables or plant-based alternatives.

-Tip 3, illustrated by Bram, Joro KSA Weelde

Reflection

The process of developing my portfolio, particularly the board game and accompanying magazine, has been a rich journey in both knowledge-building and knowledge-sharing. From the outset, my aim was to explore water and food waste as key sustainability challenges, comparing approaches in Belgium (Global North) and Indonesia (Global South), while translating these insights into accessible learning experiences for children. This dual focus required moving iteratively between analytical research and pedagogical design, constantly shaping one phase in response to the other. The knowledge-building phase began with defining a clear analytical framework for the Belgium–Indonesia comparison. Guided by feedback to clarify the contrasts I was focusing on, I identified three key dimensions: cultural habits, infrastructural and governance differences, and the degree of international collaboration. This structure allowed me to systematically examine how daily routines, consumption norms, and societal attitudes shape water and food waste in each context. Belgium's highly regulated infrastructure, technological investment, and centralized systems contrasted sharply with Indonesia's more decentralized, community-oriented approaches and uneven access. At the same time, Indonesia's creative bottom-up initiatives, such as rainwater collection and local filtration, revealed approaches often overlooked in the Global North. Synthesizing these insights across multiple sources, including academic papers, documentaries, interviews, webinars, and a focus group, enriched my understanding of both structural and cultural factors influencing sustainability. This multidimensional approach also highlighted the power dynamics underpinning North–South collaboration, fostering a nuanced awareness of positionality that informed my interpretation of cross-cultural findings.

The knowledge-sharing phase involved translating this knowledge into an engaging educational format for children. The challenge was methodological as much as analytical: how to transform complex, multi-layered sustainability insights into accessible, playful learning experiences. The board game, a hybrid of *The Game of Life* and *Operation*, and the magazine provided complementary platforms for this translation. Narrative-driven "missions," character-based habit changes, and "did-you-know" cards enabled children to engage actively with content derived from the Belgium-Indonesia research. Though the cross-country comparison is embedded indirectly, through examples and behaviors, children encounter the contrasts through practical, relatable activities. Feedback from the game at KSA Weelde showed that these design elements successfully maintained enthusiasm, helped players to retain knowledge, and encouraged reflection. More details about this can be found in the magazine. Children remembered key facts, corrected each other during activities, and proposed their own solutions to sustainability challenges, providing early evidence of impact. This process of building and sharing knowledge showed several important lessons about the way it is done and how it is understood. Firstly, I learnt the value of integrating diverse sources in order to develop a robust understanding, while also remaining sensitive to context. Combining empirical research, qualitative interviews and participatory observation allowed me to verify findings and develop content that was academically solid and pedagogically valuable. Secondly, I observed how the presentation of information influences interpretation. The storytelling, visual elements and

interactivity of the game were crucial in making the research accessible to children. Translating academic insights into engaging educational material required the complexity to be broken down without being oversimplified, while maintaining clarity and analytical integrity. Thirdly, the process exposed the conflict between ambition and feasibility. Time management issues arose during the game, with some activities taking longer than expected, demonstrating the importance of realistic planning when designing such projects. Although it doesn't matter much if a game takes a little longer, there's a trade-off when it comes to the amount of knowledge gained. Longer games mean less time for discovering other trivia.

The magazine complements the game by providing an accessible, bilingual resource that extends the reach of my research beyond immediate participants. Translating findings into Dutch and English ensures inclusivity for local children in Belgian rural communities and allows for broader dissemination through families, schools, and community platforms. In parallel, the game strengthened teamwork, problem-solving, and reflective skills, demonstrating that knowledge-sharing can produce both cognitive and social learning outcomes. Although broader dissemination, including collaboration with Indonesian partners, was constrained by logistical limitations, the portfolio positions these as future opportunities, emphasizing the iterative nature of sustainable educational design.

Conducting a North–South comparison while situated abroad for my thesis required constant critical reflection: I had to consider how my perspective as an outsider might influence interpretation and ensure that cross-cultural insights were presented respectfully and accurately. This awareness informed not only the content but also the pedagogical strategies, reinforcing the importance of cultural sensitivity when designing learning experiences for diverse audiences. A key consideration that emerged was the power dynamics underlying a North–South comparison. Using Indonesia as a case study risks reproducing unequal perspectives if it is framed merely as an example to contrast with Belgium. Throughout the project, I critically questioned why the comparison was necessary: it was not intended to rank or judge, but to highlight how structural, cultural, and governance differences shape food and water waste, and to reveal potential lessons each context could offer the other. I tried to avoid a hierarchical framing by embedding direct, first-handed insights from both countries into the game and magazine, instead fostering reciprocity and understanding. This approach emphasized that learning from Indonesia’s community-based solutions is just as valuable as analyzing Belgium’s technological and regulatory strategies, encouraging children, their surroundings and myself, to reflect on sustainability practices in a global and equitable manner.

Overall, working on this portfolio has strengthened my analytical, academic and methodological skills. In terms of analysis, I have developed the ability to synthesize cross-contextual data and identify tangible insights. Academically, I practiced connecting empirical research to theoretical frameworks while critically reflecting on my positionality. Methodologically, I developed skills in participatory design, iterative testing and translating research into accessible educational formats. These experiences are already shaping my professional trajectory: I now see clear pathways to combining sustainability research with creative, interactive learning tools that engage diverse audiences. In future, it would be nice to apply this integrative approach to larger-scale educational interventions, policy-informed outreach and cross-cultural collaborations. This would help to continue bridging the gap between knowledge generation and knowledge mobilization. By achieving a balance between analytical thinking, creative teaching methods and critical reflection, I was able to transform complex sustainability issues into practical and accessible learning experiences for children. At the same time, I deepened my understanding of the structural, cultural and collaborative aspects of food and water waste. This experience has strengthened my professional skills and confirmed my commitment to using research as a tool for meaningful, inclusive sustainability education.

Evidence of public dissemination

Facebook ‘KSA Weelde’: Announcement of Activity

Translation:
Nibble Nibble Slurp Slurp dear Joros (Participants of this group, KSA Weelde)! Crumble, Berry and their dog Splash are setting off on a big adventure! They couldn’t believe their ears when they heard on the news how much food and water is wasted every single day. That must change, they thought! Together they are travelling from Belgium all the way to Indonesia, discovering clever tips and fun facts along the way. Will you join Crumble, Berry and Splash on their mission for a more sustainable world? Pack your travel bag, because on Saturday we’re diving right in! See you soon!
Your scout leaders.

Photos of activity:

On this photo you see one of the self-made gameboards:

Link(s) to the output

KSA Weelde

Announcement activity: https://www.facebook.com/share/p/1BcYx3Nuxm/

Magazine publication (Dutch and English version): https://ksa-weelde.weebly.com/nieuws

RAWEPO

News article about activity & Magazine publication (Dutch version only):

https://www.rawepo.be/nieuws/milieu/9398-nienke-de-rijk-slaat-brug-tussen-wetenschap-en-samenleving-met-duurzaam-engagement.html

Especially this platform is very meaningful. Only one hour after publication, the article was already seen by more than 200 people! Many thanks to RAWEPO!

LinkedIn

Magazine publication (English version only):

https://www.linkedin.com/posts/nienke-de-rijk-73501a332_magazine-nothing-wasted-activity-7415418048792432642-X-q_?utm_source=share&utm_medium=member_android&rcm=ACoAAFOm-JkBWvRXvLcXUcqw49me5OnVZ8jMyIg