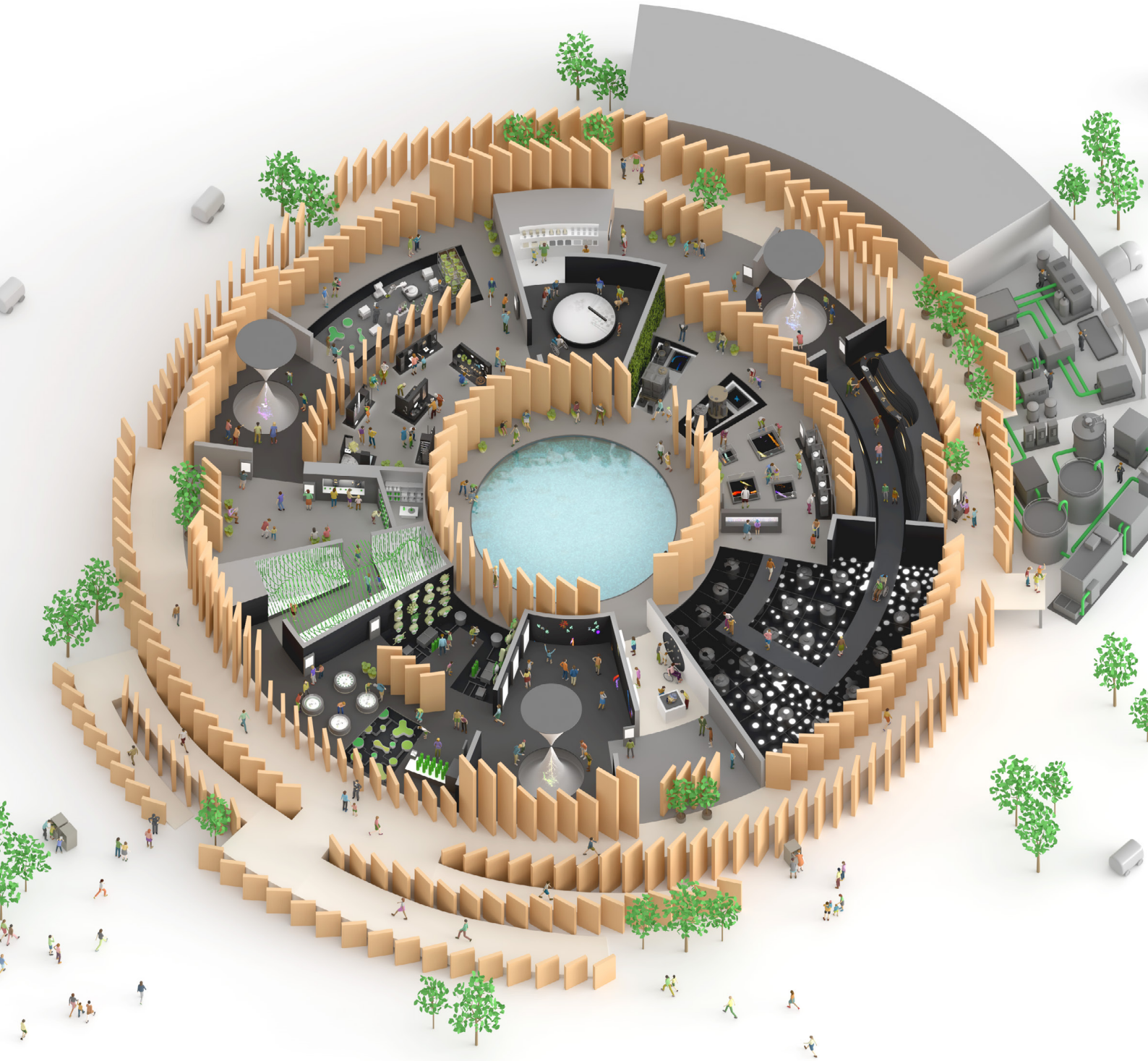
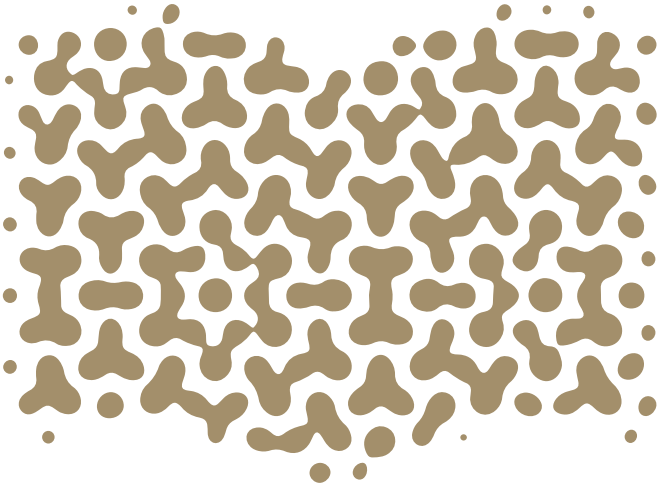
The Japan Pavilion
Complete Guide



Japan pavilion
Expo 2025

Join the endless journey along the 'cycle'. Discover the Plant Area, Farm Area, and Factory Area. The dreams that drive them, and the technologies that make them work. This guide will deepen your understanding of the Japan Pavilion before and after your visit.



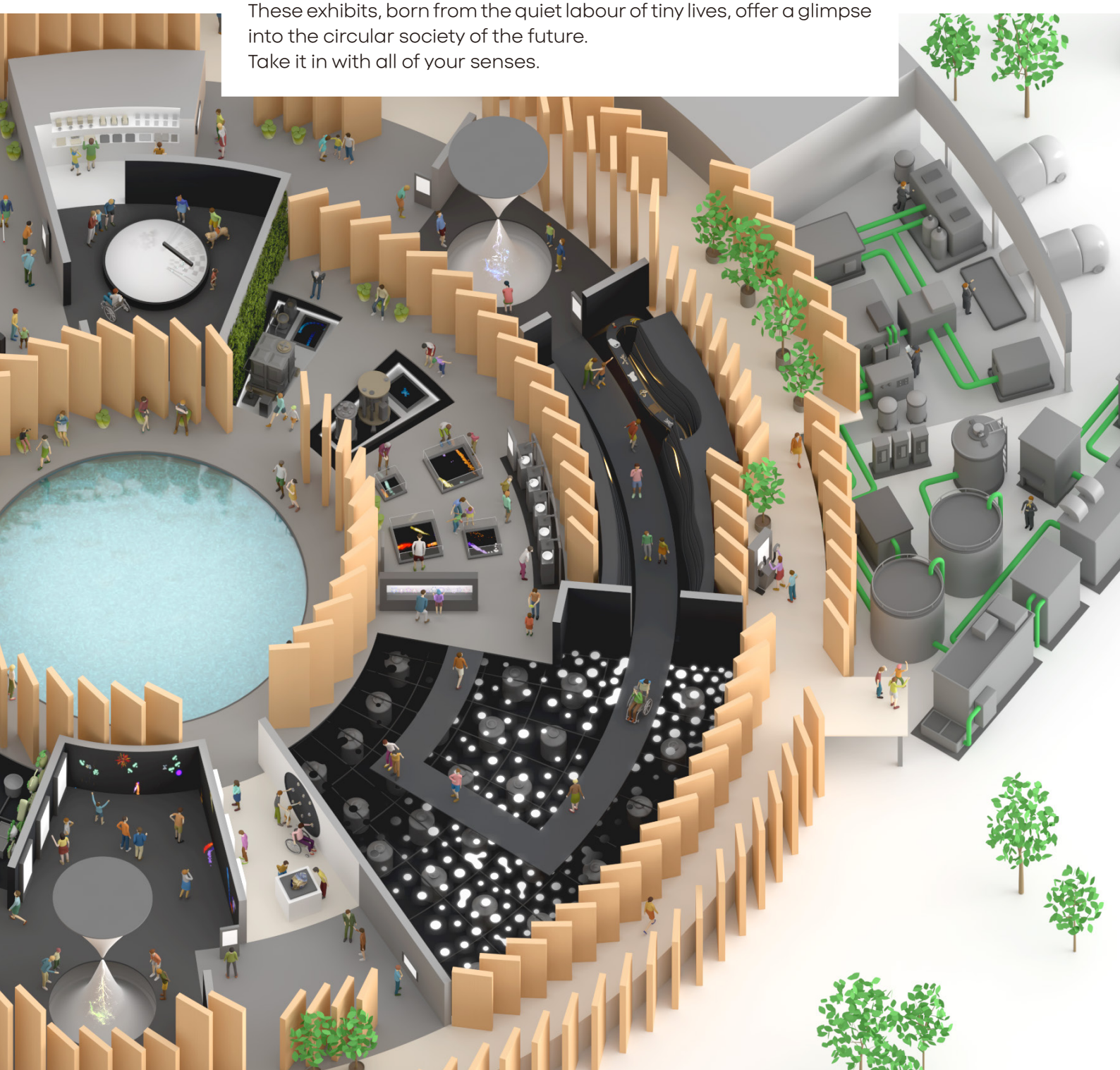
Contents

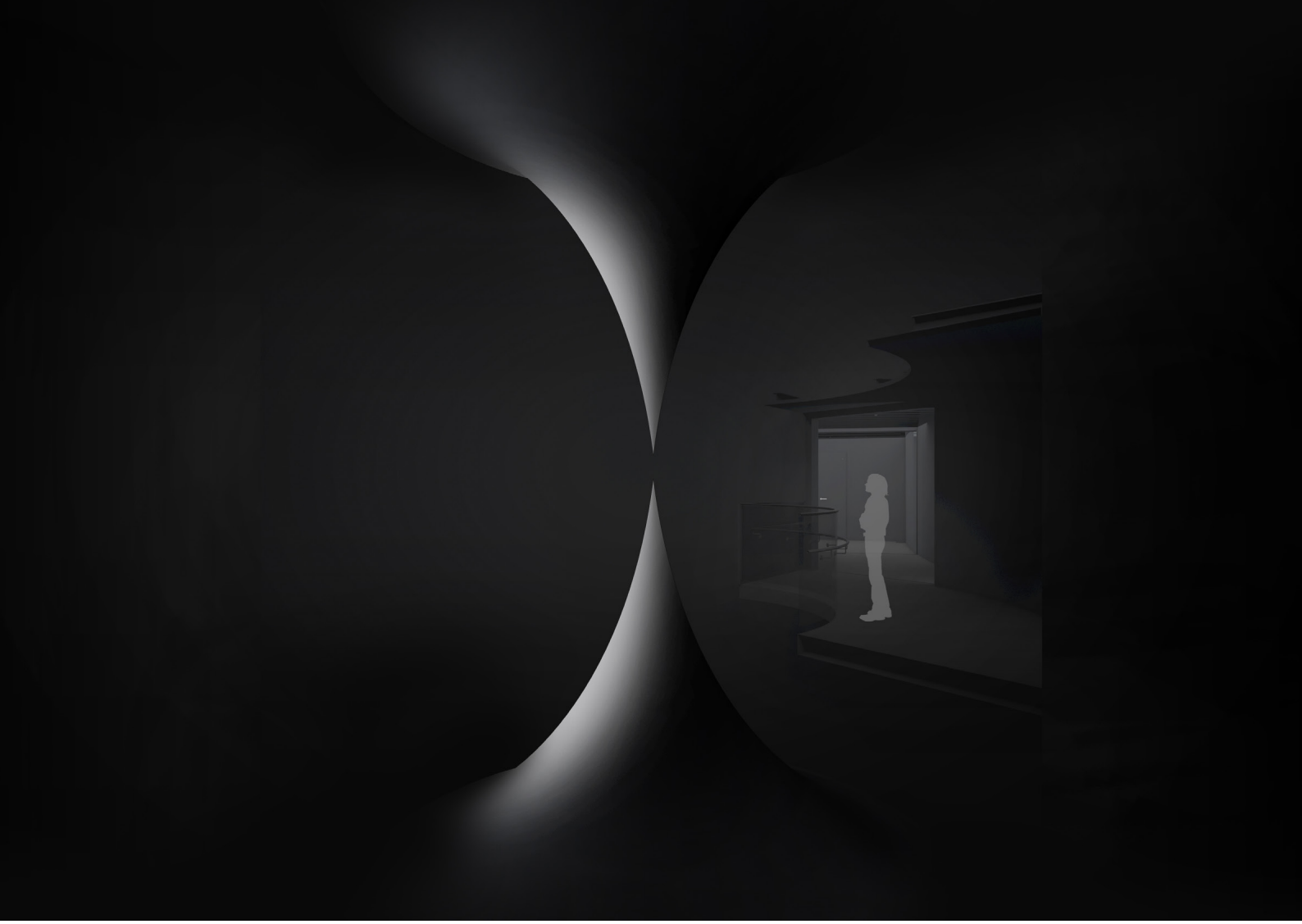
Plant Area

The cycle from Waste to Water

A little life, it speaks

Unfortunately, you won't be able to see the stars of the Plant Area. But what you can see is the result of their incredible work. The activity of these invisible microorganisms is the exhibit.
From the waste produced at the Expo site, microorganisms help generate energy, such as electricity, and create clean water. From the Japan Pavilion, the cycle of regeneration spreads across the entire Expo.
These exhibits, born from the quiet labour of tiny lives, offer a glimpse into the circular society of the future.
Take it in with all of your senses.





Plant-01

An hourglass that watches the place between lives

That which breaks down, and that which begins. From the connection between the two, a new cycle is born.

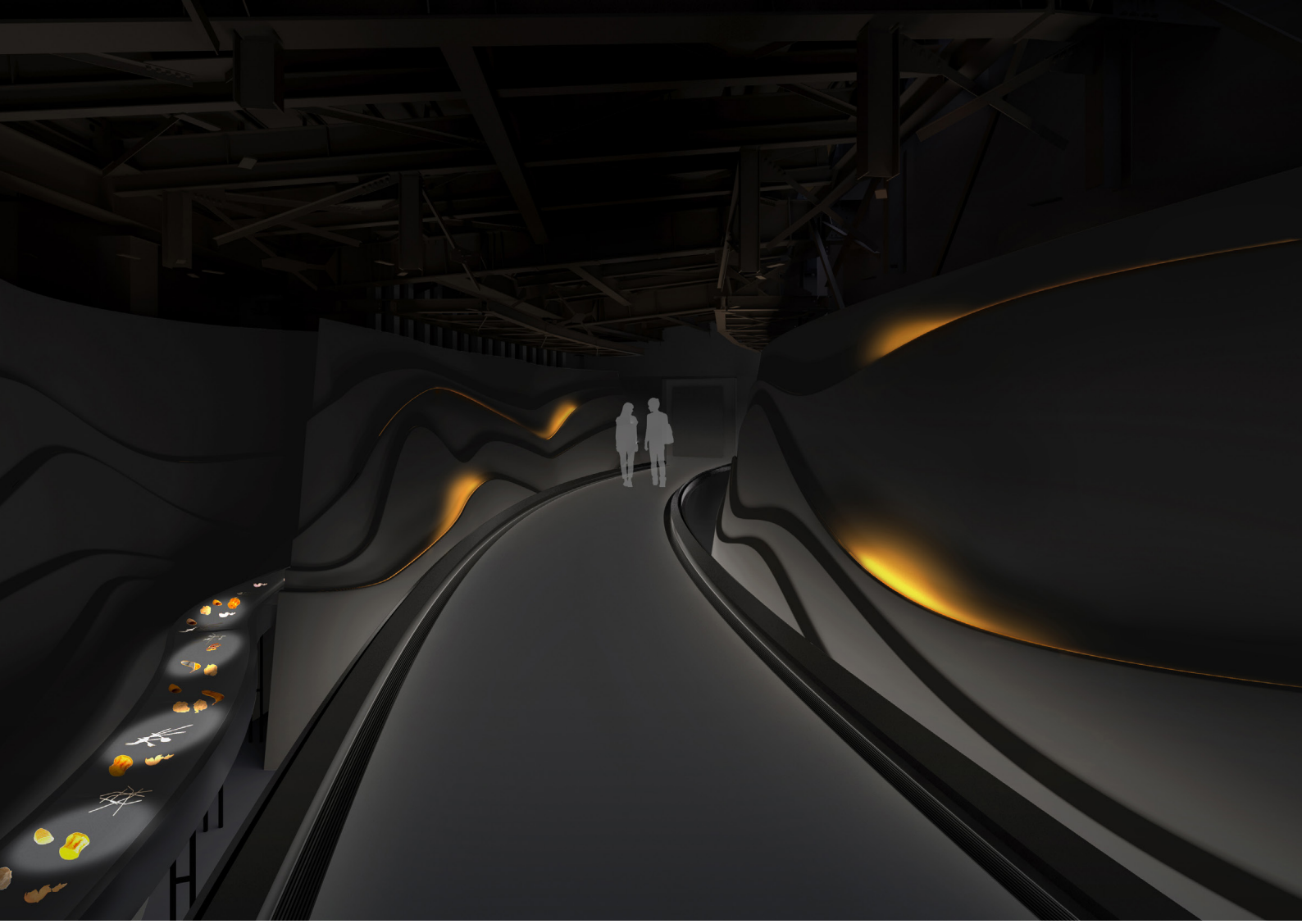
Take a step forward, and you'll find yourself in a mysterious space where life seems to breathe all around you.
New, yet somehow familiar sounds stir contradictory sensations.
What appears before you is a beautiful cycle connecting endings and beginnings.

Between an ending and a beginning

If a beginning brings to mind newness or birth, then an ending carries feelings of decline or closure. But within the endless world of the cycle, the two are one and the same—inseparable halves of a whole. The moment one life ends, another begins, and the cycle continues, over and over again. That unbroken flow—that is the cycle.
The hourglass before you embodies this very connection. The upper half crumbles under the pull of gravity—an ending. The lower half stretches and grows with its own energy—a beginning. Light and shadow shift and blend, as though new life is being born from their delicate balance.
And you, standing in this space, are also part of a vast cycle—of the Earth, of the universe. The hourglass stirs the imagination, offering a different view to each person who gazes upon it.

The cycle and the beauty of Japan within the Japan Pavilion

Since ancient times, Japan has embraced the idea that all living things—trees, flowers, and beyond—carry life. This belief in living in harmony with nature has been quietly woven into daily life.
Nature is ever-changing, flowing through time. The Japanese sensibility that finds beauty in impermanence, in the fleeting transitions of the seasons, is deeply reflected in traditional arts—from painting and literature to ceramics and gardens.
This reverence for a balance with nature has also shaped everyday wisdom, like the value of using things with care so that the objects around us might also live long lives. That same sense of beauty lives on in the Japan Pavilion's exhibits, expressed in many forms.
As you witness life continuing through constant transformation, what kind of beauty will you discover? Perhaps something deep within you—a uniquely Japanese aesthetic—will begin to stir.
Lend an ear to that quiet inner voice, and experience the cycle brought to life by the Japan Pavilion.



Plant-02

Life begins with waste.

Walk the magical path where waste is reborn.

As you enter the Plant Area, the first thing to greet you is the waste produced at the Expo site. Consumed, used, and cast aside.
Now, through the power of microorganisms, that waste is broken down and transformed into energy—a new source of life. You are here to witness that beginning.

An end? Or a beginning? Wander the path of light.

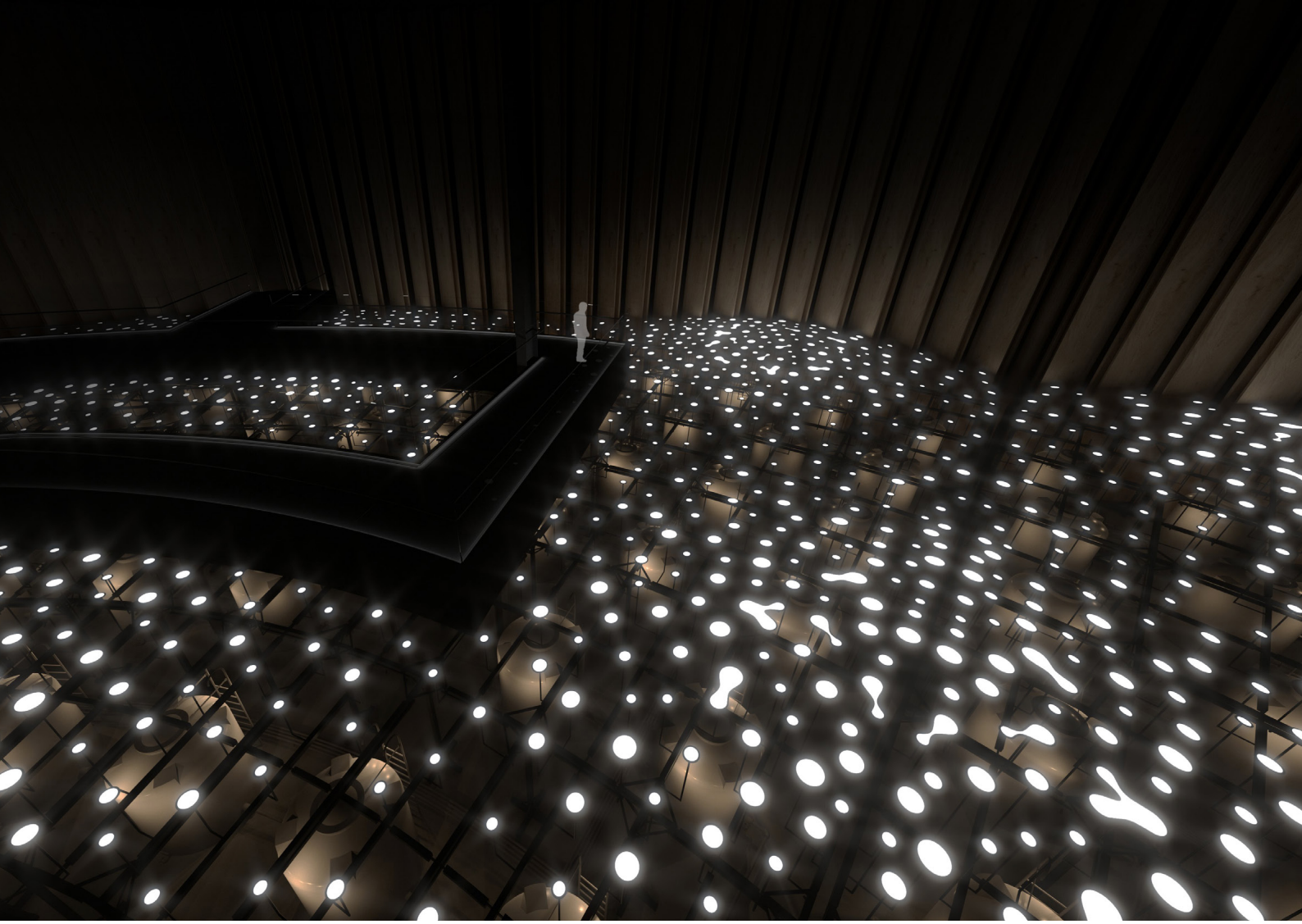
The first thing to catch your eye in this cavernous space is a massive conveyor belt. Laid atop it: cutlery, cardboard, vegetable and fruit peelings...each one a representation of the many types of waste produced across the Expo site.
Watch! The transformation begins. The waste becomes glowing orbs of light—drifting slowly, bouncing playfully, racing ahead. This is the moment when waste, having fulfilled its purpose, is reborn as new life. The dynamic tension of disappearance and emergence is expressed through constantly appearing, flowing, and vanishing light.
Watch closely—you may begin to sense a soul inside each flicker. Because here, even waste carries life. Follow the rhythm of the lights as they pass the baton from ending to beginning, and step into the place where life moves through its transformation.

From waste to resource

Japan produces over 40 million tons of waste each year—more than half of it from households (2022 data). Roughly 40% of that household waste is said to be food waste. The number feels overwhelming. But it also speaks to potential.
Among all forms of waste, food waste has been one of the hardest to put to use. But the biogas produced during fermentation is now drawing attention around the world as a clean energy source. Composting—where microorganisms break down food waste into fertilizer—is also a practical method, easily achieved at home.
Of course, reducing waste is important.
But if we can also turn waste into a resource, we can lessen our dependence on new ones. And if we can find a way to use something rather than throw it away—that feels good, doesn't it? Using waste wisely has the power not only to form a circular society, but to lift our spirits as well.

Turning Expo waste into power for the Japan Pavilion

Every day during the Expo, food waste is produced as crowds gather on-site. At the Japan Pavilion, that waste is collected using EV trucks, fermented, and turned into biogas. The electricity generated by this biogas is used to power the Pavilion itself. And the water produced as a byproduct of fermentation is purified by a filtration system and reborn as clean water.
The effort to reuse waste as energy and resources is an area of innovation with even greater potential in the years to come. Across Japan, efforts to repurpose food waste and supply energy to local communities are quietly but steadily growing.



Plant-03

Lit by fermentation?

A shimmering meadow of living light—
Gaze into a gentle splendour born from the cycle.

In the darkness that spreads out before you, countless lights suddenly begin to flicker. The waste that once flowed along the path of light now swims, bounces, gathers, and spreads—transformed into glowing particles. Here, within this breathtaking scene at the Japan Pavilion, you are surrounded by the hidden power of living things—the quiet stirrings of rebirth.

A vast world born from the smallest of life forms

Beyond the passageway unfolds a vast and breathtaking world. What does it look like to you? A shimmering ocean? A sky full of stars? Perhaps a windswept highland.
This spectacular scene is created by approximately 700 glowing panels. Their ephemeral flickers and bold bursts of brightness mirror the vibrant dance of life itself. The lights drift freely—sometimes forming clusters, at other times swelling into one great undulating wave.
Peer through the darkness, and beneath the surface of the lights, you'll begin to see them—rows of towering tanks, just faintly emerging from the shadows. These are fermentation tanks that break down food waste.
The lights above mirror the invisible labour of the microorganisms inside. Perhaps you're drawn to the delicate movement of the lights because something within you resonates—a silent harmony between the lives within the tanks and the life within yourself.

Passing the baton of decomposition—inside the fermentation tanks

Standing in the depths of this sea of light are 37 massive tanks. This installation is inspired by fermentation tanks—where countless microorganisms, each with its own role, are at work. Some microorganisms break down proteins and carbohydrates into amino acids and sugars. Others further decompose them into acetic acid and short-chain fatty acids. With each step, the molecules become smaller, until methane-producing bacteria complete the process, creating biogas that can be used for power generation.
The Japan Pavilion contains an actual fermentation plant, where real microorganisms are hard at work. Every day, food waste from the Expo site is used as fuel. The electricity generated powers the Pavilion itself.

Energy without adding to CO_2

Biogas made from food waste is gaining attention worldwide as a key technology for achieving carbon neutrality—reducing net CO_2 emissions to zero. Much of what we call food waste, like fruits and vegetables, is made from plants that once absorbed CO_2 from the natural environment to grow. So even if biogas from that waste releases CO_2 into the air, the total amount of CO_2 in the atmosphere doesn't increase.
By turning food waste into energy, we reduce the volume of waste that needs to be incinerated and help lower CO_2 emissions. Food waste doesn't just generate power. It can also fuel ideas for a better future.

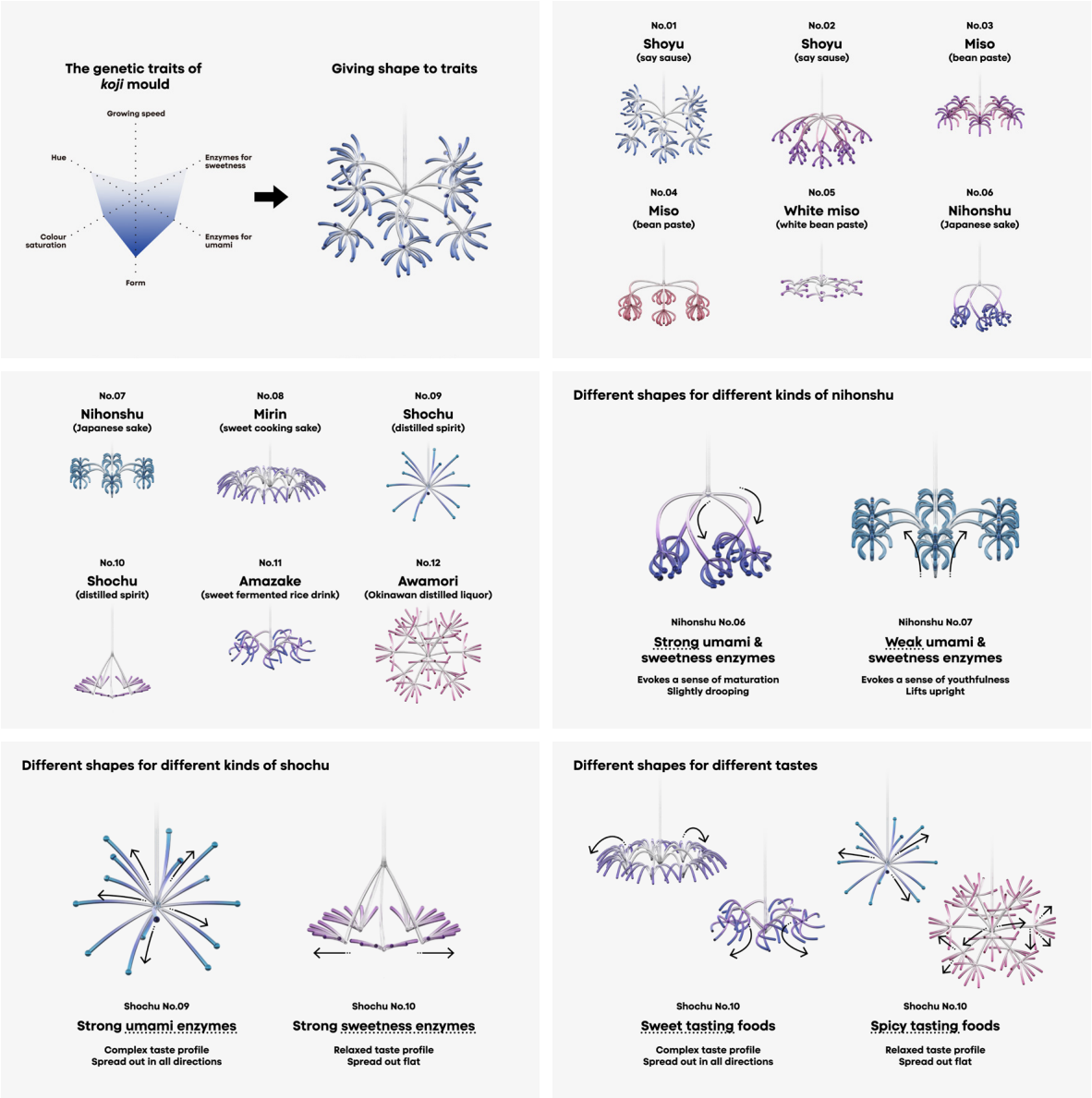
Plant-04

Japan’s proud hidden chef: *koji* mould

Can the world of microbes be art? At the heart of it all is koji mould— born and raised in Japan.

Take a quiet peek into the microbial world that sustains the cycle of life. There, you’ll find koji mould, a microorganism that has long supported the foundation of Japanese cuisine. Beyond that familiar flavour lies a story of history and mystery.

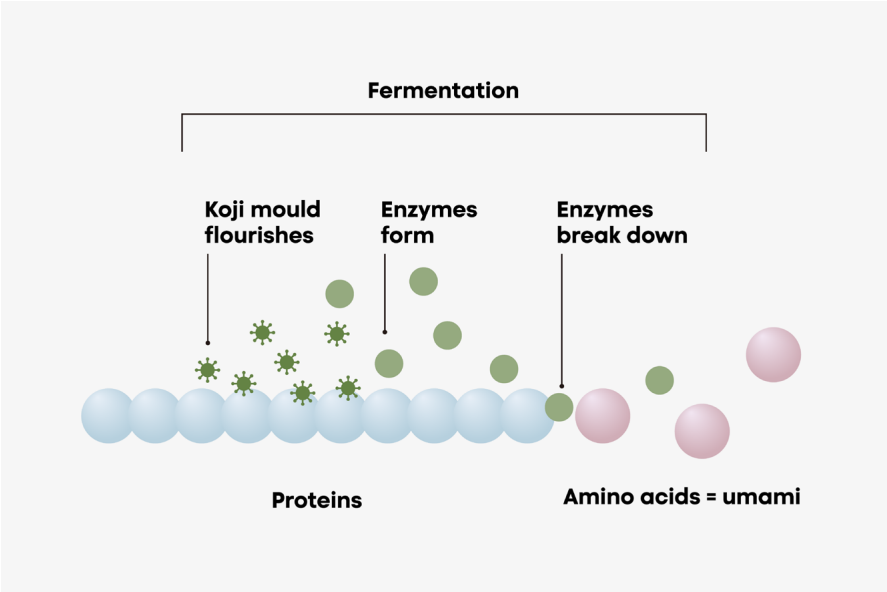
A museum of moulds that make ‘the taste of Japan’



Delicate objects line the showcase. Some may remind you of sparklers, others might feel like they’re quietly pulsing with life. These forms represent the many genetic traits of koji mould used in everyday life—particularly those characteristics most deeply connected to flavour. The diverse personalities of koji mould have become gifts to Japanese food culture, the result of chance encounters and the wisdom of those who came before. Simply gazing at them brings new discoveries. Welcome to a museum where the remarkable world of koji mould—the creative force behind soy sauce and miso—becomes art.

Could this be the mould behind that familiar taste? What’s the true source of umami? By getting to know these tiny lives that produce such abundant gifts, you’ll uncover the secrets behind the tastes of Japan.The miracle called ‘fermentation’ that changed everyday life

The miracle called ‘fermentation’ that changed everyday life



Soy sauce, miso, sake, vinegar, mirin—many of the iconic elements of Japanese cuisine are created through fermentation by koji mould. The enzymes produced by the mould are the secret to its delicious taste. These enzymes break down starches into sugars, and proteins into amino acids—the very essence of umami. This is the process known as fermentation. Koji mould—also known as kōji-kabi—is a type of fungus. But unlike harmful moulds, it doesn’t produce toxins. Instead, it draws out sweetness and umami from rice, wheat, soybeans, and more, creating complex, layered flavours.
Fermentation and spoilage are, biologically speaking, the same process—both driven by microbial activity. The line between a delicious transformation and a rotten failure is incredibly thin. The wisdom of our ancestors in navigating that line was nothing short of extraordinary. A food culture rich in fermented seasonings can be seen as the ultimate expression of Japan’s deep respect for nature.

Japan’s koji mould, growing into the future

It’s said that the first success in pure microbial cultivation came in 19th-century Germany. But texts from Japan’s Muromachi period (14th–16th century) mention tane-koji-ya, or specialists who cultivated and distributed koji mould to sake brewers across the country. In other words, Japanese people had already achieved pure cultivation of mould by the 14th century, and were using it commercially.
Koji mould is a type of fungus that, through mutation, lost its ability to produce toxins. The Japanese discovered it, nurtured it, and made it their own. This is the foundation of Japan’s fermentation culture. In 2005, a Japanese research team successfully mapped the entire genome of koji mould. The sculptural forms in this exhibit are built on that genetic data. Research into the genetic code of koji mould continues to this day. And in tracing the roots of Japan’s distinctive flavours, we just might stumble upon the flavours of the future.

Plant-05

The fascinating potential of microorganisms

The fleeting transformation shaped by microorganisms. A delicate sculpture of cherry blossoms

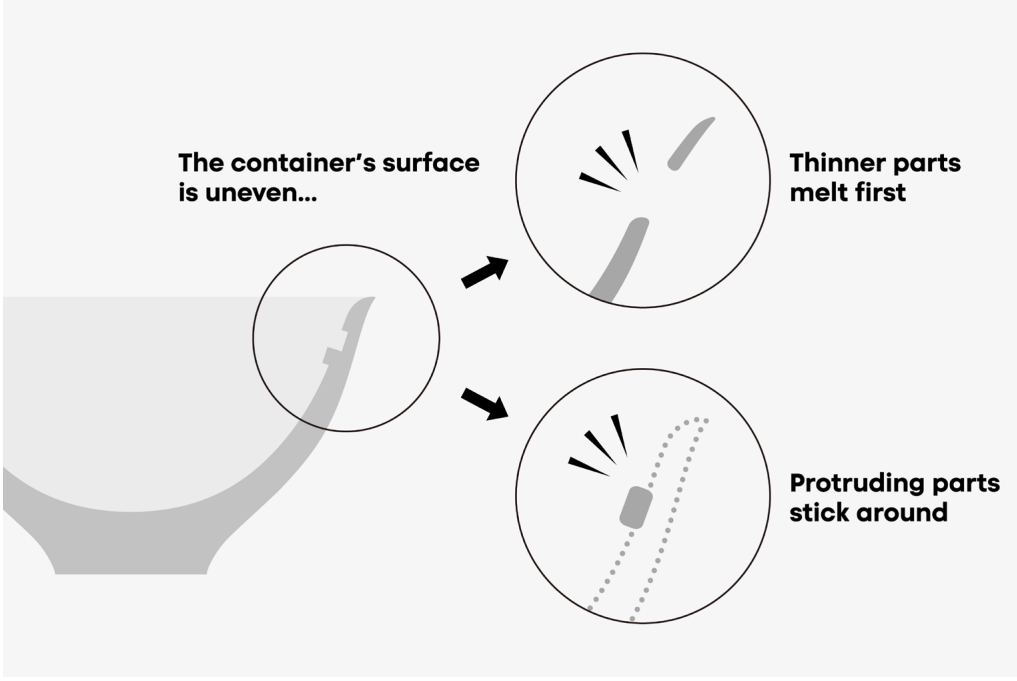
Within the vessels submerged in water, cherry blossom shapes emerge like fleeting illusions. They are temporary forms, revealed only in the process of breakdown, as the microorganisms gradually cause the vessels to disappear. This is a quiet space to reflect on the beauty of the decomposition that connects the cycle of life.

Five phases of transformation: witness how form changes through decomposition

Inside the tanks lined along the wall are vessels made of biodegradable plastic, slowly being broken down by microorganisms. The exhibit presents this process in five stages—each one represented by a separate tank. As you walk past them in order, you can witness the transformation step by step.

The first to appear on the surface is the cherry blossom. As decomposition progresses, branches begin to emerge. The flowers scatter. Eventually, the entire vessel disappears. By varying the thickness of different parts of the vessel, each element fades at its own pace, revealing delicate shapes sculpted by the flow of time and life.

These ephemeral, natural sculptures have been shaped by decomposition itself. Take a moment to gaze at their fragile outlines right to the very edges.



Biodegradable plastic: a technology for the future

Biodegradable plastics are designed to break down naturally as microorganisms decompose them, returning them to nature. Depending on the source materials—such as plant oils or starch—and the environmental conditions—like soil, lakes, or sea water—the speed and success of decomposition can vary. Of these, the ocean presents the greatest challenge. It covers much of the Earth's surface, yet is home to relatively few microorganisms capable of effective decomposition.
The vessels used in this exhibit are made from a type of biodegradable plastic developed through advanced technology—created by microorganisms, and capable of breaking down even in seawater. It functions like ordinary plastic, but with far less environmental impact. Developed by a Japanese manufacturer, this material may offer a potential solution to the growing problem of marine waste. Research into its applications continues today.

Choosing materials that enrich both our senses and our future

Even if you've never heard of biodegradable plastic before, you may already be using it in your daily life. From agricultural tools and fishing nets, to trays for fresh food, disposable nappies, and sanitary products—more and more companies are turning to biodegradable plastic as a material for their products.
The transformative technologies that will reshape our future may already be hidden in plain sight, quietly waiting to be discovered in the unseen corners of everyday life.

Plant-06

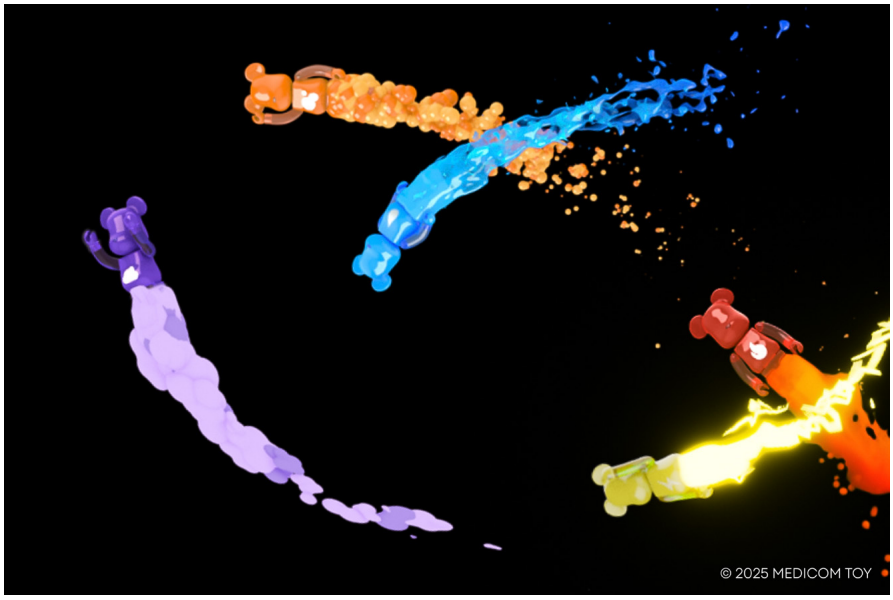
Organic waste...becomes water, becomes heat, becomes electricity, becomes CO_2, becomes nutrients

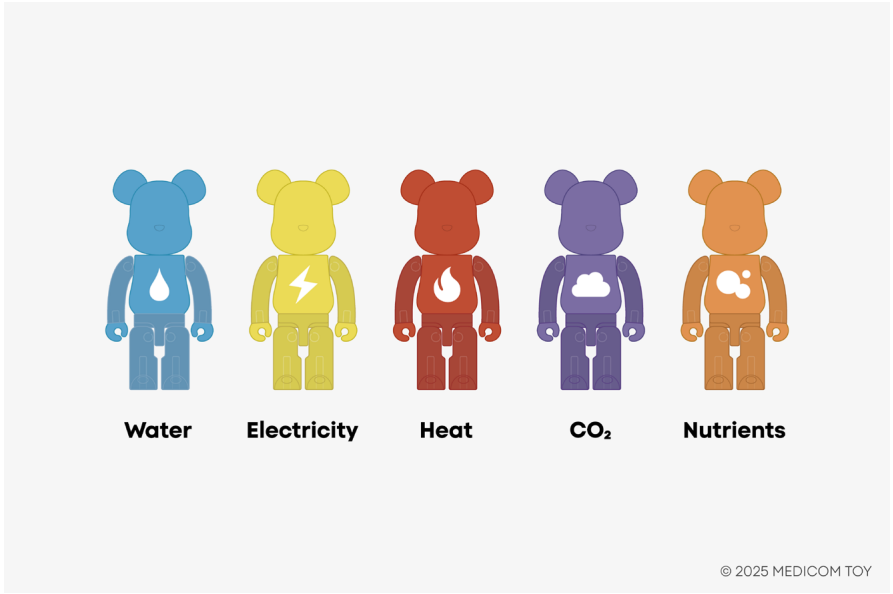
A burst of colour from the BE@RBRICKS. But what are they, really?

Take a peek through the window at your feet, and you'll see a flurry of colourful BE@RBRICKS spring to life. Some flash like lightning, others ripple like droplets of water. They are powered by the energy born from food waste, and this is the very moment they come alive.

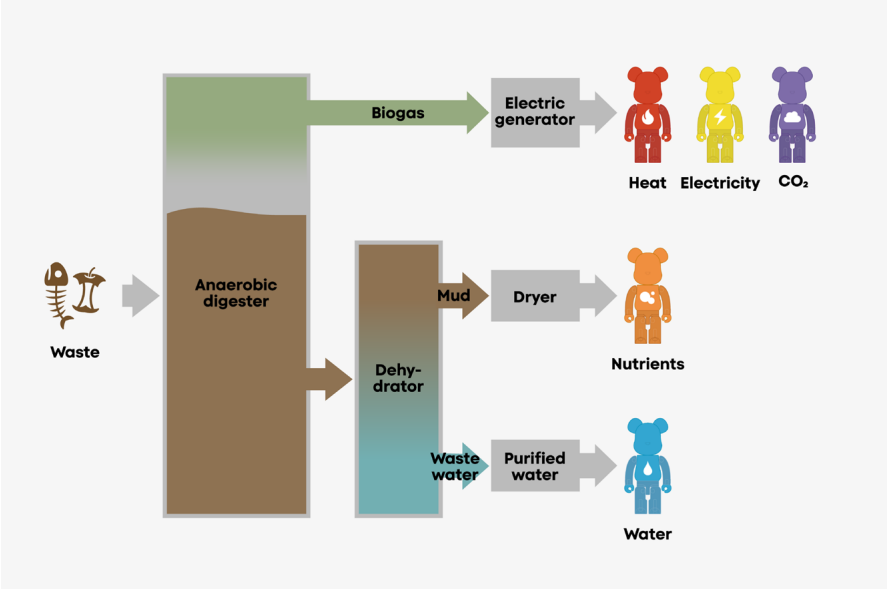
From food waste at the Japan Pavilion to a new adventure ahead

These BE@RBRICKS have come bursting out from below—where real food waste is being broken down. Microorganisms are hard at work decomposing waste collected from across the Expo site, producing five valuable outputs: water, heat, electricity, CO_2, and nutrients such as nitrogen and phosphorus. Each of the five BE@RBRICKS embodies one of these elements. Can you guess which is which? Take a closer look at their playful details—their tails, their colours, their cheeky features. Each one expresses its element with charming flair. Their energetic movements are bursting with the joy of transformation, filled with a sense of newfound life. And if you listen carefully, you might even hear them chirp with delight.





How are they born? Where are they headed? The science behind their adventure



Inside the fermentation tanks of the Pavilion, food waste is broken down, producing biogas. Biogas can be used as fuel to power a thermal generator, converting heat into electricity. Meanwhile, the CO_2 within the biogas is separated and collected for reuse. In the Farm Area, for example, it's used to feed hydrogen-oxidising bacteria—the same bacteria that help produce the base material for bioplastics. It can also be used to grow algae.
Water and nutrients remain in the sludge left behind after decomposition. The water is purified to become clean and clear. You'll see it soon in the water basin ahead. And the nutrient-rich sludge can be dried and turned into compost to nourish the next generation of life.

Biogas power: a solution we must shape together

If food waste is incinerated as-is, it adds to CO_2 emissions. But biogas power lets us harness the work of microorganisms to create energy from waste, reducing our impact on the environment.
In Japan, more and more municipalities are now turning to biogas power to support local energy cycles. If initiatives like this can spread just like the beloved BE@RBRICK characters who have captured hearts worldwide, they'll become a driving force in building a truly circular society.
And this adventure? It's only just begun.

Plant-07

The workers are microorganisms at this water ‘recycling factory’

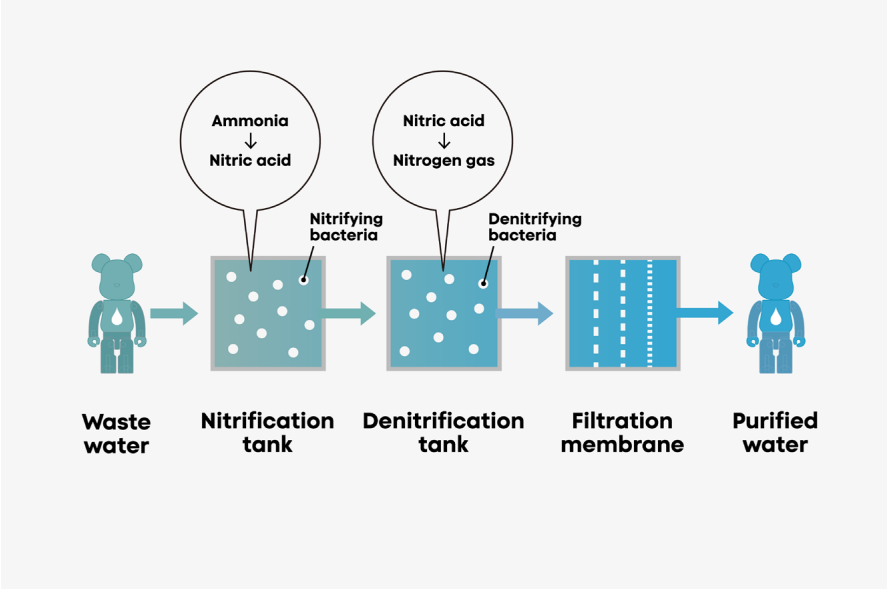
Can microorganisms create water resources too? Japan’s water purification power: turning waste into hope

The water left behind after food waste is broken down is purified to an almost-pure quality right here inside the Pavilion. This is made possible through a combination of microbial power and advanced membrane filtration. Inspired by nature, this purification method offers a wealth of insights into how we can live more sustainably.

Join the Water BE@RBRICK on a new adventure

Follow the Water BE@RBRICK across the small bridge and you'll come upon a curious machine. To your left: the filtration system. To your right: a tank filled with clean, purified water. This is the very same system used inside the Japan Pavilion. As the BE@RBRICK passes through the filters, its colour shifts to a sparkling blue, and it happily begins to swim, heading toward the vast water basin in the central courtyard.
This device brings the Pavilion's water purification technology to life. The clean water it produces is used to fill the courtyard basin, where its crystalline beauty is revealed.

Two types of microorganisms power Japan's purification technology



Inside the purification tank, water is cleaned using two kinds of microorganisms and filtration membranes.
First, the water enters the nitrification tank. Here, porous spheres covered in nitrifying bacteria are infused with air and water. These bacteria convert harmful ammonia into nitrate through the process of oxidation.
Next, the water moves into the tank filled with denitrifying bacteria. The nitrate is broken down once more, this time into harmless nitrogen gas.
Finally, the water passes through multiple filtration membranes that remove remaining impurities, resulting in water clean enough for human use. This technology is already in practical use at many water treatment facilities across Japan.
Who knows? A water BE@RBRICK might show up in your own home someday.

The wisdom behind Japan's choice: Purification and regeneration

The advancement of water purification technology in Japan was driven by a difficult reality: our nation's limited water resources. Despite having high annual rainfall, Japan's dense population means that per-capita precipitation is just one-quarter of the global average. With limited water, the answer was clear: recycle it.

Japan has actively developed technologies for seawater desalination and wastewater regeneration, turning ambitious ideas into real-world solutions. One key innovation is the reverse osmosis membrane (RO membrane), a filtration system capable of removing impurities larger than water molecules. Japan is a world leader in this field, with domestic manufacturers holding around 60% of the global market share. These membranes are making a difference in water-scarce regions around the world.

Plant-08

Pristine water reflecting the future

Even waste can become a gift. In this clear, still water, we glimpse the boundless potential of life.

A circular courtyard where a vast reflecting pool appears, aglow with light. This water has been purified to a near-pure state through the power of microorganisms. Its clarity is dazzling. As sunlight and wind ripple across the surface, it feels like a celebration of life itself. Simply standing here brings a quiet sense of peace. This is the central space of the Japan Pavilion, where the water, the heart of the cycle, gently restores the soul.

A moment of quiet reflection, with water at the centre of the cycle

Step through the corridor and look up—a vast sky unfolds before you. You've arrived at the central courtyard of the Japan Pavilion. Stretching out ahead is a great basin of water, capturing the light of the sun. This water began its journey in food waste. With the help of microorganisms, it travelled with you through the Plant Area and now, purified, it is ready to begin life anew.

Here in this circular courtyard, there is only water. Open to the sky above, the space is purposefully left empty—a gentle pull toward the centre, a symbol of the cycle's gravitational core. Freed from meaning, freed from form, this is a place to stand face to face with the water. To reflect, without distraction. After sunset, the basin comes to life with soft illumination. As the light dances across the rippling surface, the water seems to breathe.

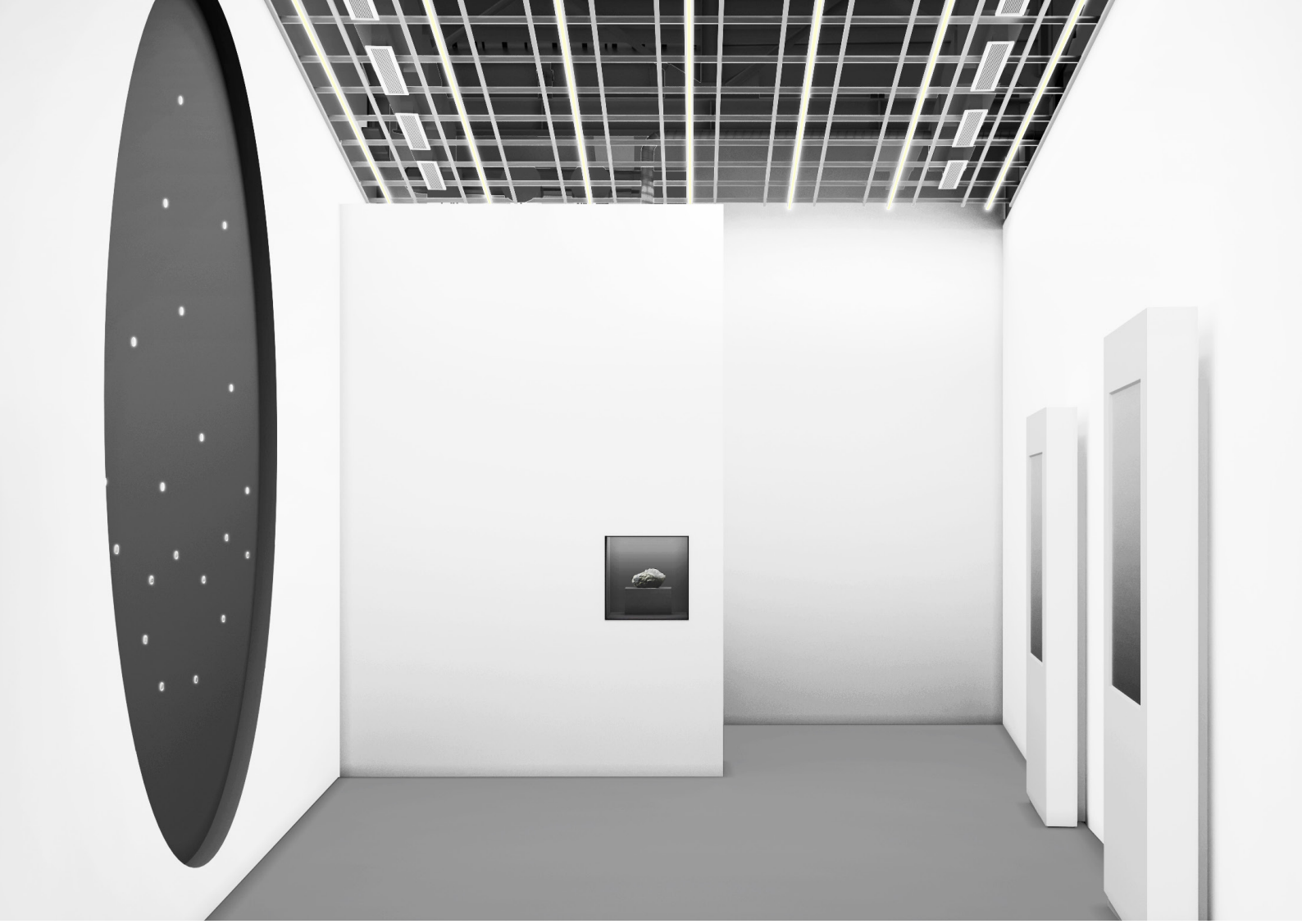
All around you rise cross-laminated timber (CLT) walls, standing in quiet order. They mark the architecture of the Japan Pavilion, a structure that itself embodies the idea of circulation. Gently, peacefully, the water watches as people flow together in this circular space. Each on their own path, each part of the same whole.

Water, woven into the soul of Japan

Just as civilisations across the world formed along rivers, so too has water played a vital role in shaping communities and culture throughout human history. In Japan, public baths and hot springs have long served as places of connection and conversation, and continue to do so today.

Water is often seen as a threshold: a boundary between the pure and the impure. At shrines, the ritual of handwashing expresses this very idea. In a country shaped by agriculture, water has always been a blessing and, at times, a threat. Gratitude and awe exist side by side. Perhaps this duality gave rise to the cultural view of water as something that marks the boundary between the sacred and the everyday.

The ponds, waterfalls, and winding streams so often seen in Japanese gardens are not just aesthetic choices. They symbolise the shifting, flowing link between all living things. Throughout history, water in Japan has expressed countless ideas, quietly flowing through culture in many forms.



Plant-09

A discovery!
Even on Mars, water circulates.

Could Mars once have had oceans?

In the year 2000, a single rock was discovered in the Yamato Mountains, around 350 kilometres from Japan's Showa Station in Antarctica. It turned out to be a meteorite from Mars. What scientists have since learned from analysing it could help uncover the origins of life, and even reshape humanity's vision of the future. This is one of the largest known Martian meteorites in existence. As you stand before it, what do you feel?

See it, touch it, feel it—
one of the world's largest Martian rocks

A rock is photographed against a black background. It features flat, relatively smooth black patches, while the remainder is bumpy and a dark grey with a faint yellowish-green tinge.
Weighing approximately 13 kilograms and roughly the size of a rugby ball, this Martian meteorite is on public display for the very first time, right here at the Japan Pavilion.
It is exceptionally rare for a Martian rock of this size to have survived intact. By chance, it landed not in the ocean, which covers over 70% of the Earth's surface, but on the frozen expanse of Antarctica, within the search area of a Japanese expedition team. Thanks to this extraordinary chain of events, the rock now stands before us.
Look closely at its colour, its texture, formed on a world not our own. Fragments of ten meteorites are also on display nearby. You can reach out and touch them yourself, bringing the journey through deep space just that little bit closer.

A rock that proved the presence of water on Mars

Its size is impressive, but that's not all. Analysis revealed minerals that could not have formed without water, meaning this stone was the first to clearly demonstrate the presence of water on Mars.
Today, Mars is cold and dry. Most of the water on its surface exists as ice. Ice turns to vapour, which forms ice clouds, then falls back down to the surface as tiny frozen particles. There is no liquid water on the surface today. But in the distant past, Mars is thought to have been warmer—and surface features suggest it once had rivers and lakes. So where did all that water go?
In 2024, a major breakthrough offered a clue. A team at the University of California announced findings that vast amounts of liquid water may still exist deep beneath the Martian surface. It was a stunning discovery, one that opens the door to the possibility of an ecosystem on Mars.

Living on Mars—
a not-so-distant dream?

Through electrolysis, water can be split into hydrogen and oxygen. The resulting hydrogen can then be stored and transported as a powerful energy source. That's one of the reasons water is seen as a key to humanity's future beyond Earth. If such a process could be realised on Mars, it could provide fuel for rockets, enabling round trips between Mars and Earth, and even making it possible to establish a base for human life on the red planet.

Around the world, the race to find water on Mars has already begun. JAXA's Martian Moons eXploration (MMX) project aims to be the first in history to retrieve samples from one of Mars' moons and is searching for traces of water in the process. The Mars Ice Mapper (MIM) project, a joint effort by the US, Canada, Italy, and Japan, is also underway, dedicated to mapping the water resources of Mars.

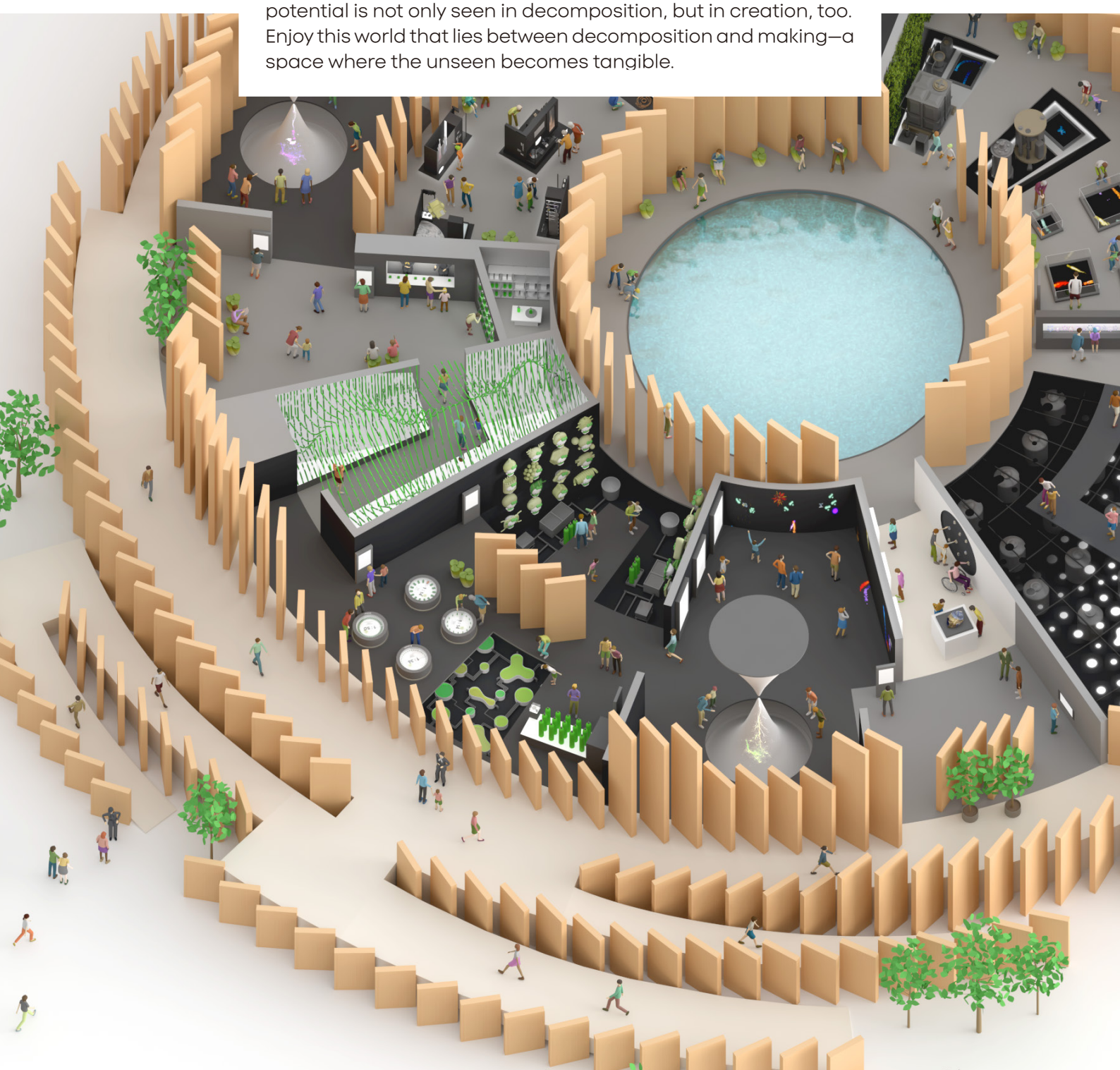
The Martian rock before you now serves as a guidepost for the dreams of humankind.

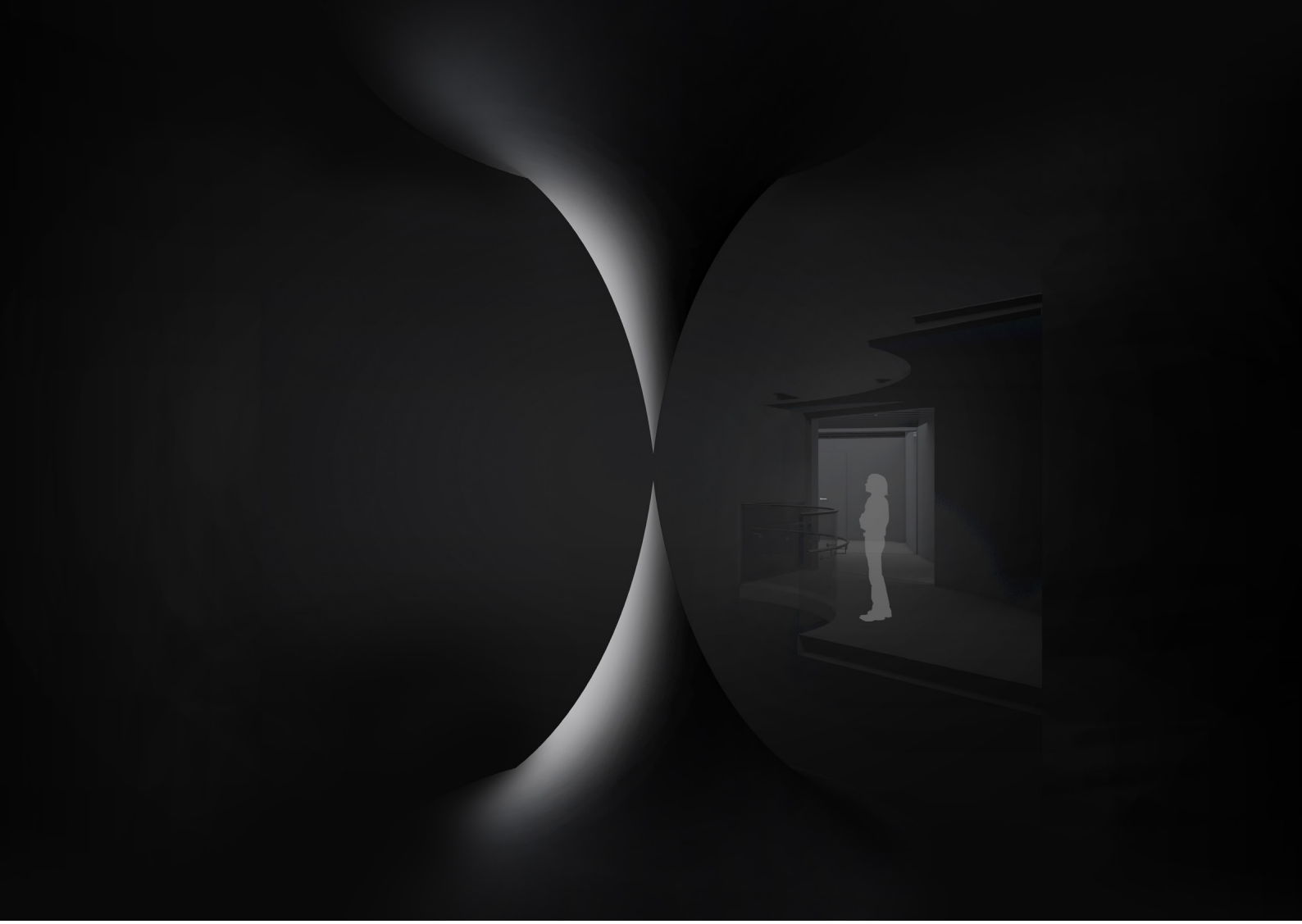
Farm Area

The cycle from Water to Material

Connecting the invisible

The Farm Area is where matter and energy transform into raw materials for making things.
Water and CO_2—created when microorganisms break down food waste—are reborn here as new materials. Invisible substances take on visible forms to appear before you in a variety of shapes. Once again, the stars of the show are microorganisms, working energetically in every corner of the space. Here, their incredible potential is not only seen in decomposition, but in creation, too. Enjoy this world that lies between decomposition and making—a space where the unseen becomes tangible.





Farm-01

An hourglass that watches the place between lives

Every form of life finds its purpose— and leaps into the cycle.

The Plant Area is where things that have fulfilled their role give rise to new life.
Next comes the Farm Area, where life, having changed its original form, discovers a new purpose of its own. The countless shifting patterns within the hourglass continue to move and flow, as if offering hints to life itself.

Farm-02

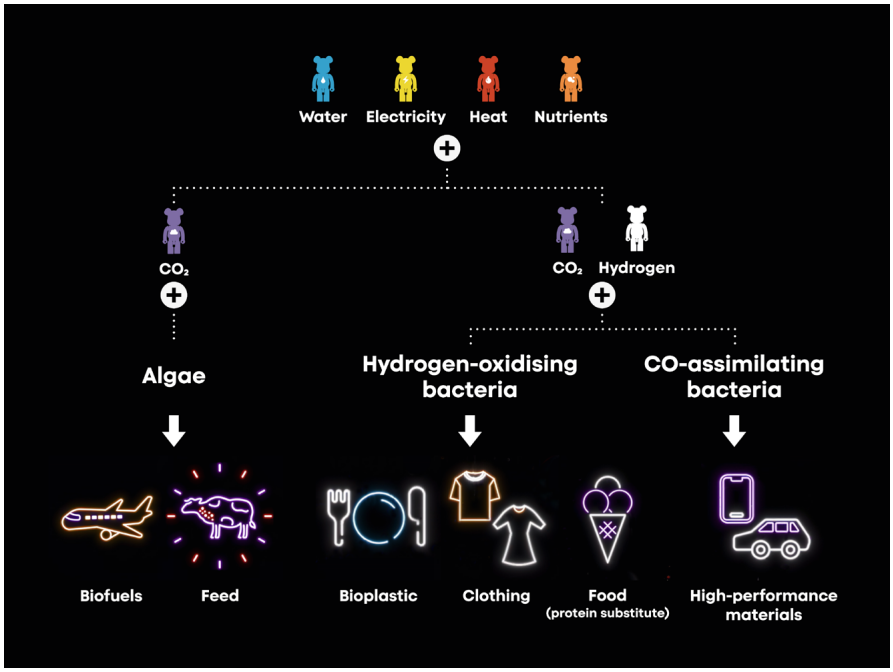
A relay race where the runners change shape

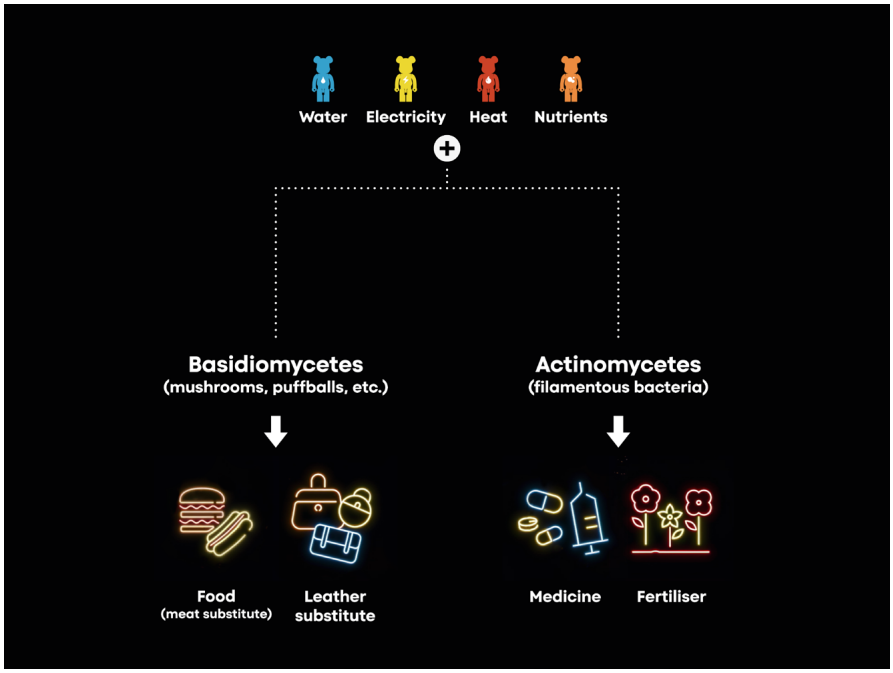
From waste to the next great adventure. What exciting possibilities lie ahead?

Water, heat, electricity, carbon dioxide, and nutrients like nitrogen and phosphorus—these materials and energies created through the decomposition of food waste in the Plant Area now arrive here, ready to be transformed by new microorganisms into entirely new forms. In the Farm Area, a journey of discovery begins: a journey filled with future visions, playful characters, and cutting-edge Japanese technology.

With a burst of fireworks, the journey continues

The five BE@RBRICKS, born from food waste, have arrived at a crossroads. Here, they must each choose their next path.
Depending on how they combine with other substances, these materials and energies will be reborn in a wide array of new forms. Until now, most materials were produced through chemical processes. But today, microorganisms—especially those with the power of production—are beginning to transform the way we manufacture, and may even reshape society itself.
Before your eyes, fireworks erupt in vivid colour—celebrating the moment of encounter with these productive microorganisms. The BE@RBRICKS merge with microbial motifs, transforming into new materials, and taking flight—just like fireworks—carrying with them the boundless possibilities of the future.





Microorganisms do more than decompose. They produce, too

Actinomycetes. Basidiomycetes. Hydrogen-oxidising bacteria. Microalgae. Their names might sound unfamiliar, but they're already part of our daily lives.
Take actinomycetes, for example: nearly two-thirds of all antibiotics used in medicine are derived from these microorganisms. Basidiomycetes with their thread-like mycelium have a meat-like texture and are gaining attention as a form of alternative protein. They're nutritious, environmentally friendly, and the subject of global research and product development. Microorganisms are often associated with decomposition, but many also have the remarkable ability to create.

Could bio-based manufacturing shape the future?

Traditional manufacturing relies heavily on fossil resources like petroleum. Burning these fuels releases CO_2, contributing to climate change. But microorganisms can produce new materials from CO_2, offering a renewable alternative that helps limit emissions. This is bio-based manufacturing—a growing field that's leading the way toward a carbon-neutral society. And Japan is at the forefront.
One promising example is CO-assimilating bacteria. These microorganisms convert CO (carbon monoxide), which can be derived from CO_2, into useful substances. They're already being used in pilot projects to capture CO_2 from food waste processing facilities. What makes these bacteria truly impressive is their ability to produce high-performance materials, such as industrial adhesives that previously could only be made from fossil fuels. This is a technology with the power to completely reimagine global manufacturing without relying on fossil energy.
Hydrogen is also playing a key role in this bio-based future. Essential for both hydrogen-oxidising bacteria and CO-utilising bacteria, hydrogen can now be produced through environmentally friendly methods. Here at the Japan Pavilion, you'll even encounter hydrogen reborn as part of the materials used in vessels and other objects. And so, joining the five BE@RBRICKS is a sixth member of the team: Hydrogen.

Farm-03

What shall we make with CO_2?

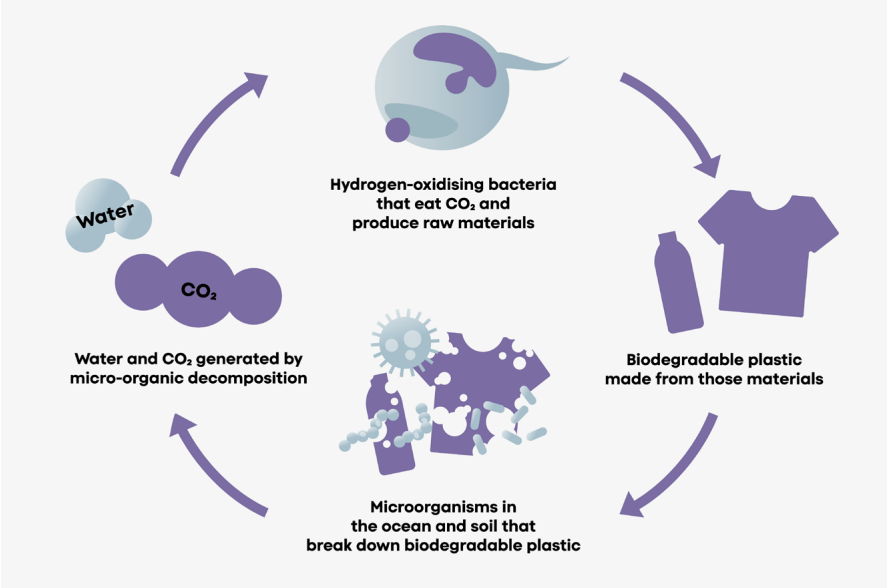
Recycled from waste, made without fossil resources, and returned to nature—a new material, born from CO_2.

Transforming CO_2 into a resource for a better future. This technology is the result of years of determined human effort. From the tunnel ahead come cylinders filled with carbon dioxide derived from food waste. Packed with hope and potential, they mark the beginning of a new kind of manufacturing.

Beyond the tunnel lies a world of microbial innovation

The cylinders transported from the far side of the tunnel contain concentrated CO_2 produced during the microbial decomposition of food waste. Waiting to meet them is a vessel made from biodegradable plastic, created using CO_2 as a raw material. In the Plant Area, an identical vessel is shown breaking down, decomposed by microorganisms back into water and CO_2. From food waste to CO_2, from CO_2 to material—and once its role is complete, back to nature once more. At the heart of this relay stand the microorganisms that make it possible.

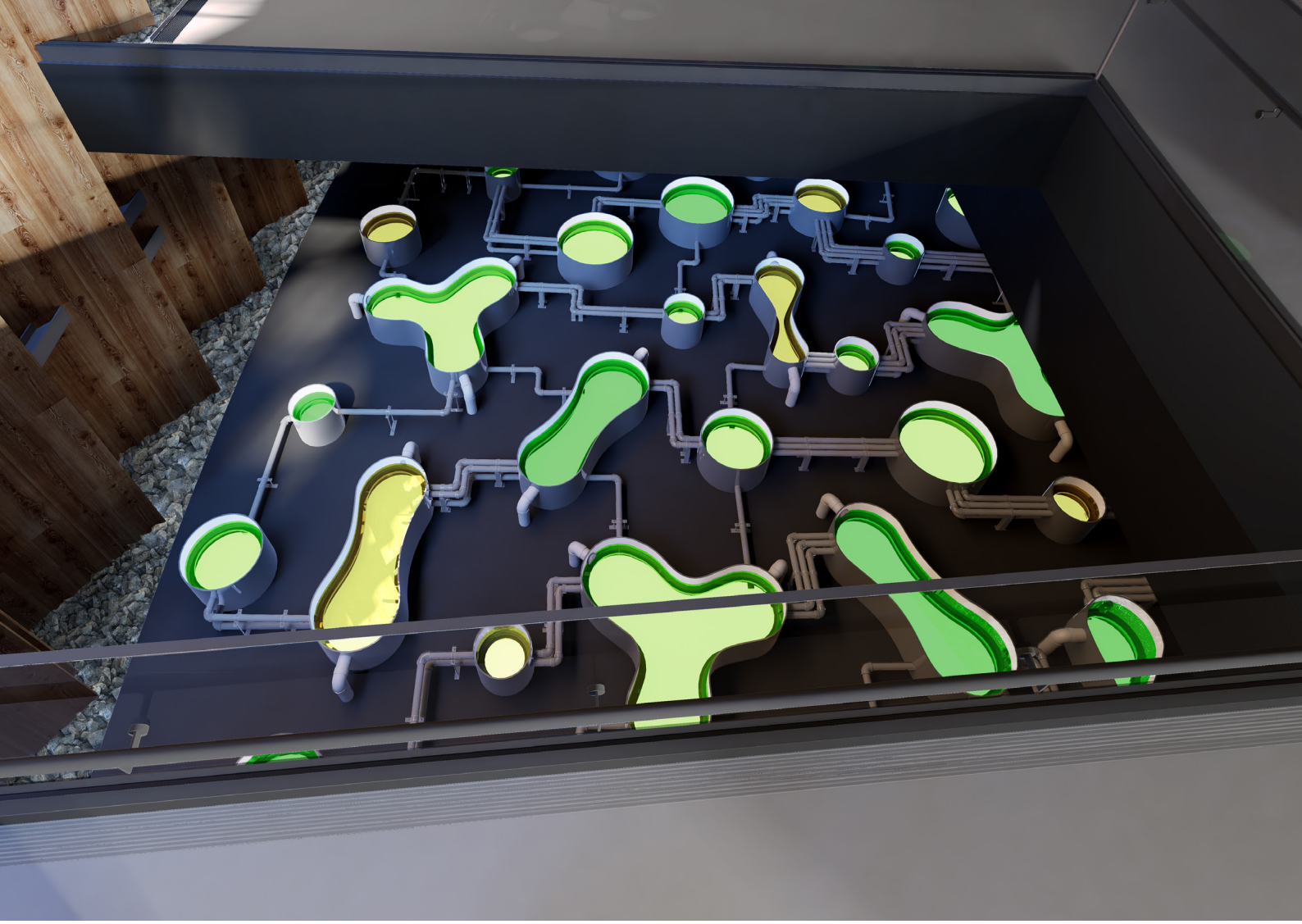
Hydrogen-oxidising bacteria: creating plastic from CO_2



The biodegradable plastic used here will be broken down again by microorganisms after use. These plastics come in many forms depending on what they're made from and the environment in which they decompose. One particularly remarkable microorganism is the hydrogen-oxidising bacterium. Its unique trait? It 'feeds' on CO_2.
By absorbing carbon dioxide as a nutrient source, these bacteria produce the compounds that form the basis of new materials. The result is a biodegradable plastic that's environmentally friendly both in production and decomposition. This cutting-edge technology was developed by a Japanese manufacturer, who discovered the original strain in soil from their own factory. Through refinement, created a strain capable of breaking down even in seawater—a breakthrough once thought impossible. The vessel displayed here is made from that very material.

Microbial manufacturing—something you can use, too

But is it really usable? Isn't it something only for luxury products? Once you understand how it works, you may begin to wonder about practicality and cost.
In fact, biodegradable plastics are already in wide use—as spoons, forks, cups, shopping bags—in convenience stores, cafés, and beyond. They're strong enough to last as everyday materials, and versatile enough for many applications. Some local governments in Japan have already begun using them in demonstration projects.
The biodegradable plastics made from CO_2 on display here at the Japan Pavilion are also part of a project working towards practical use. A future where these materials are a natural part of daily life is just around the corner.



Farm-04

Who lives in this aquarium?

Behold...an empty tank? Not at all.
Inside, algae with boundless potential are growing fast.

Curious to see people tending a tank with no visible creatures?
Welcome to the Invisible Aquarium. Here, thriving in the water, are tiny algae. Less than a millimetre in size, but quietly growing and full of possibility.

The shimmering light reveals a spark of life

Look down, and you'll see tanks glowing in shades of green. They appear empty at first glance, but inside, a type of green algae called Botryococcus is being cultivated. It's a species found all around the world. Sometimes referred to as 'oil-producing algae', Botryococcus is now seen as a promising alternative to petroleum.
Water sways gently. Tiny bubbles rise and vanish. Light dances across the surface. Though invisible to the eye, microscopic algae are growing within—and you can feel them, living, shimmering, evolving.

Tiny algae, immense energy

Algae originated some 3.5 billion years ago. Over immense spans of time, they evolved in water—and around 500 million years ago, some moved onto land. By comparison, humans have only existed for about 200,000 years. These algae are ancient ancestors, the earliest forms of life that eventually evolved into mosses, ferns, and the plants we know today.
As they lived and died, their remains built up underground over millions of years, transforming into fossil fuels like petroleum and coal. That means tiny algae, given enough time, become the vast energy sources that power modern life.

The world is watching: Botryococcus

Botryococcus like the ones growing in these tanks is gaining global attention as a potential solution to both energy and environmental challenges. Its standout feature? It produces large amounts of hydrocarbon, the main component of petroleum.
Universities, research institutions, and companies worldwide are now racing to turn this potential into reality. As a biomass, algae absorb CO_2 as they grow, and because they can be continuously cultivated, they will not run out.
If we can one day scale this up as a viable energy source, we may find ourselves on a path to solving climate change, reducing our dependence on fossil fuels—and stepping into a new future.

Farm-05

Each algae is different.
All are wonderful.

Hello, microscopic world!
It’s Hello Kitty like you’ve never seen her before.

From the invisible to the familiar—this playful exhibition features Hello Kitty transformed into a wide variety of algae. As you admire each charming figure, you’ll find yourself drawn into the fascinating diversity of algae. It’s a joyful introduction to their unique personalities.

Hello Kitty meets 32 varieties of algae

Algae come in many forms, from microscopic species like Micrasterias and Chlorella, to edible varieties like wakame and *hijiki* that appear on our plates. This display focuses on their incredible diversity of shape and form.
These 32 unique Hello Kitties are each inspired by a different type of algae. Lined up side by side, these delightfully reimagined Hello Kitties invite you to fall in love with the distinct characteristics of algae. Their adorable forms reflect the features of each species, bringing this hidden world of algae closer than ever before.

Algae—evolving into many forms, in every size

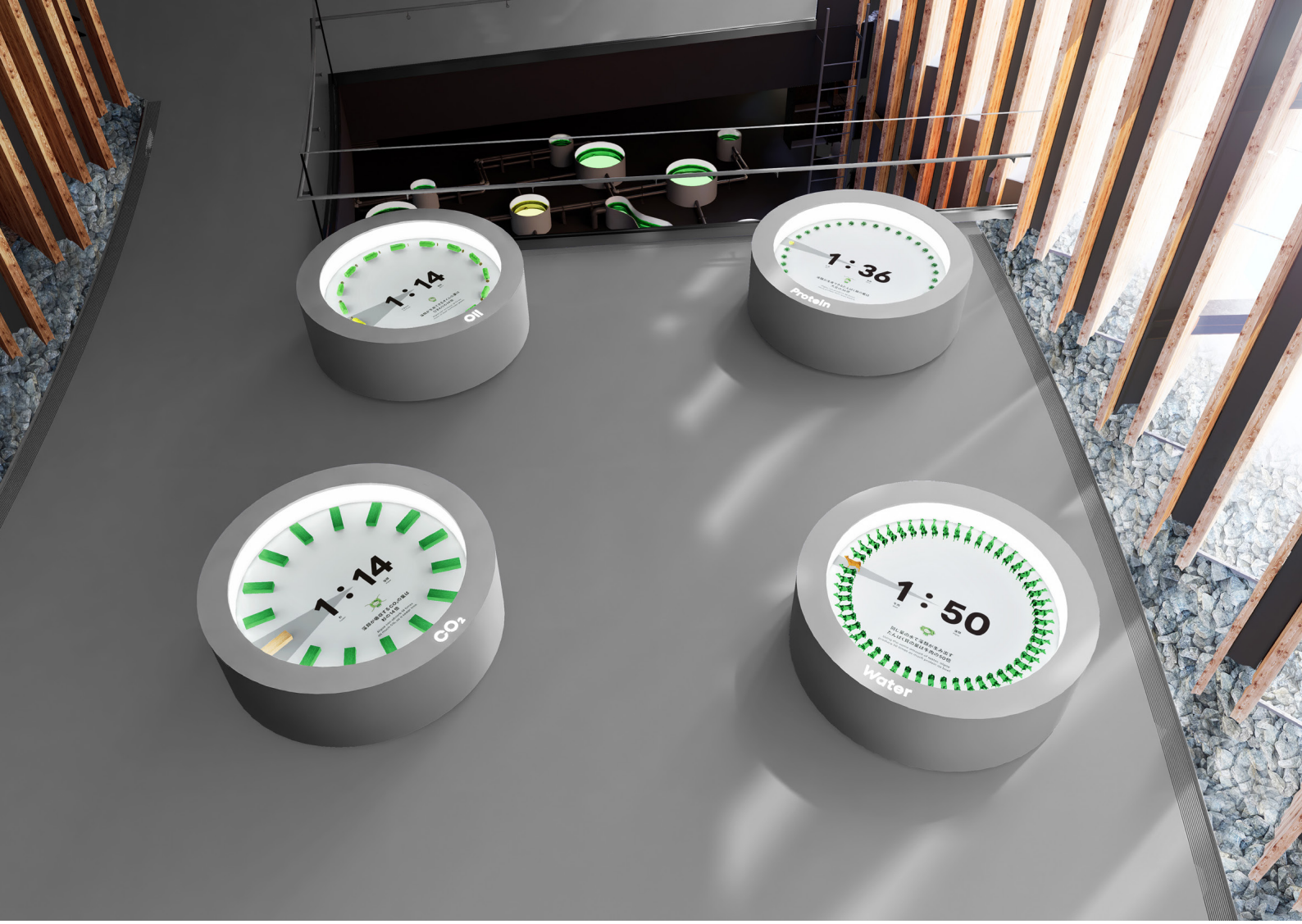
From giant seaweeds stretching several metres to microalgae just a few microns wide (one-thousandth of a millimetre), algae have branched out through evolution into a wide variety of shapes, sizes, and characteristics. Today, scientists estimate that over 300,000 species of algae exist in nature.
Among the Hello Kitties you'll find
The round *marimo*,
The triangular Triceratium,
The lucky four-leaf Closterium,
and Braarudosphaera, shaped like a perfect dodecahedron.
Even just looking at their forms, it's easy to see that each one is truly one of a kind.

Japan and algae: a long-standing friendship

Algae can be used for food, for fuel, and in many other fields. But for the Japanese, they've always been something familiar. In The *Man'yōshū*, the oldest surviving anthology of Japanese poetry, algae appear again and again—in poems that speak of *mo* (seaweed), *tamamo* (jewel-like algae), and *moshio* (salt made with seaweed). Nearly one hundred such verses have been recorded.

And *marimo*, one of the forms Hello Kitty takes here, became a cultural phenomenon in post-war Japan. People were captivated by its charming shape, keeping it as a pet or buying it as a souvenir.

From ancient poetry to modern trends, Japan has long held a quiet affection for algae. Doesn't Hello Kitty look even cuter, now that she's become one herself?



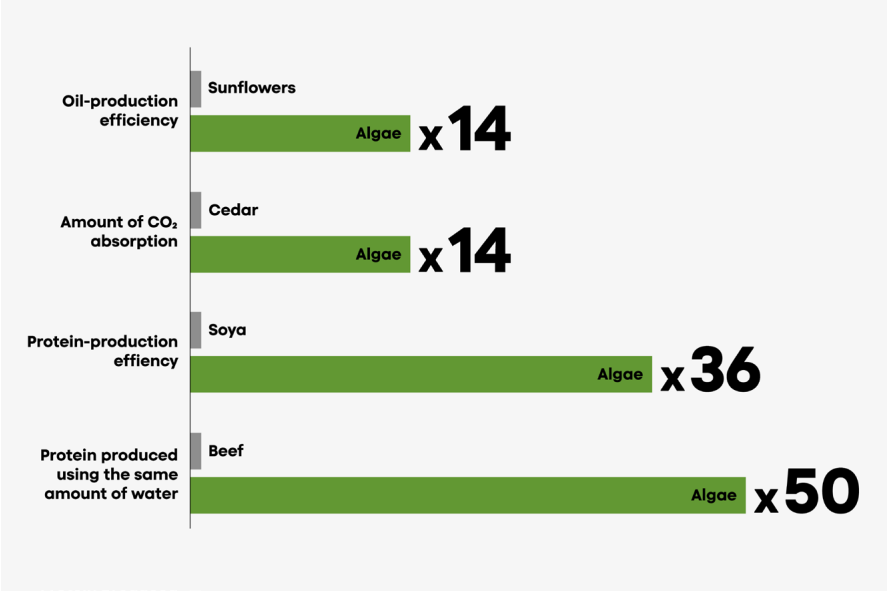
Farm-06

See the difference: unlocking the hidden potential of algae

Algae's untapped potential is shaping the future of sustainable manufacturing

What you see here is the incredible power of algae—a force essential to creating a more sustainable society. Through key indicators like production efficiency and environmental impact, this space reveals the true strengths of algae and invites you to imagine a new industrial future built around them.

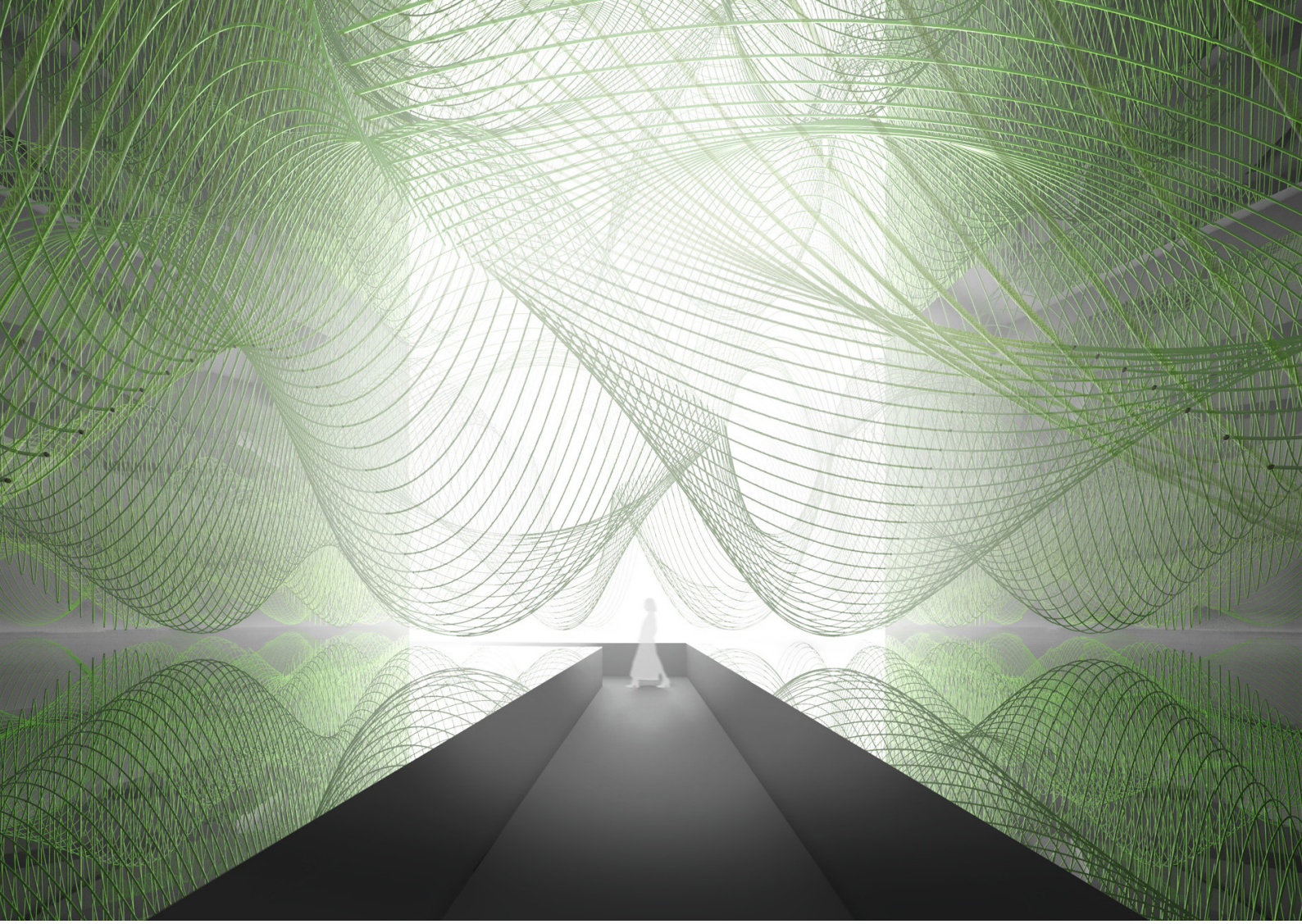
Beyond expectation—algae's astonishing potential



At the four displays ahead, you'll find algae's hidden capabilities visualised through comparisons with familiar plants and food sources.
Protein production? 36 times more efficient than soybeans.
Oil yield? 14 times greater than sunflowers.
CO_2 absorption? 14 times that of Japanese cedar.
And when it comes to water usage, algae can produce 50 times more protein than beef using the same amount of water.
As a food source, as a material for carbon-conscious manufacturing—these figures speak volumes about algae's promise for the future.

Photosynthesis could save the planet

As we look to move beyond our reliance on finite fossil resources, the world is placing growing hope in the ability to harness energy from the sun as fully as possible here on Earth. At the centre of that vision is algal photosynthesis.
Why? Because algae are incredibly efficient producers of biomass. They need very little water, and they can be cultivated in deserts and other barren environments. With minimal input and maximum output, algae are poised to become a key technology for ushering in a new, sustainable phase of human life.



Farm-07

An algae curtain brimming with life

Countless algae flourishing inside translucent tubes: a glimpse of the forests of the future

Bathed in a soft, gentle light, like sunshine on a spring morning.
Here, algae photosynthesise and begin their transformation into new energy. Take a stroll through this fantastical space woven with green tubes that feels like a peaceful walk in the forest.

The forest of the future, alive with movement

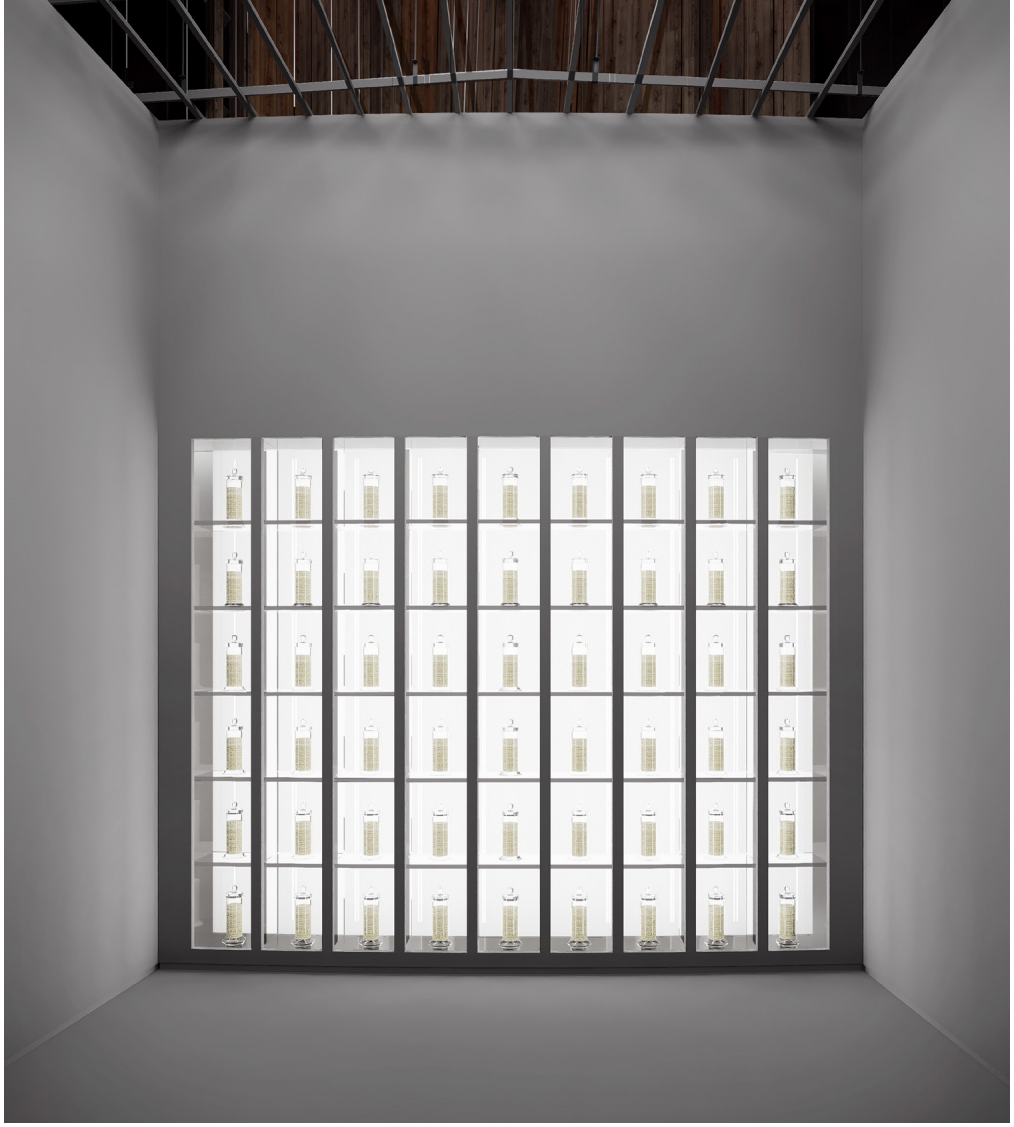
The tubes, layered like thick foliage, evoke a dense and thriving forest. This is a photobioreactor—a massive system designed to absorb light efficiently and grow algae using only a small amount of water.
Inside the tubes is Spirulina, a type of blue-green algae rich in nutrients like vitamins, minerals, and protein. It's already widely used as a food source.
As you watch these tiny lives pulsing within the tubes, take a moment to reflect—and let yourself be immersed in a deep sense of calm.

Algae: outperforming plants at photosynthesis

Like plants, algae need water, light, and CO_2 to photosynthesise. The photobioreactor in this room stretches 1,457 metres in total length. Bubbles racing through the tubes serve as nutrients for the algae. Arranged in a three-dimensional structure and illuminated from all angles, the system helps boost photosynthesis.
Microalgae photosynthesise in water and are even more efficient at harnessing solar energy than plants growing on land. They absorb large amounts of CO_2, producing energy-rich organic compounds, all while using very little water.

Photobioreactors—part of everyday life?

Photobioreactors, which cultivate microalgae and other photosynthetic organisms using light, are already being used in practical applications. They offer efficient recovery of fuels, proteins, and other resources produced by microalgae—all within a sealed system that reduces the risk of contamination. In other words, they allow for clean, stable, high-quality production.
Photobioreactors can even be installed on urban buildings, offering a new vision for city development. As they take shape like forests amid the skyline, these living systems may one day become part of your daily surroundings—and that day might be closer than you think.



Farm-08 April 13 – June 17, 2025

Take some of the cycle home with you.

A new cycle begins within you.

At the end of the Farm Area... a gift shop?
Here, the cycle that begins in the Japan Pavilion continues as something you can bring into your own life. It's the start of a new relay race of life.

A clear folder, 100% plant-based—a new link in the cycle

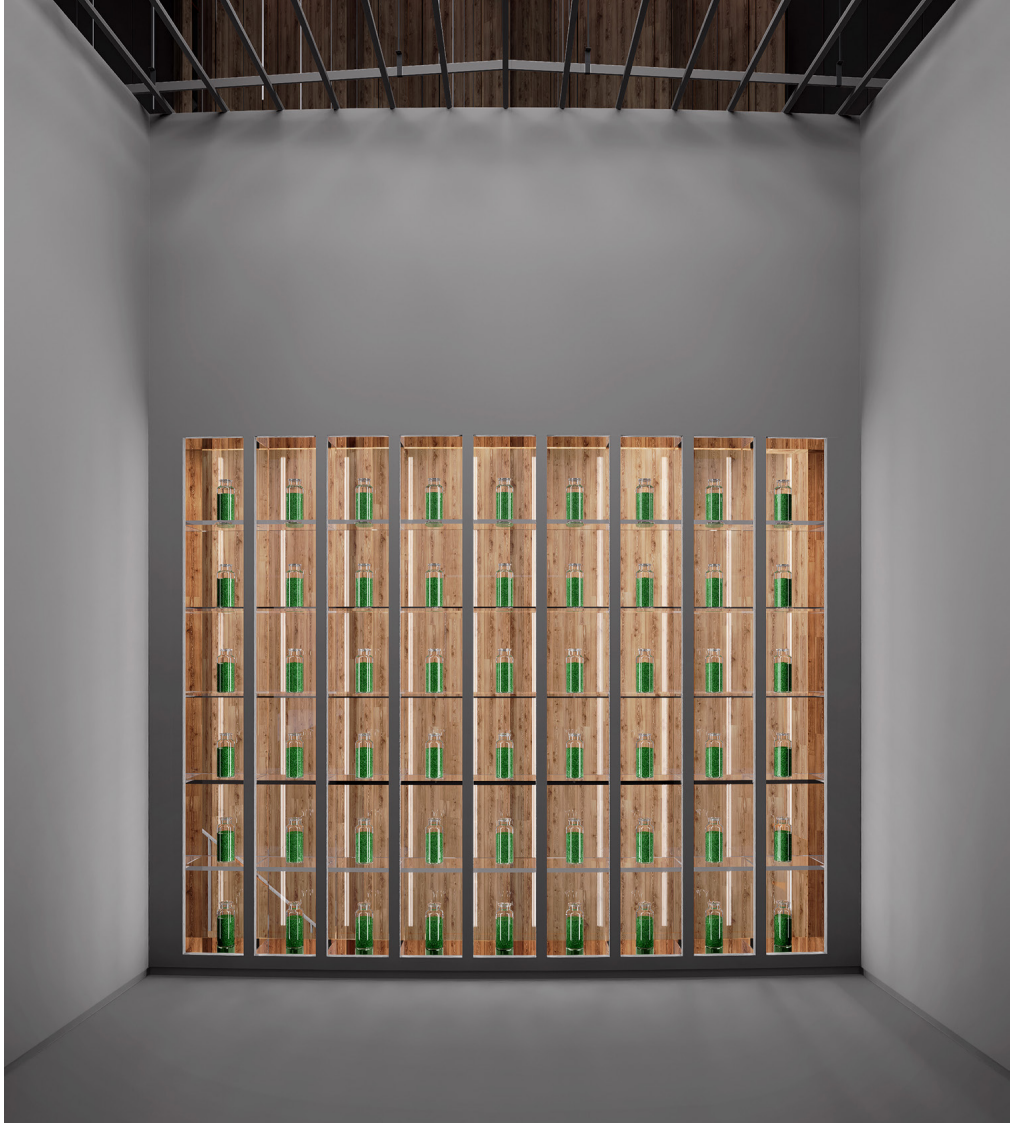
The clear folder you'll receive as a gift is made from 'Green Planet', a 100% plant-based biodegradable polymer developed by Kaneka.
In fact, it's the very same material used to create the biodegradable plastic vessels on display in the Plant Area—the ones that are broken down by microorganisms.
What sets biodegradable plastic apart from conventional plastic is that it naturally breaks down in soil or seawater.
Through the power of the cycle, it offers a new solution to the global problem of plastic pollution.
This clear folder is a baton in the relay race of regeneration, carrying the spirit of the Japan Pavilion's cycle into your daily life.

Green Planet: a potential hero in the fight against ocean waste

Plastic is used everywhere in our lives: in the clothes we wear, the phones we carry, even in cars and planes.
It's become an essential part of modern living—and at the same time, a major contributor to environmental problems.
Plastic that ends up in rivers and oceans breaks down very slowly, causing harm to marine life.
Green Planet—the material used in this clear folder—is a breakthrough: a plastic that can biodegrade not only in soil, but also in seawater, where decomposition was once thought near impossible.
It's now being hailed as a promising solution in the battle against ocean plastic pollution.

The microorganism was found in the soil of a factory.

The development of Green Planet began in the early 1990s—with a vision of creating a material that was kind to the planet and free from fossil fuels.
The turning point came when a researcher discovered a microorganism in the soil of Kaneka's Takasago manufacturing plant—
a microorganism with the power to produce Green Planet.
Harnessing the power of this tiny life form has opened a new path forward.
And perhaps, in using it, we take one small step towards solving the environmental challenges of our time.



Farm-08 June 18 – October 13, 2025

Take some of the cycle home with you.

A new cycle begins within you.

At the end of the Farm Area... a gift shop?
Here, the cycle that begins in the Japan Pavilion continues as something you can bring into your own life. It's the start of a new relay race of life.

What does the cycle taste like? A parting gift...of algae

Lined up neatly on the shelves you'll find powdered Spirulina—the very same algae cultivated inside the Japan Pavilion. And now, at the counter, you might even receive a small treat made with that Spirulina. As you enjoy it, think back to the cycle you witnessed here—and take a moment to taste its story.

Spirulina—a global superfood in the spotlight

Spirulina has a long history as a valuable source of nutrition. Compared to meat or soy, it contains an even higher percentage of protein. It's packed with more than 60 nutrients—including vitamins, minerals, dietary fibre, plant pigments with antioxidant properties, and all five essential nutrients. No wonder it's known as 'the king of superfoods'.
Though each Spirulina is just 0.3 to 0.5 mm in size, its incredible nutritional power has caught the attention of UN agencies and even NASA.

A traditional food, loved in Japan for generations

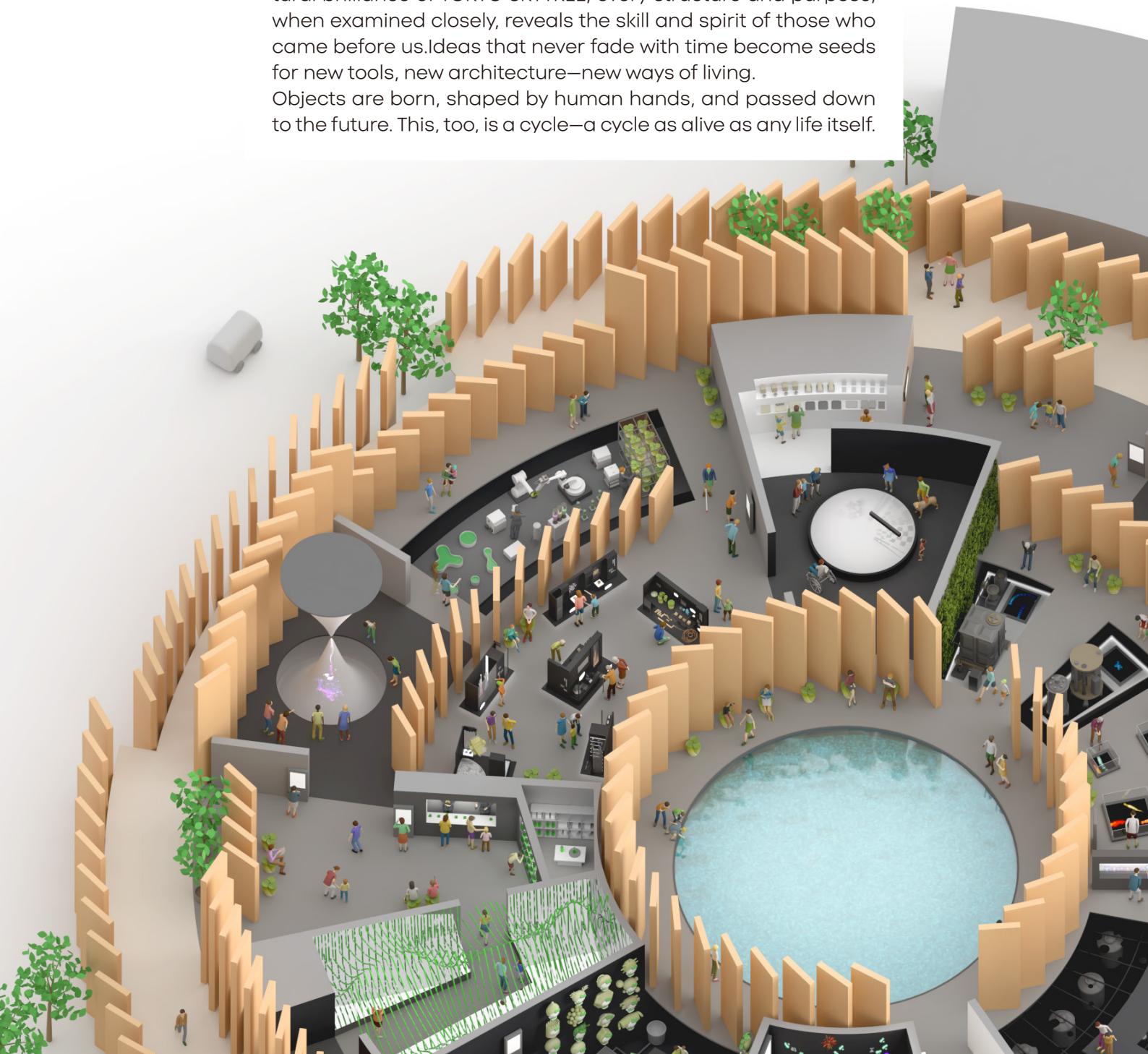
As the world turns its gaze to algae, Japan has long embraced them—especially seaweed—as part of daily life.
In the Yamato period, seaweed was a treasured offering. By the Heian era, it had become food for the nobility, and by the Edo period, it had spread to the tables of everyday people. Today, around 50 varieties of edible seaweed are used in Japanese cuisine—from *kombu* and *wakame* to *nori* and *aosa*. Whether simmered, stirred into soups, pickled, or dressed in sauces, these algae add richness and colour to countless meals. Like rice and seafood, they are cherished staples—a part of Japan's enduring food culture.

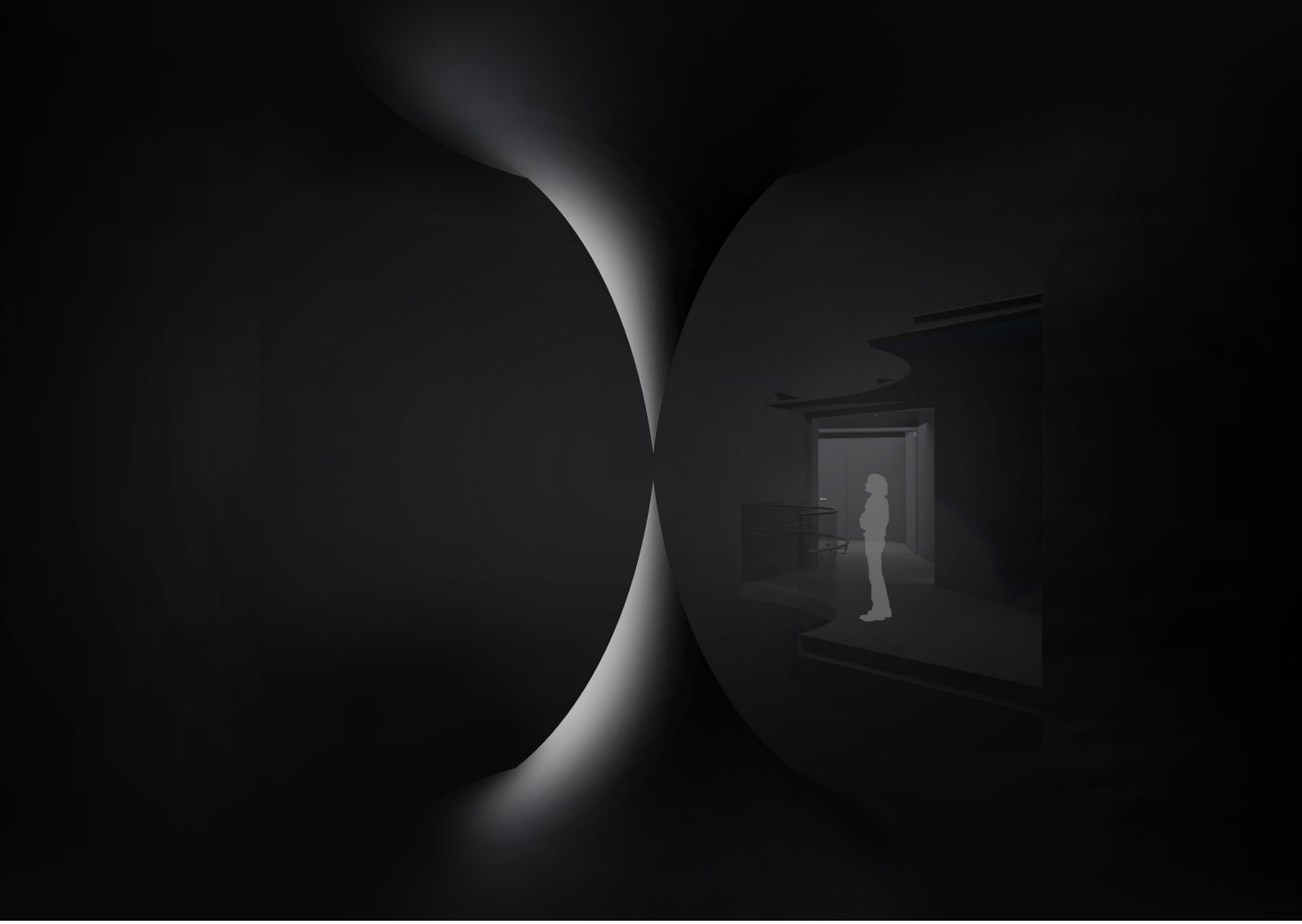
Factory Area

The cycle from Material to Object

Breakable, it is born

Materials and energy born from waste are transformed into new substances. Here in the Factory Area, they take shape once more as objects that support daily life. Each object carries the baton of the cycle forward, imbued with human knowledge and craft. In Japan, the philosophy of treasuring and extending the life of things has long been woven into everyday culture. Today, it is increasingly seen as a key to building a more sustainable society. From the enduring design of the furoshiki cloth to the architectural brilliance of TOKYO SKYTREE, every structure and purpose, when examined closely, reveals the skill and spirit of those who came before us.Ideas that never fade with time become seeds for new tools, new architecture—new ways of living.
Objects are born, shaped by human hands, and passed down to the future. This, too, is a cycle—a cycle as alive as any life itself.



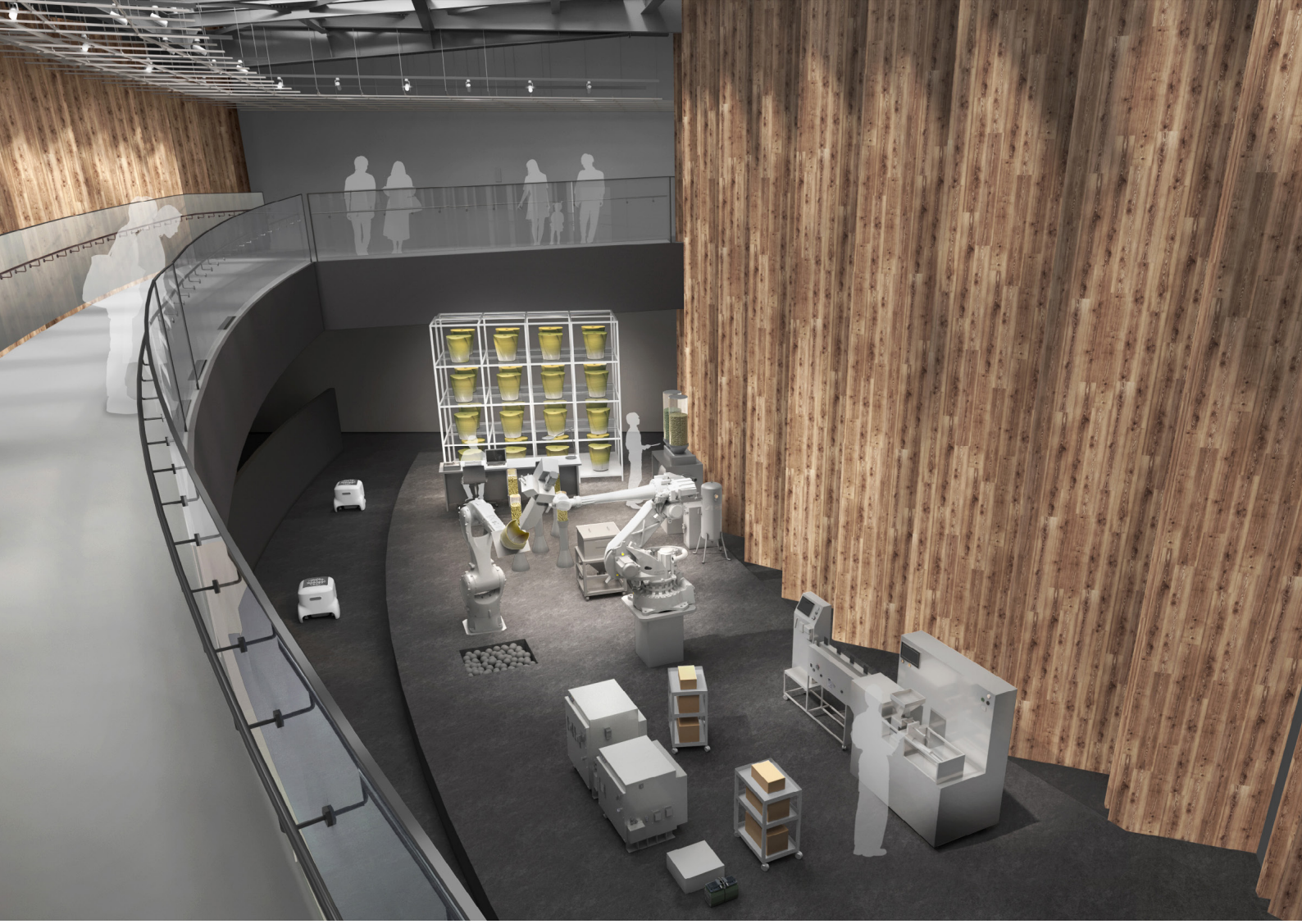


Factory-01

An hourglass that watches the place between lives

To make, to use, to return to nature— a relay carried forward by human hands

Step into this space—new, yet strangely familiar. A place where the feeling of something long remembered lingers in the air.
In the Factory Area, the main character is people. And yes—you are one of them. Objects born from the endless cycle are shaped by human hands, used in human lives, and passed from era to era.
Now it is your turn. Step across time, and follow the footprints left by those who came before.



Factory-02

Taking shape.
Changing shape.
Hello, world

Welcome to the factory of the future!
A creative lab where circular materials and smart design meet

Did you know the Japan Pavilion is also a factory? Right here, products used within the pavilion are being made—using plant-based plastic infused with algae cultivated in the Farm Area. Come and see the process up close.

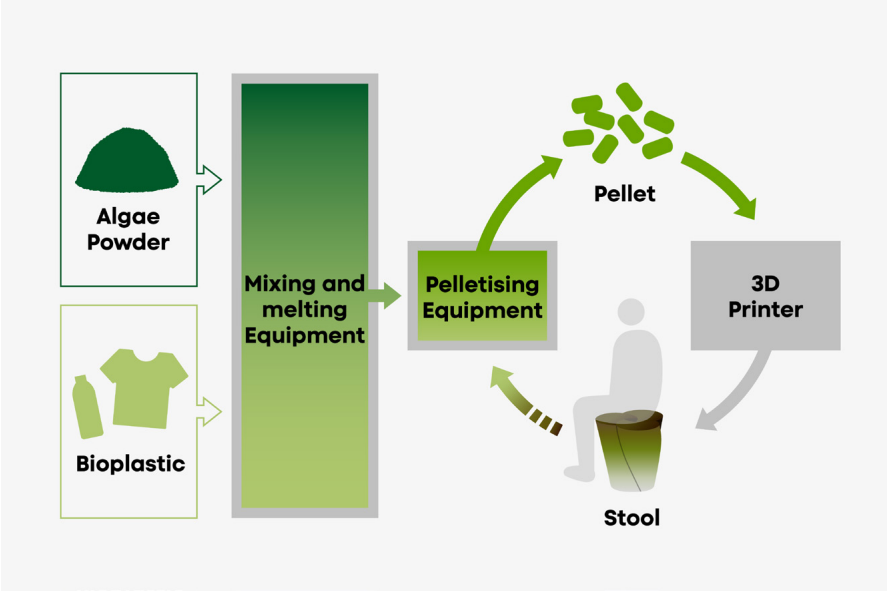
Japan Pavilion stools—now in production

Look down from the upper walkway and you'll see robotic arms at work, 3D-printing with smooth precision. What they're making is a stool, crafted from a special material that blends algae with bioplastic.

The stool features three seat panels, each inspired by one of the pavilion's zones. It's designed for easy disassembly once its purpose has been fulfilled. Its green colour gradient? That's created naturally, by varying the amount of algae in the mix.

From materials and energy to product and idea—watch as each step of the process unfolds with rhythm and clarity. There's something deeply satisfying in watching it all come together. You'll find the finished stools placed throughout the pavilion. Feel free to take a seat and rest for a moment.

Note: The live production demo is scheduled for select periods during the Expo.



Craft, challenge, and the future of making

3D printing—also known as additive manufacturing—is one of the technologies supporting a circular society. It builds objects layer by layer and first appeared in the 1990s, though it struggled with technical challenges at the time. Since then, innovation has propelled it forward. Today, it's used not only in factories but in schools and offices as well. The printer here in the Japan Pavilion features dual robotic arms reminiscent of a pair of cranes—a cutting-edge machine in both form and function.

3D printing is gentle on the environment: it generates minimal waste and requires fewer steps. But it also changes the economics of production. Traditional manufacturing requires costly moulds and fixtures, and often depends on large-scale production to be profitable. 3D printing enables flexible production—customised, small-batch, and adaptable to almost any material.

Everyday products made with algae embody this shift. Across the Japan Pavilion, algae have shown us their potential. And now, thanks to this technology, they're taking shape as useful products. Behind that transformation lies a deep well of technical passion—a quiet story of innovation, powering the future of regeneration.

Algae products: creating a circular future

So what changes when we make products from algae? Take a moment to consider toys and playground equipment—many are made from petroleum-based plastic.

If we use plant-based, biodegradable plastics instead, we can reduce both CO_2 emissions in production and the burden of disposal on the environment. As demand grows, so too will the pace of innovation. We'll see new bioplastics from algae and other plants, as well as improved functionality and durability.

We live in a time where anyone can turn an idea into reality. Imagine: the household items you use every day—what if they were made from algae? This way of thinking is key to building a truly circular society. And your curiosity is where that journey begins.

Factory-03

A gallery of soft things

Softness—a relay of new life

Logically speaking, when making things, durability seems like the ideal. But what if things were made soft—on purpose?
This is a gallery of objects designed with rebirth in mind. Here, ‘soft’ means easy to repair when broken, flexible enough to absorb impact without shattering, and simple to reshape into something new once they’ve worn out. It’s a beautiful way of thinking, don’t you think?
Japan has long been rich with clever techniques for keeping things in the cycle.
Now, step into a world of craftsmanship—filled with wisdom and skills passed down through generations.

Factory-03A

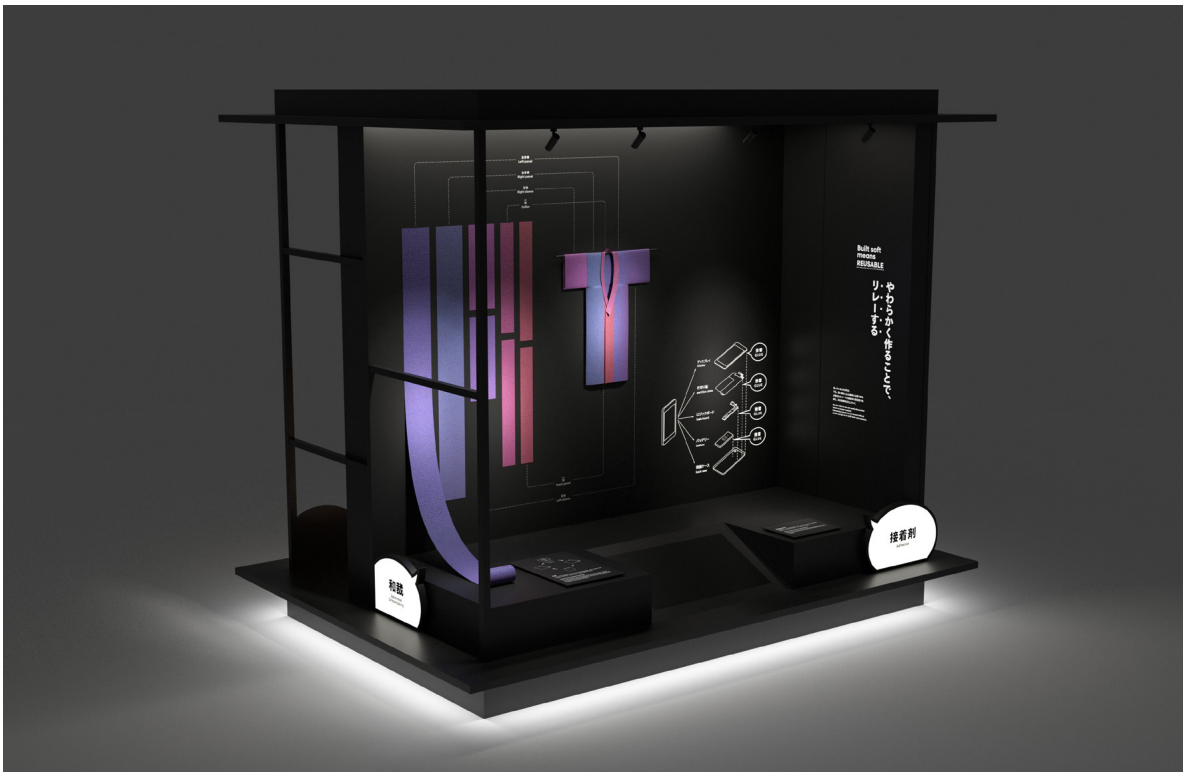
Built soft means LONG-LASTING

Easy to repair, gentle on the planet— a sustainable mindset rooted in Japanese tradition

It may seem counterintuitive at first: things that aren't built to be tough...actually last longer. But that paradox lies at the heart of traditional Japanese circular design.
Featured here are two examples: a classic Japanese oke (wooden tub) and a special football inspired by traditional Japanese bamboo baskets.Both use puzzle-like structures that don't rely on nails or adhesives. If a part breaks, it can simply be replaced—no need to discard the whole object.
Intentionally built light and soft, these designs reflect a deep cultural value: to treat objects with care, and make them last. That's the quiet wisdom behind Japan's sustainable craftsmanship.

Factory-03B

Built soft means REUSABLE



Every ending is a beginning, a seamless relay into the future.

What if we design things with their end in mind from the very start?
The Japanese kimono is a perfect example. Crafted to make full use of a single piece of fabric, it can be returned to that original form simply by pulling out the threads. This makes it easy to adjust, alter, or completely remake.
That same thinking is now being applied to smartphones. Instead of traditional screws and fixings, what if we used adhesives that hold firm while in use but lose their grip with a special dissolving solution? Parts could be easily dismantled—ready to take on a new role, a new form, a new beginning.
Designing with the next step in mind keeps the baton moving forward, unbroken.

Factory-03C

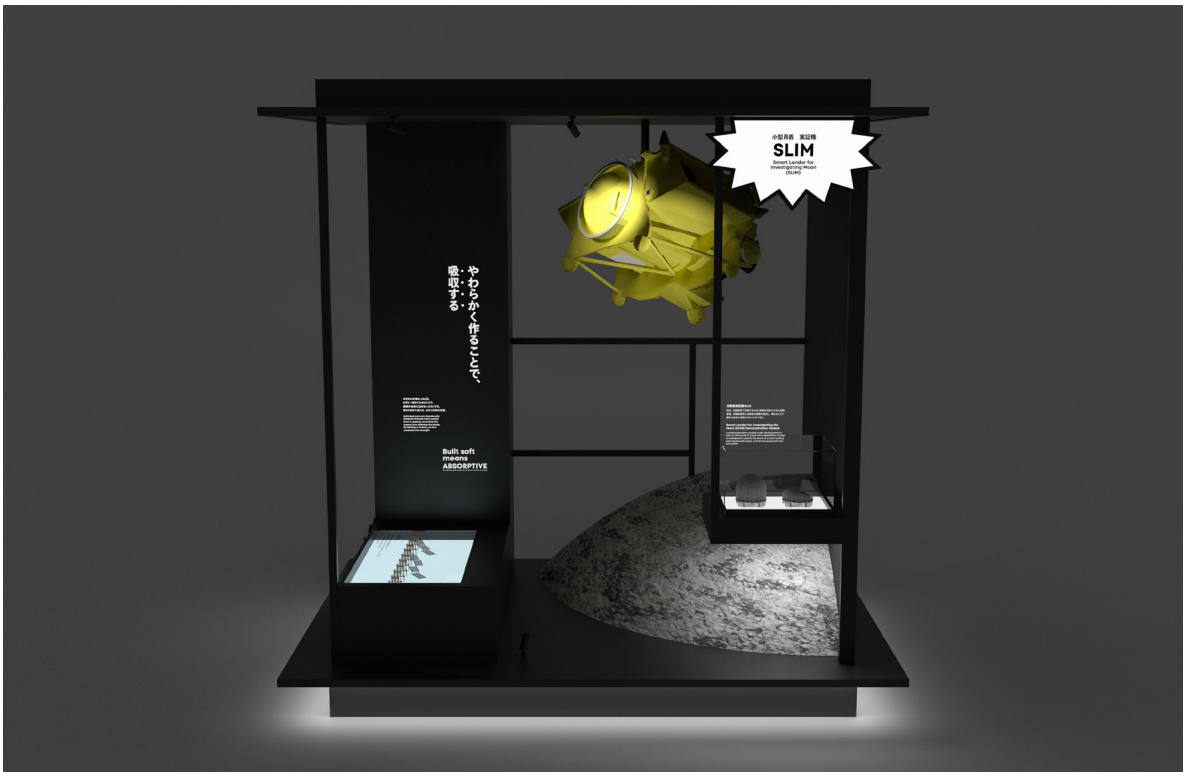
Built soft means FLEXIBLE

By choosing not to resist, it cannot be defeated. A quiet mastery in the art of redirecting force.

In Japan, there has long been a tradition of using softness not to break—but to prevent breakage.
One example: traditional Japanese nails, known as wakugi, are made from soft wrought iron. When they strike a hard knot in the wood, they bend—protecting both the nail and the wood and allowing the work to continue unhindered.
Another: TOKYO SKYTREE, the tallest broadcasting tower in the world. At its core stands a central pillar, unconnected to the rest of the structure. When an earthquake strikes, the pillar sways in the opposite direction to the tower, helping to dampen the motion and reduce overall shaking.
This gentle art of absorbing impact, rather than resisting it, is a uniquely Japanese approach to strength.

Factory-03D

Built soft means ABSORPTIVE



To protect what matters most, some parts are made to break.

Breaking as a form of protection is an unusual idea, to say the least.
The Smart Lander for Investigating Moon (SLIM), a compact module developed for lunar exploration, has legs designed to break on impact. By absorbing the shock of landing, they help ensure the safe arrival of the main body.
A similar concept is found in the Flowing Bridge—the Kozuya Bridge that spans the Kizugawa River in Kyoto Prefecture. Frequently struck by floods, it doesn't resist the force of the rising river. Instead, its girders, connected by ropes, are allowed to float away. Once the water recedes, they can be pulled back and reassembled.
By letting go of the idea of absolute strength, we gain resilience. The breakable parts absorb the damage and protect the whole.

Factory-03E

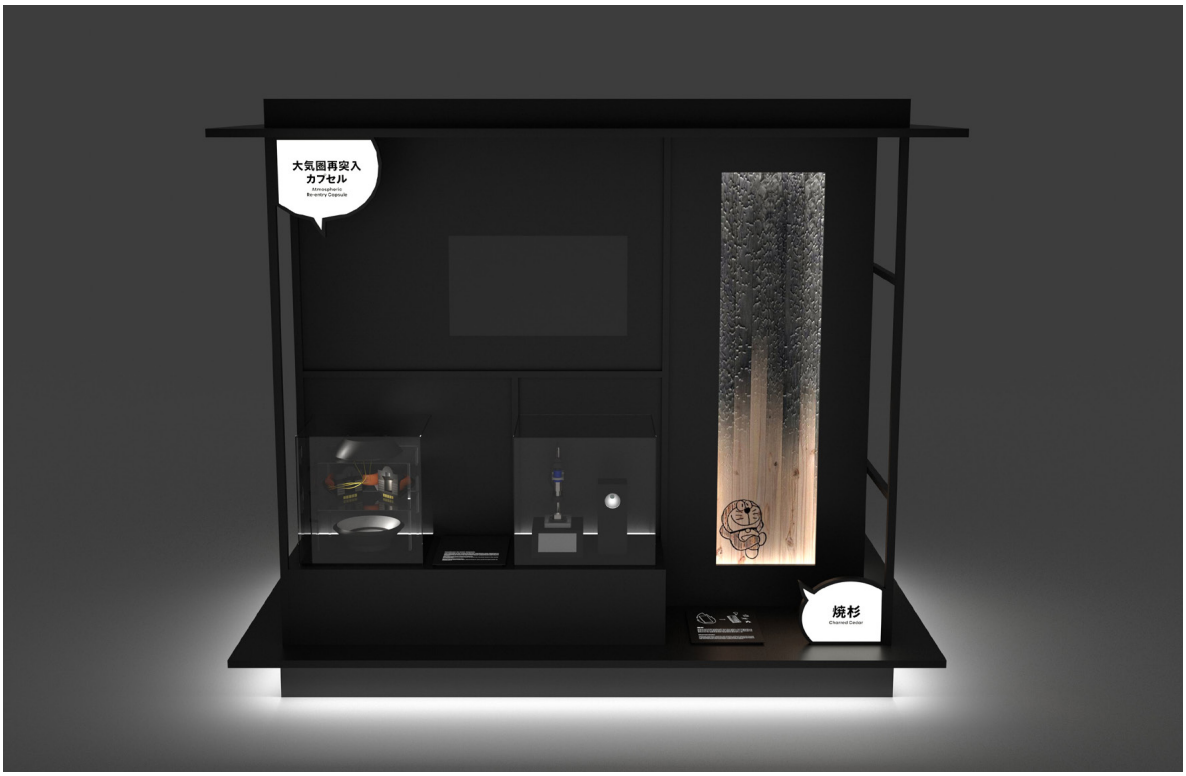
Built soft means VERSATILE

Innovation born from adaptability

Giving one item multiple functions might just be one of Japanese craftsmanship's greatest strengths.
Take the furoshiki, a single square of cloth that can be folded and tied in countless ways.
Or Transformers, a Japanese-born franchise with fans around the world, where cars, planes, animals—even dinosaurs—transform into mighty robots.
At first glance, these two may seem worlds apart, but they share one thing in common: a spirit of adaptability and transformation. Instead of creating more things to meet more needs, we can expand the possibilities of a single item. Don't you think that feels just right for the times we live in?

Factory-03F

Built soft means RESILIENT



Growing stronger by breaking down. How does that work?

What if, instead of hardening to protect, we let something weaken, and in doing so, made it last longer?
That's the counterintuitive principle behind the atmospheric re-entry capsules of the asteroid probes Hayabusa and Hayabusa2. Faced with the intense heat of re-entry—over 10,000°C—these capsules didn't resist. Instead, their heatshields cooled themselves by gradually evaporating, just like sprinkling water on hot summer streets. In softening, they protected what mattered most inside.
A similar principle is found in yakisugi—charred cedar used in traditional Japanese houses. By deliberately burning the surface of cedar wood, it becomes carbonised, suppressing rot and increasing durability. Compared to standard siding materials, which last around 15 years, yakisugi walls can last 40 to 50 years, resisting moisture and insects alike. This is resilience through decay—a quiet strength born from knowing how to endure.

Factory-03G

Built soft means TRANSMITTABLE

The spirit of tokowaka— a living tradition in eternal renewal

Have you ever heard of Shikinen Sengu? It is a sacred ritual held at the Grand Shrine of Ise (Ise Jingu) every 20 years. Each time, the shrine buildings are completely rebuilt, and the sacred treasures—garments, ornaments, weapons—are newly crafted. Then, the deity is ceremonially transferred to the new shrine.

Why rebuild everything just once every 20 years? One reason is the transmission of craft. With a 20-year cycle, a single artisan may take part in the ritual two or even three times in a lifetime—an ideal rhythm for passing down precious skills.

Even the timber used is grown from saplings raised for the occasion. Thatched roofs and wood from the previous shrine are carefully reused, making the ritual an act of regeneration as much as of reverence.

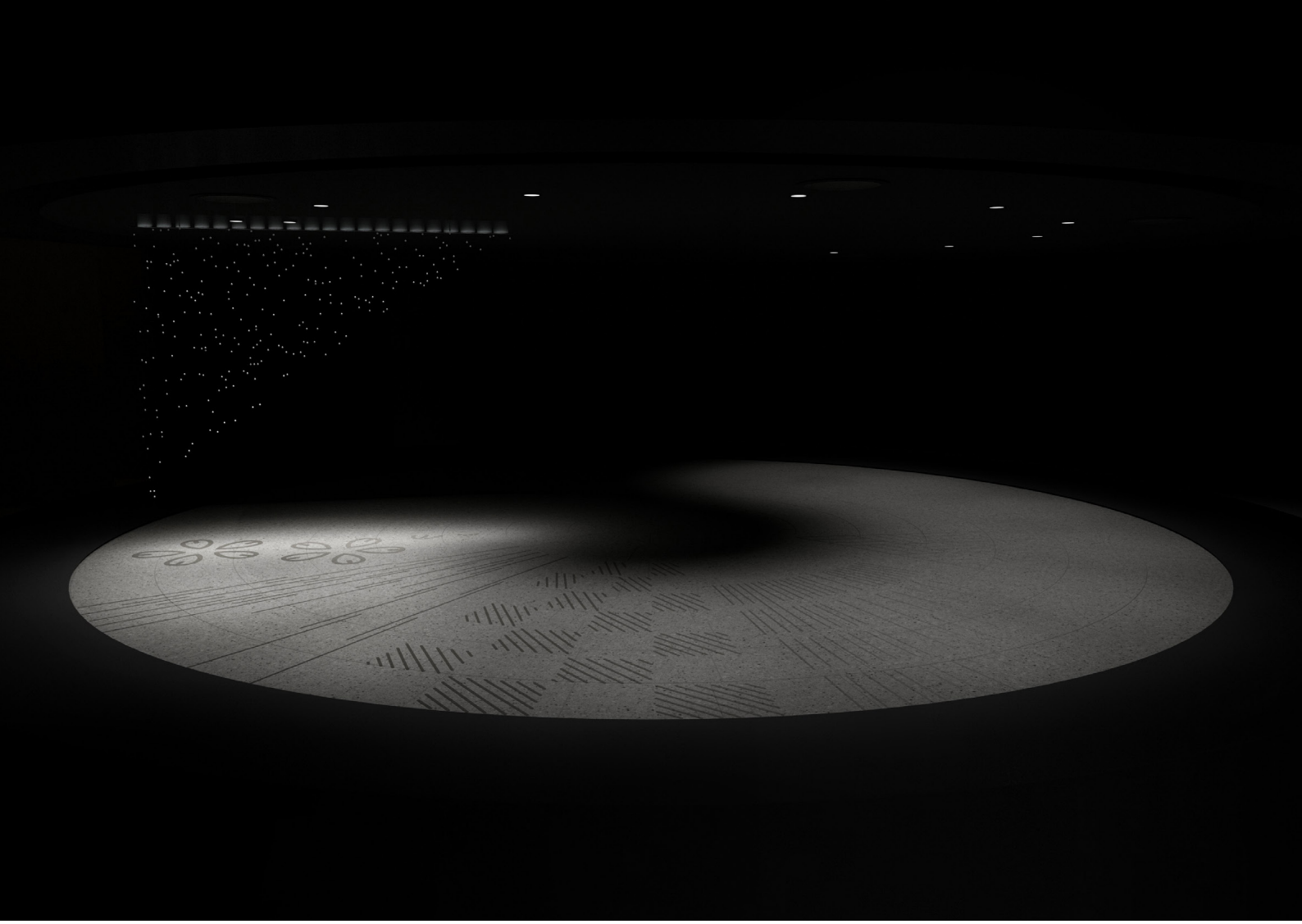
Like life itself, it is a cycle—one that keeps tradition fresh, and knowledge alive. This is the essence of tokowaka: always young, ever renewed. And it is the quiet philosophy at the heart of a 1,300-year-old tradition.

Factory-03H

Built soft means a RENEWABLE Japan Pavilion

What will become of the Japan Pavilion once the Expo ends?

Even a structure as vast as the Japan Pavilion is designed with the cycle in mind—down to the finest detail.
Its walls are made from Cross-Laminated Timber (CLT) sourced from forest thinning. A construction method with minimal processing has been chosen so the building can be easily dismantled and reused after the Expo.
But it's not just the architecture.
The attendants' uniforms are made from recyclable materials. The cardboard packaging used in the shop folds neatly for efficient recycling. The stools, composed of three interlocking seats, are made from resin and algae and designed for disassembly and reuse.
Every element of the Japan Pavilion is already taking its next step—towards being part of something new.



Factory-04

Art so fleeting it'll never be seen twice.

Is it art, or is it magic? A massive disc of diatomaceous earth spins before you, revealing images drawn in water only to vanish moments later.

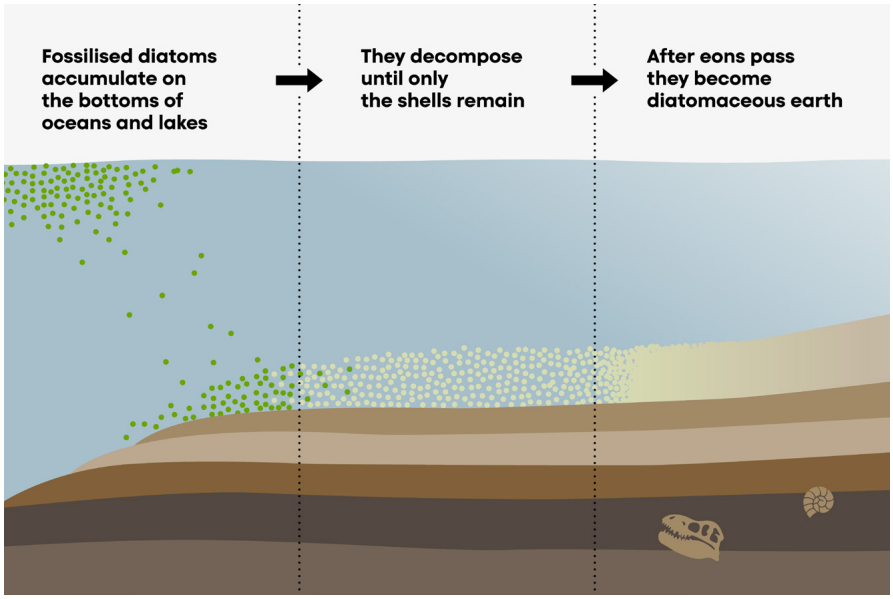
This fossilised canvas was once alive, composed of algae that thrived in ancient seas. As water drips silently onto its surface, it leaves behind marks—brief glimpses of life, appearing only to fade again into the passage of time. Flashes of birth and death so fleeting, you may even forget to blink.

Fleetingness as beauty—lines drawn in living time

This installation harnesses the remarkable properties of diatomaceous earth, which absorbs and releases water with ease.
In Japan, the idea that transience can be beautiful has long shaped art and culture—from falling cherry blossoms to the final spark of a handheld firework, from the poetics of kacho fugetsu (poetry on the beauty of nature) to the shifting moods of setsugekka (poetry on the four seasons). On the slowly turning disc, these aesthetics take shape.
The images drawn in water begin to fade the moment they appear—delicate and ephemeral, accompanied by the quiet rhythm of dripping droplets. It is a cycle—an eternal return of beginnings and endings. Rather than record it with a camera, let this moment be etched into your eyes and your heart.

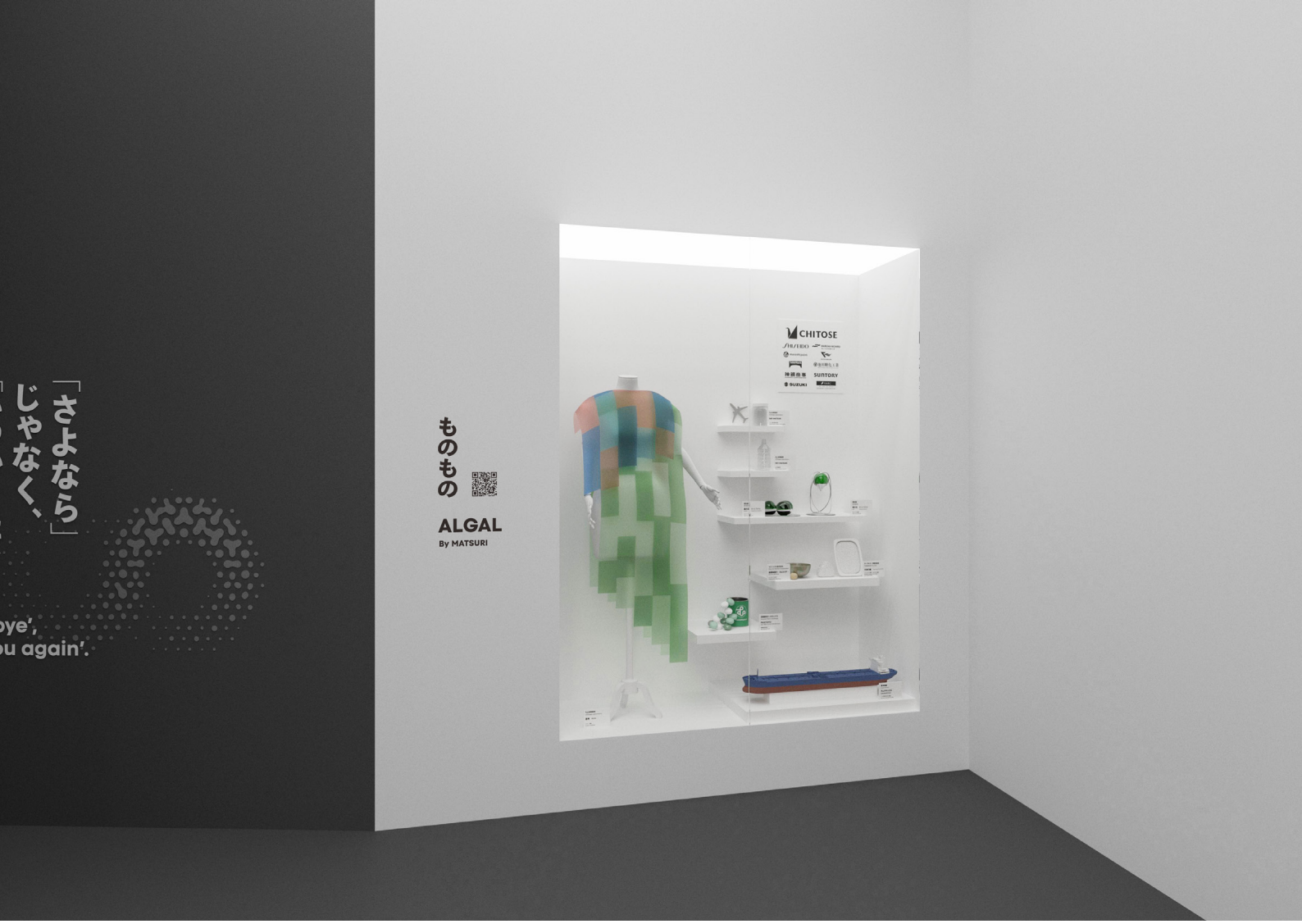
The invisible force behind photosynthesis: the diatom

Diatomaceous earth is formed from the fossilised remains of diatoms—microscopic algae that once lived in oceans and lakes.
Today, diatoms still inhabit rivers, ponds, and moist rocks and soil. Tiny and invisible to the naked eye, they nonetheless account for around 20% of all photosynthesis on Earth—a quiet force sustaining ecosystems across the globe. Each diatom builds a delicate glass-like shell. When it dies, the shell remains—and over time, countless shells accumulate to form diatomaceous earth. The life of these ancient algae continues even now, in the material's unique properties, woven into the fabric of our daily lives.



A quiet companion to Japanese culture

Diatomaceous earth is full of microscopic pores, making it both lightweight and highly absorbent. You might have seen it in coasters, bathmats, or household goods. But it also plays a role in craftsmanship—as a filtration aid in soy sauce or beer production, for example. Thanks to its ability to regulate temperature and humidity—absorbing moisture when it's damp, releasing it when it's dry—diatomaceous earth has long been used in Japan as a material for walls and other structures. A subtle yet essential presence in the architecture of life.



Factory-05

Bring the Japan Pavilion experience into your daily life

A shop for exclusive goods & a showcase of everyday items from the future

After journeying through the three zones of the Japan Pavilion, the story of the cycle continues—this time, in your own life.
Here you'll find a shop offering exclusive original goods, alongside a showcase of prototype products that could soon become part of your everyday routine.

The cycle continues—now in your hands

Discover one-of-a-kind items you won't find anywhere else: original Japan Pavilion figures of Algae x Hello Kitty, BE@RBRICK, and Doraemon, mugs printed with messages from the Japan Pavilion, and more.
In the adjacent sponsor exhibition, learn how the technologies and ideas woven through the Pavilion's narrative of regeneration are already beginning to take shape in society—supporting real lives, in real ways.

A glimpse of future craftsmanship—just beyond the glass

Algae that nourish our bodies, support beauty, bring joy through fashion, and one day, may even power jet engines. These are not distant dreams.
This showcase highlights pioneering products of the future developed by Japanese companies—tangible examples of the cycle reborn, backed by advanced technology and limitless possibility.

Architecture

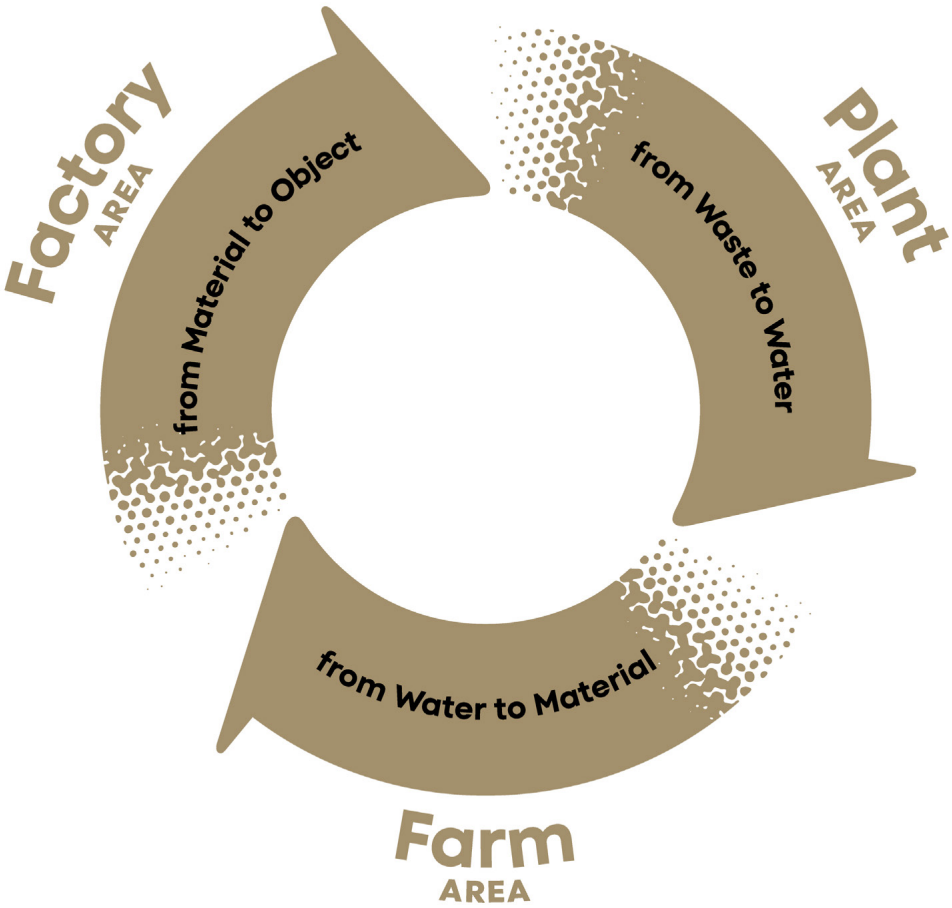
A pavilion that embodies the relay of life

No beginning, no end.
An architecture of life in circulation

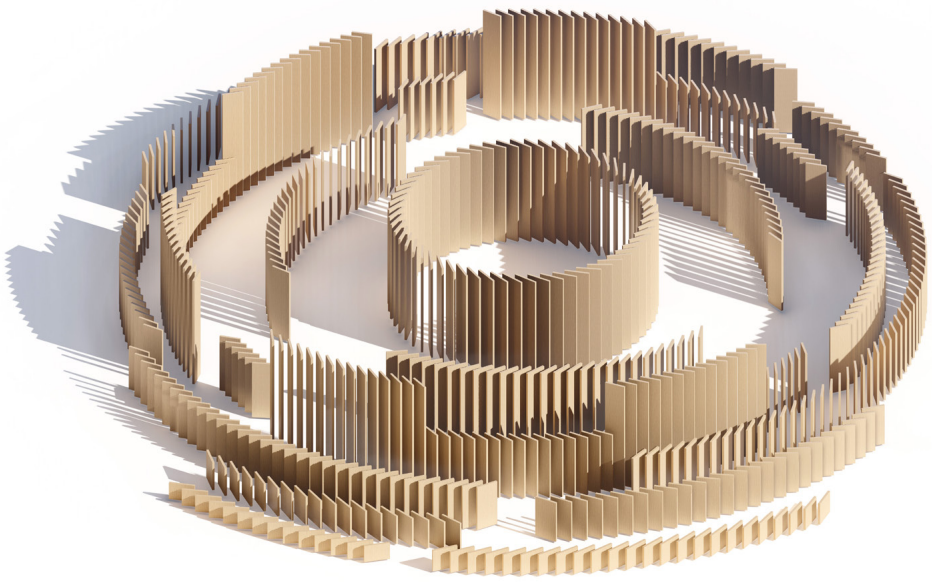
No fixed ‘entrance’ or ‘exit’. No clear boundary between ‘inside’ and ‘outside.’ The Japan Pavilion dissolves such divisions.
Its very design expresses the essence of a cycle, a world where beginnings and endings do not exist. And when the Expo ends, the Pavilion itself will continue the cycle, transformed into new life.

What does it mean to circulate? Step into the cycle and find out

The Japan Pavilion is made up of three areas—Plant, Farm, and Factory—each with its own entrance. No matter where you begin, the journey leads you to a deeper understanding of the cycle.
Your entry and exit points shape your path and perspective, but in the end, all stories return to the same truth: a cycle has no start or finish. Even walking one full circle around the Pavilion becomes an act of regeneration in itself.



CLT: A symbol of transformation



The inner and outer walls of the Japan Pavilion are made from Cross-Laminated Timber (CLT). In total, 280 sets—560 panels—are used throughout the structure. After the Expo, these panels will be dismantled and reused by partner organisations and municipalities. To make that possible, they have been left in their simple, rectangular form, with minimal processing. Easy to take apart. Easy to give new life.
Arranged in a ring around the Pavilion, these CLT panels visually express the ongoing cycle of life.
Gaps between the panels create soft boundaries between indoors and out—spaces where sound, light, and the presence of people mingle freely, blurring the line between the Pavilion and its surroundings, and fostering a sense of connection among the exhibits.

A universal space for a shared experience

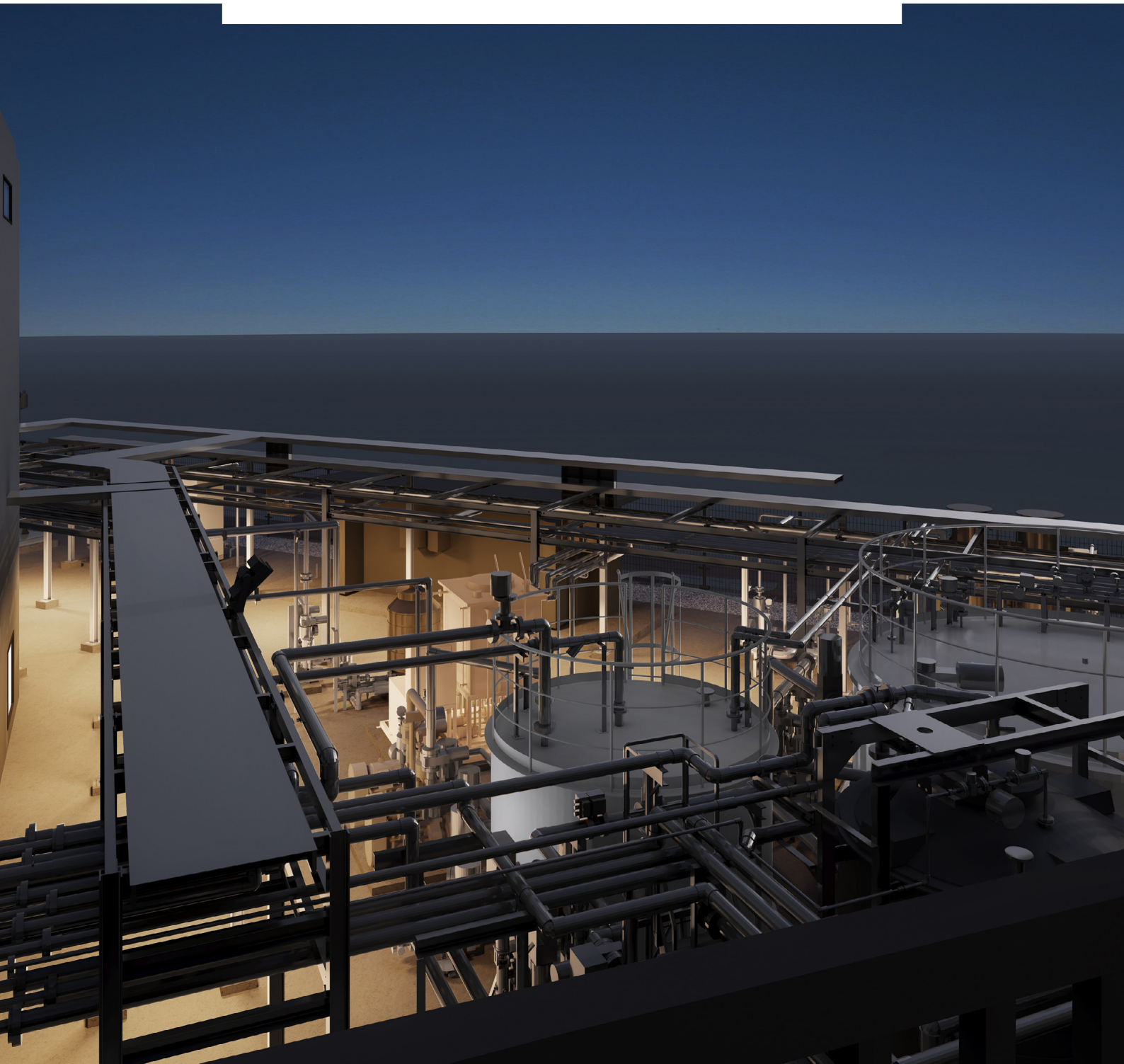
As you walk along the outer ring, you may suddenly realise you've drifted inside—drawn in naturally by the fluid design of the Pavilion's layout. This immersive approach is fully accessible, with all routes designed to accommodate wheelchair users, and also serving as safe evacuation paths in case of emergency.
Rather than defining the outer shell first and building inward, the Pavilion was created from the inside out.
This method allowed the layout to grow organically, guided by the flow of visitors and the relationships between the exhibits.
With soft, natural light and CLT walls that shift in appearance as the day goes on, the Pavilion invites everyone to share in a moment of cyclical time—a universal space, in every sense of the word.

Biogas Plant

A pavilion that eats waste

Life reborn in a hidden corner: Inside the biogas plant, something remarkable is underway

Here, behind the scenes of the Japan Pavilion, food waste from the Expo site is being broken down by the power of microorganisms—transformed into water and biogas.
The biogas is then used to generate electricity, which in turn powers the plant itself. It's a quiet process, but one that fuels the entire cycle.



From food waste to energy—powering the Pavilion from within

Within the Japan Pavilion lies a system that processes food waste from across the Expo. Using microorganisms, the waste is broken down into water and biogas. This biogas is collected—up to one tonne of waste per day is processed here—and used to generate electricity. The electricity produced is then used to power the biogas plant's own operations. This is circulation in action.

Tiny tank dwellers, doing mighty work

Food waste contains proteins, carbohydrates, and fats. Microorganisms break these down into small molecules—amino acids, sugars, glycerol, and fatty acids. Other microbes then convert these into short-chain fatty acids like acetic acid. Finally, methanogenic bacteria digest these compounds and produce methane gas.
This chain of decomposition inside the tank is a highly intricate process. Each type of microorganism plays a role, passing the baton along from one to the next. Together, these unseen workers drive the cycle forward. Their work can also be explored through the exhibits in the Plant Area.

Furniture

Interior design for a circular future

Designed to be reborn even before it is born

What if furniture were created not just to be used, but to be used again? Here, each item is built with its next purpose already in mind—easy to dismantle, easy to repurpose. As you take in the exhibits on life's cycles, take a moment to consider how the very objects around you are part of that same cycle.

Algae stools that can be crushed, reformed, and reused

You may have spotted these algae stools throughout the Japan Pavilion. In the Factory Area, you can watch how they're made. Created with a special material that blends algae and bioplastic, each stool is 3D-printed, but that's not the only thing that makes them unique. Inspired by traditional Japanese woodworking, these stools are assembled without any fasteners or adhesives—so they can be easily crushed and reused. Once their role is complete, they can be reshaped and reborn into something new.
This mindset—designing for the next life—is one that may soon become the new norm.

Benches and signboards made from CLT

Benches and signboards throughout the Pavilion are made using the same Cross-Laminated Timber (CLT) as the Pavilion's walls.
They feature a simple structure with minimal processing, making them easy to assemble and just as easy to take apart. When no longer needed, they can be compactly stored or transported—practical, sustainable, and beautiful. These pieces embody the spirit of Japanese craftsmanship explored in the Gallery of Soft Things.
Even the bench you're sitting on is just one stop in a longer journey. Take a closer look—it's a piece of furniture built with the future in mind.

Uniforms

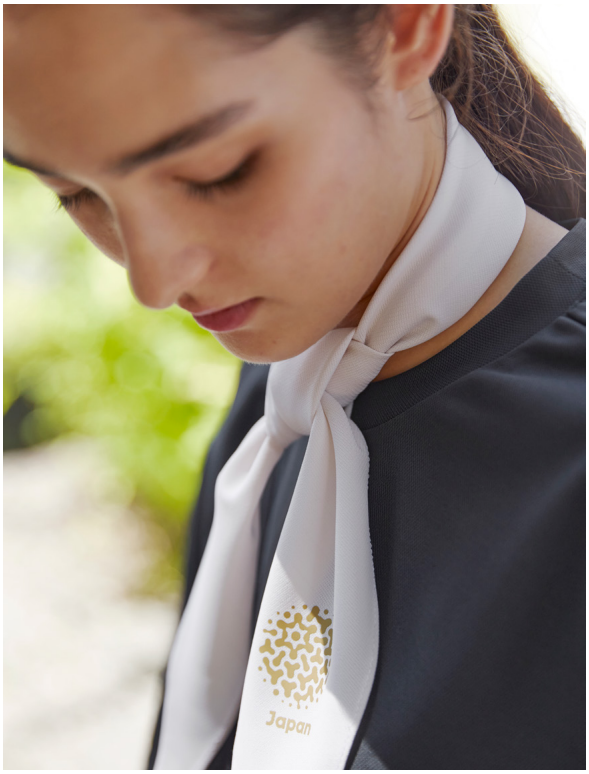
Aesthetics, function, and what comes next

Pavilion attendants, clothed in Japanese sensibility

With generous silhouettes that echo the elegance of the kimono, these uniforms embody both function and beauty.
Graceful and approachable, the attendants who wear them gently welcome each visitor to the Japan Pavilion.

A unified look with room for individuality

The attendants of the Japan Pavilion come from diverse backgrounds—nationalities, ages, cultures—and the uniform is designed to reflect that spirit. While maintaining ease of movement and instant recognisability, the design also respects and highlights the individuality of each person who wears it.
It's a new kind of uniform—one that represents the Japan Pavilion's ideals and allows the wearer's personality to shine through. Notice, too, the subtle Japanese aesthetics expressed through the attendants' manner and presence.



A timeless idea: the monomaterial garment

Just like the Pavilion's architecture and interior design, the uniforms are created with their afterlife in mind.
They're made using a monomaterial approach—carefully crafted from a single, recyclable polyester fabric, with minimal use of buttons or zips.
Why? Because when the time comes to recycle, the absence of mixed materials makes disassembly simple and reuse far more efficient.
This concept may sound cutting-edge, but it's actually a return to something deeply traditional. In fact, it closely echoes the philosophy behind kimono design—a garment made entirely from a single bolt of cloth, ready to be taken apart and remade.
Monomaterial thinking: an old idea, perfectly suited to the future.

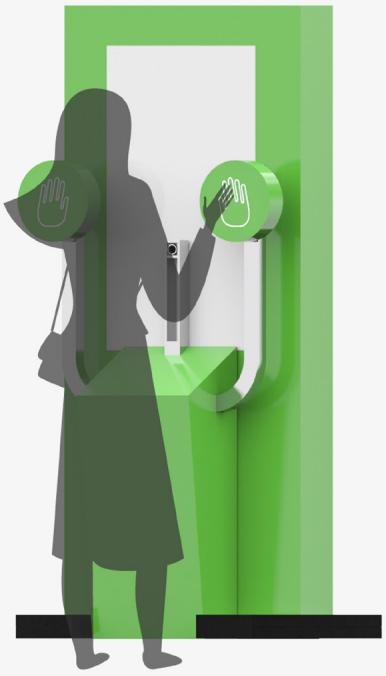
Fureau Denwa

Say hello with 'Denwa'

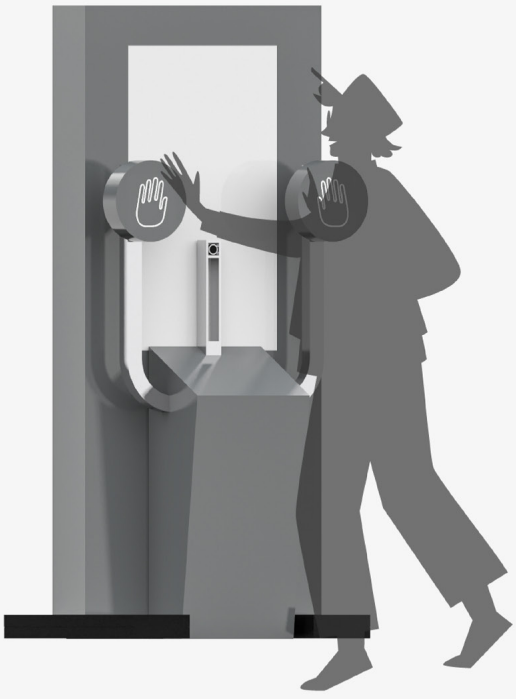
A new kind of communication, felt in the palm of your hand

Tap-tap on the handprint, and your touch is transmitted to someone far away. That's why it's not a telephone—it's Denwa, or 'transmission talk.' Your connection reaches all the way to Kansai International Airport, where your message might be received by a traveller from overseas.
No words, just warmth—a gentle touch from the heart. Kindness, too, is something we can keep passing on.

Kansai International Airport



The Japan Pavilion



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