

Minimalist infrastructure housing

The world's first fully recycling-based
minimal infrastructure house

Demonstration experiment



The Minimal Infrastructure Housing project is

Canon Marketing Japan Inc.



FREE Co.,Ltd.
FREE & CO.

a joint research initiative between Canon Marketing Japan and FREE.

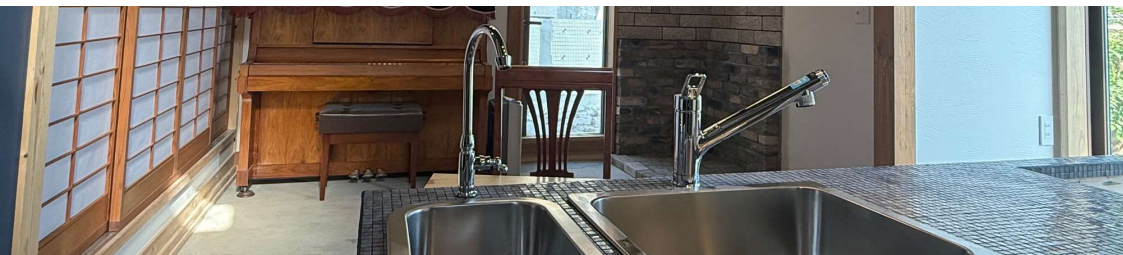


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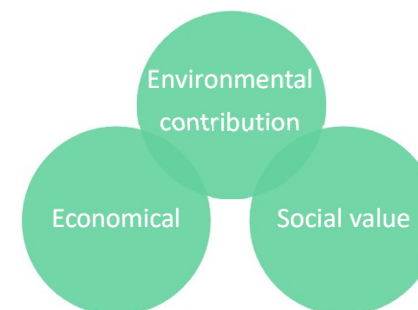
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Towards a future where water is produced from air

The world's first minimal infrastructure housing project



1

PROJECT DETAILS

The heart of the project

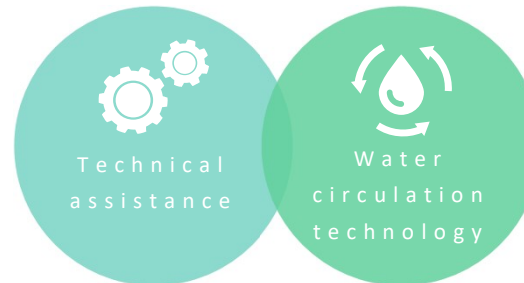
Next-generation
lifestyles that solve
social issues

Overview and
Significance of the
Joint Research

"Minimal Infrastructure": A Next-Generation Living Option Unconstrained by Location and Resources

This was made possible by bringing together the expertise, technology, and passion of leading companies in each field.

Canon Marketing Japan Inc.



 **FREE & CO.**

FREE Co.,Ltd.



Chodai Co.,Ltd.

In charge of : Toilet



NAVIC Co.,Ltd.

In charge of : Solar



株式会社 翔慶

Syoukei Co.,Ltd.

In charge of : Demolition

CAWARU

CAWARU

In charge of : Reform

Each technology works organically together to create a complete "lifestyle platform."

To the Press

FREE Co., Ltd. which produces water from air, has begun a demonstration experiment of the world's first fully recycling-based minimal infrastructure home in collaboration with Canon MJ and others.

Passing on the lessons learned from the Noto Peninsula earthquake to the future. Disasters, aging infrastructure, water shortages - a lifestyle in which the home becomes infrastructure can be solved, spreading the message from Toki City, Gifu Prefecture, to the world.

FREE Co., Ltd. (Headquarters: Fukuoka City, Fukuoka Prefecture; CEO: Yuji Takahashi), which has the technology to generate safe drinking water from air, is pleased to announce that it will begin a residential demonstration experiment of a "Minimal infrastructure home" that is completely independent of water, sewerage, and electricity infrastructure in Toki City, Gifu Prefecture, in August 2025, together with Canon Marketing Japan Inc. and collaborating companies Chodai Co., Ltd., Navic Co., Ltd., and Shokei Co., Ltd.

This project is the world's first attempt to combine our air-purified water technology, a complete recycling system for domestic wastewater, solar power generation, and V2H.

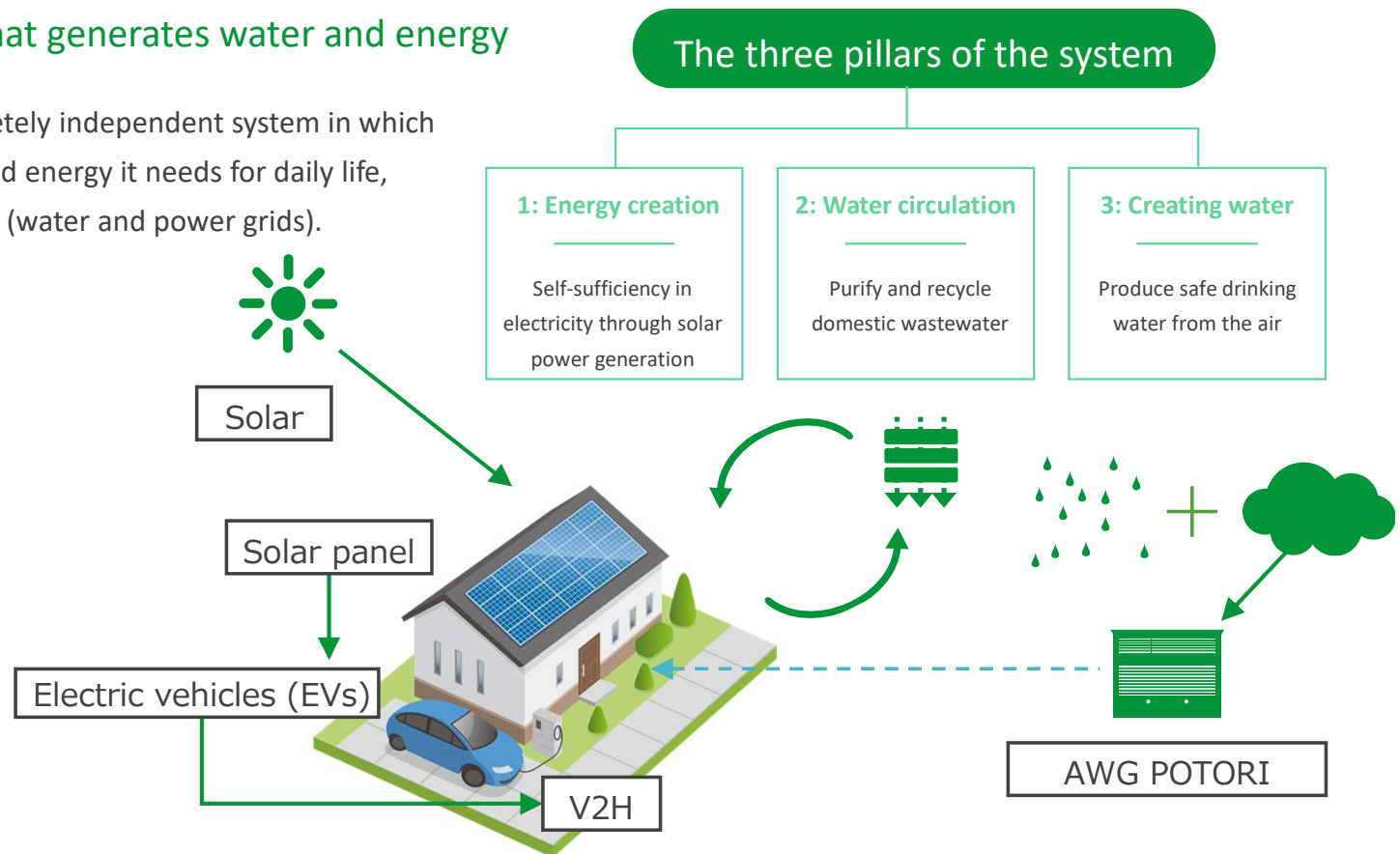
We will propose to society a new way of living in which the home itself becomes infrastructure, and co-create a future standard that combines resilience and sustainability.

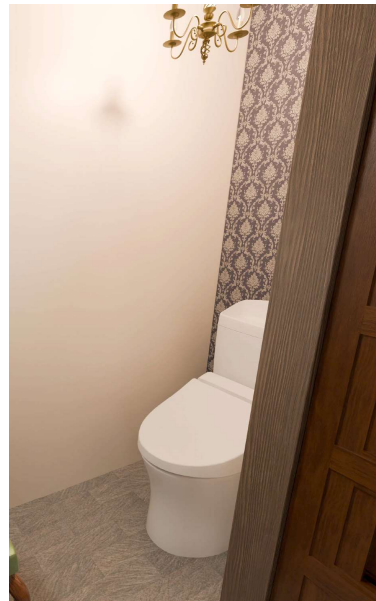
August 00, 2025 FREE Co., Ltd.

What is a Minimal Infrastructure System?

Homes become infrastructure that generates water and energy

Minimal infrastructure system is a completely independent system in which the home is self-sufficient in the water and energy it needs for daily life, without relying on external infrastructure (water and power grids).





Key Points of This Release

POINT 1

World's first complete circulation

"Homes become infrastructure"
Housing of the future

Creates drinking water from the air and purifies and recycles 100% of domestic wastewater.

It is also energy self-sufficient through solar power and V2H.

We will begin demonstration testing of the world's first housing model that is completely independent from the water and electricity grid in Toki City, Gifu Prefecture.

POINT 2

Solving social issues

Solutions to disasters, aging infrastructure, and regional revitalization

This fundamentally resolves the risk of water outages and power outages that were highlighted during the Noto Peninsula earthquake.

It reduces environmental impact during normal times and functions as an independent disaster prevention base during emergencies.

This will be a new option for depopulated areas where maintaining infrastructure is difficult.

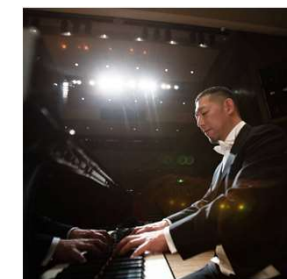
POINT 3

Co-creation in different fields

A story-driven proof-of-concept study

FREE, specializing in atmospheric water generation;
Canon Marketing Japan, providing technical support;
Chodai, offering circular sanitation systems;
Navic, supplying solar power;
Shokei, handling demolition and concrete recycling

Professionals from diverse fields have come together for this project. A pianist will actually live in the residence, sharing their daily life through media coverage, creating a demonstration experiment with strong public appeal.



Resident

Hidenori Shiraishi

Pianist living in Toki City, Gifu

Next-generation lifestyles that solve social issues



Residents' Thoughts

Looking around the world, I feel that the way people deal with water and nature varies greatly from country to country.

In some countries, rainwater is carefully collected and used, while in other countries, water is abundant, yet disasters still occur as a result.

Wherever you are, water is essential for life, and the flow of nature is deeply connected to the way we live. Rain falls, seeps into the ground, and flows into rivers and seas. I am reminded that our lives exist within that very cycle.

The environment, disaster preparedness, and water-everything is interconnected, and I believe that how we choose to engage with them will be the key to living in the future.

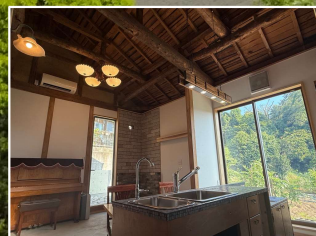
That is why I wholeheartedly support this project, which aims to create a society where nature and people can live in harmony.

Hidenori Shiraishi Pianist based in Toki City, Gifu

Sugiyaki Pond
Toki City, Gifu Prefecture

Hidenori Shiraishi's Profile

After graduating from Tokyo University of the Arts, he moved to the United States. An internationally active pianist, he has performed on stages across the world, including Japan, the United States, and China. As a soloist, he has delivered passionate performances with numerous orchestras, such as the Tokyo Philharmonic Orchestra, while also creating his own music as a composer and arranger. His activities extend beyond the stage, contributing to society through charity work and composing school songs for the children who will shape the future, harnessing the power of music to make a positive impact.

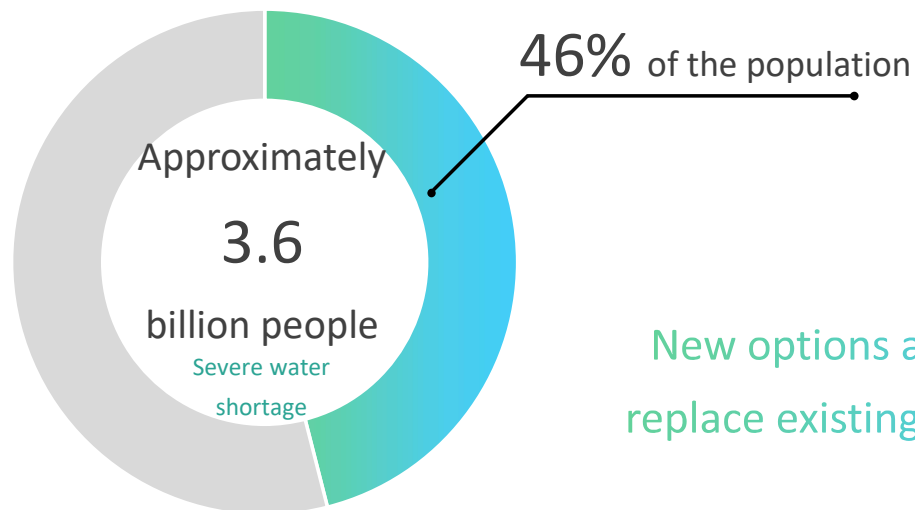


This social issue is urgent. Now is the time to transform our lives

Aging infrastructure with rising maintenance costs, increasingly severe natural disasters, and an ever-increasing number of vacant homes are all issues facing a society that relies on traditional infrastructure.

We believe the key to solving these issues lies in moving away from centralized infrastructure, in other words, a shift to "minimal infrastructure."

Global Issues
The world's worsening water shortage

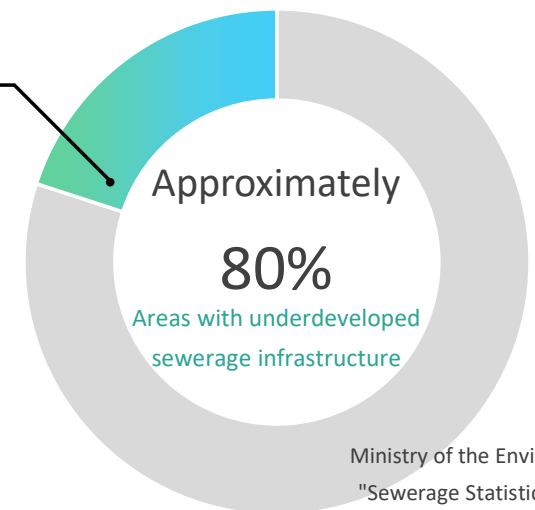


20%

(Approximately 25 million people)

**New options are needed to
replace existing infrastructure**

Japan's problems
**Aging infrastructure and
declining population**



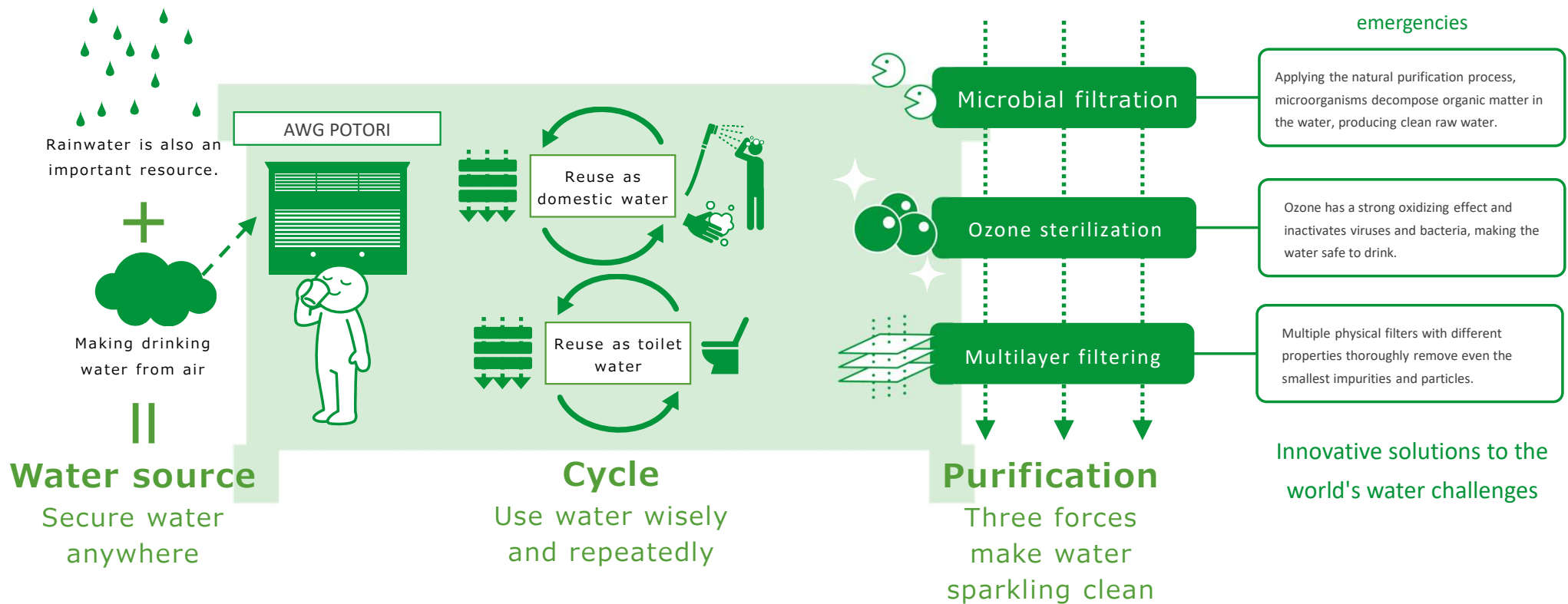
Ministry of the Environment
"Sewerage Statistics" as of
2023

POTORI: The World's First* Atmospheric Water Generator with a 3-Step Purification System

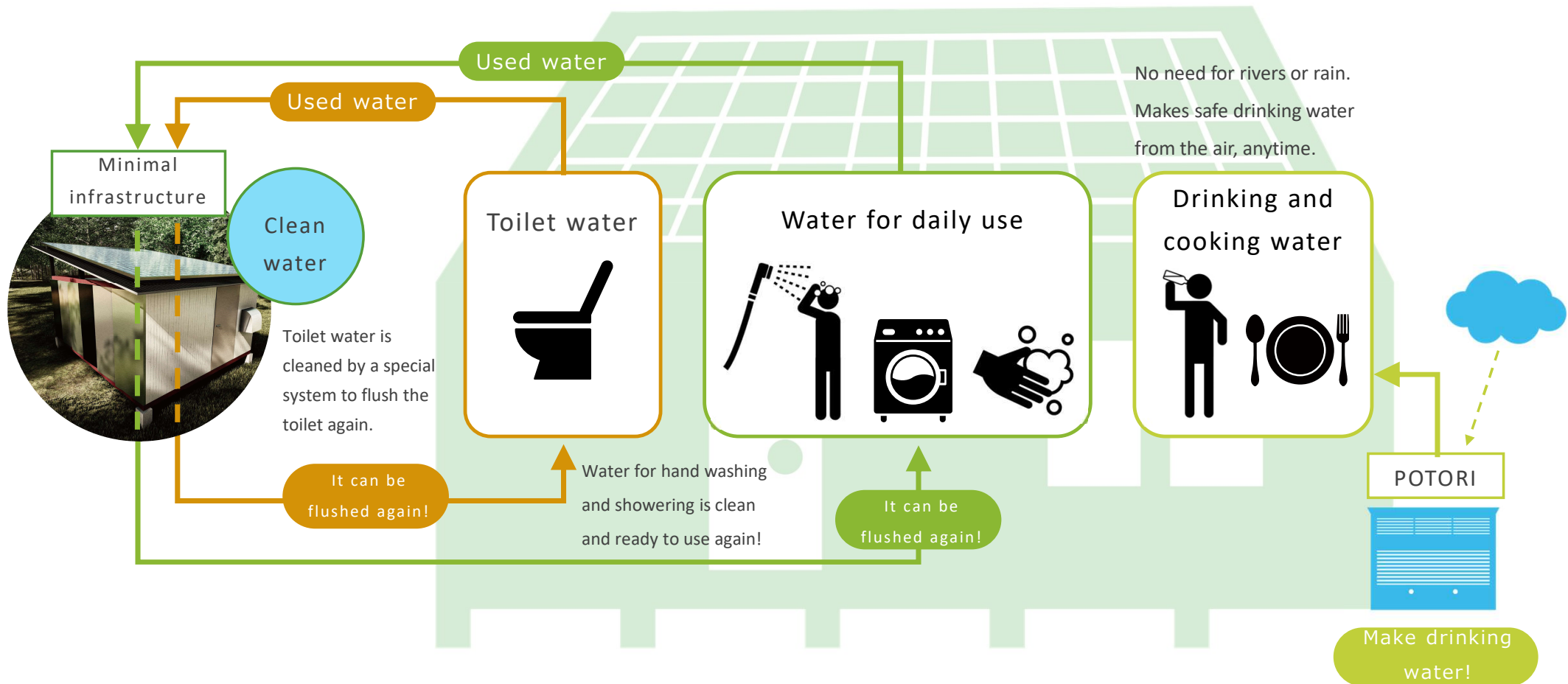
*In-house research (as of July 2025)

This is an innovative air-powered water maker that produces safe drinking water anywhere, without the need for infrastructure. Our advantage lies in our unique "3-step purification system," which is the first of its kind in the world*.

Ensuring safe drinking water in all situations, from normal times to emergencies



Not a single drop of water or a single grain of light is wasted



2

OUR PARTNERS

Collaboration System



Toilet

Chodai Co.,Ltd.



Solar

NAVIC Co.,Ltd.



Demolition

Syoukei Co.,Ltd.



Reform

CAWARU

Collaboration framework

Chodai Co.,Ltd.

An innovative self-contained, circulating water treatment system that supports the water cycle

Company Profile

Company
Name Chodai Co., Ltd.

Head 1-20-4 Nihonbashi Kakigaracho, Chuo-ku,
Office Tokyo 103-0014

TEL +81 3-3639-3301

FAX +81 3-3639-3366



<https://www.chodai.co.jp/>



A.Q (AQUA QUALITY) is a water circulation technology brand developed by Chodai Co., Ltd. It works in conjunction with atmospheric water generators to reuse water, building a sustainable future through innovations in water.

Construction example



Chodai Co.,Ltd.

Product introduction

Recycling toilet system

- Works in conjunction with an air-generating water pump to reuse limited water resources.
- High efficiency with low water consumption, minimizing environmental impact.
- Combines comfort and sustainability.

Circular story

- The water cycle begins with the toilet
- Maximizing limited water resources and minimizing environmental impact

A.Q's circular toilet system is a fully self-contained solution that uses microorganisms to purify wastewater and recycle it into clean flushing water-minimizing environmental impact, maximizing efficiency, and ensuring comfort with minimal water use.

No bad odor

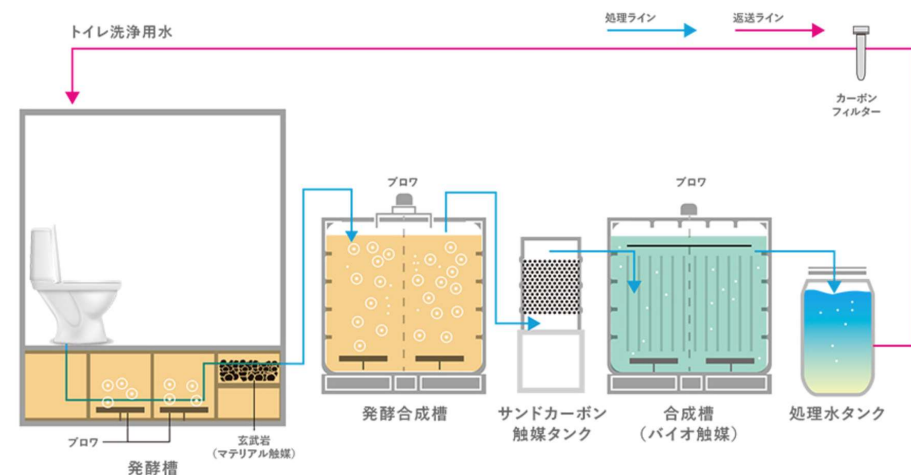
100% recycled

E. coli zero

No need to pump

Movable

■ Water treatment and circulation flow (100% endless recycling)



Collaboration framework

NAVIC Co.,Ltd.

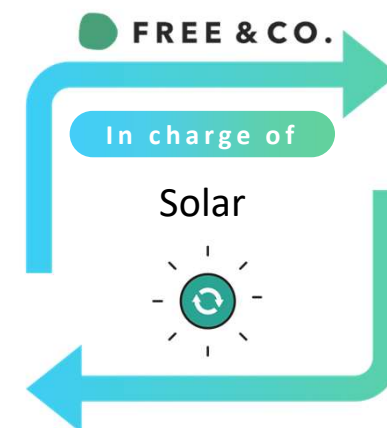
CREATING NEW VALUE—

Company Profile

Company Profile	NAVIC Co.,Ltd.
Head Office	180 Akatsubocho, Minami-ku, Nagoya, Aichi Prefecture, 457-0024
	TEL +81 52-602-7771 FAX +81 52-819-0080



<https://www.navic-inc.jp>



We offer a wide range of services, including the rental, sales, and installation of solar batteries, measuring instruments, and construction safety equipment; the development and manufacturing of measuring instruments and safety equipment; and consulting for the operation of various measuring instruments and safety devices-providing solutions that meet every on-site need.

In this project, we are responsible for the solar power generation system, the core of the energy circulation process.

With our many years of accumulated technical expertise, we contribute to realizing a sustainable lifestyle powered by clean energy.

Collaboration framework

NAVIC Co.,Ltd.



Installation example



 **FREE & CO.**

By harnessing clean, limitless solar energy, we contribute to building a sustainable society.

The electricity generated not only supports daily life and industry, but any surplus is returned to the local community-serving as an emergency power source during disasters and promoting local production for local consumption.

From panel supply to recycling, we adhere to a design philosophy that prioritizes resource circulation, aiming to realize a truly circular energy society.

Shifting from merely “using” the sun’s blessings to “passing them on to the future,” we are committed to pursuing energy solutions that coexist harmoniously with nature.



Circular story

- Sunlight is a natural cycle
- Contributing to society and the environment as a sustainable energy source

Collaboration framework

Syoukei Co.,Ltd.

Giving new life to industrial waste and contributing to the creation of a comfortable society.

Company Profile

Company
Profile Syoukei Co.,Ltd.

Head Office 7-1-82 Minami-Onkajima, Taisho-ku, Osaka
City, Osaka Prefecture, 551-0021

TEL +81 6-6552-8833

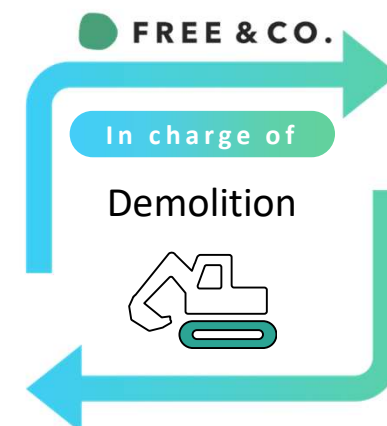
FAX +81 6-6552-8834



株式会社 翔慶



<https://syoukei-yob.co.jp/>



Driven by the belief of “giving new value to waste,” we are demolition professionals pioneering the future of resource circulation.

We are working to discover new value in materials that were once simply discarded and to promote their reuse as resources.

Rather than merely breaking things down, we connect them to the future in ways that once again serve society.

With this philosophy of circulation, we support the very foundation of the project.



Syoukei Co.,Ltd.



Our work is not simply about “tearing things down.”

Beyond demolition lies a story of renewal-breathing life back into what once seemed finished.

We carefully dismantle buildings that have reached the end of their life, giving industrial waste a second chance.

Crushed concrete, for example, becomes recycled concrete for use as new construction material.

Old roof tiles are ground into fine pieces and reused as a substitute for gravel, creating new landscapes in gardens.

Even decayed timber is never wasted-it serves as firewood to warm the community, fulfilling its role once more in the glow of the flames.

This is not disposal, but circulation. From demolition to the creation of a more comfortable society.

It is our quiet challenge, connecting the unseen parts of our work to a truly sustainable future.

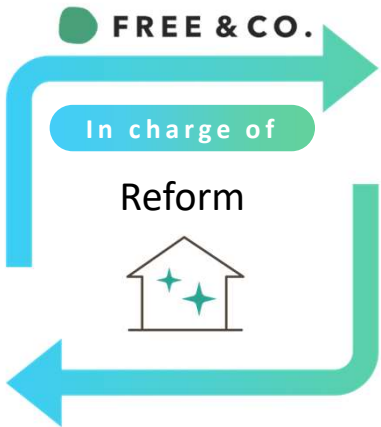
Circular story

- Properly sorting and recycling waste generated from demolition work to make the business sustainable

CAWARU

Beautiful functionality without all the unnecessary features

Company Profile	
Company Profile	—
Head Office	—
	—

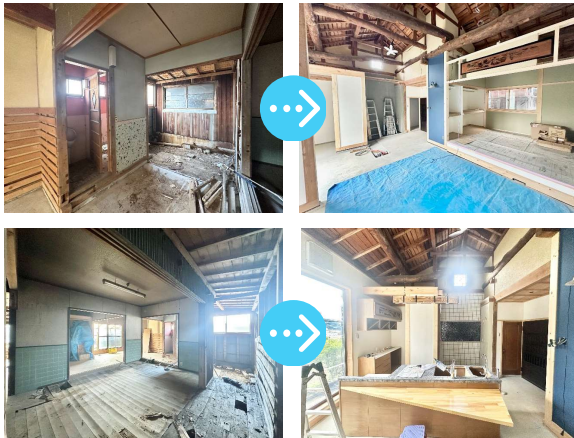


Our brand values beautiful and efficient living in both new construction and renovation.

We carefully recycle reusable materials and promote resource circulation, making choices that are kind to both the planet and everyday life.

By eliminating waste in function, cost, and time, we aim to create spaces that balance comfort and beauty.

CAWARU



Circular story

- Renovations make effective use of building materials, recycling resources and reducing environmental impact.

Buildings that have fulfilled their roles hold hidden value etched with time and memories.

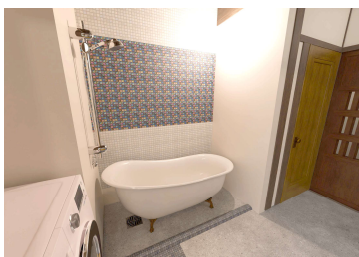
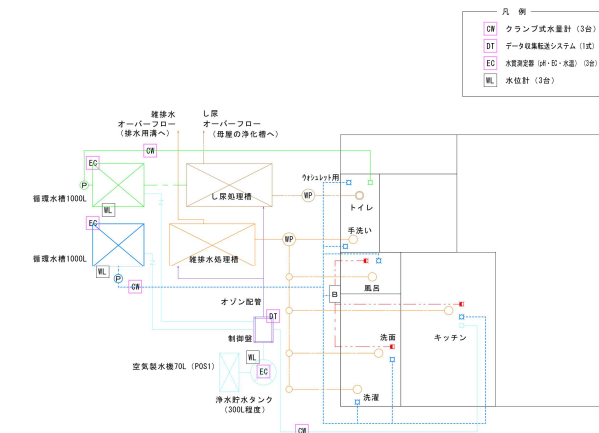
Rather than simply demolishing them, we reimagine and transform these structures into spaces that embody functional beauty.

By maximizing the use of existing structures and materials and designing with zero waste, we create new places that meet modern needs.

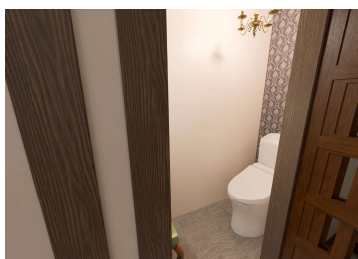
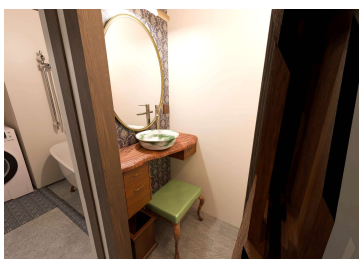
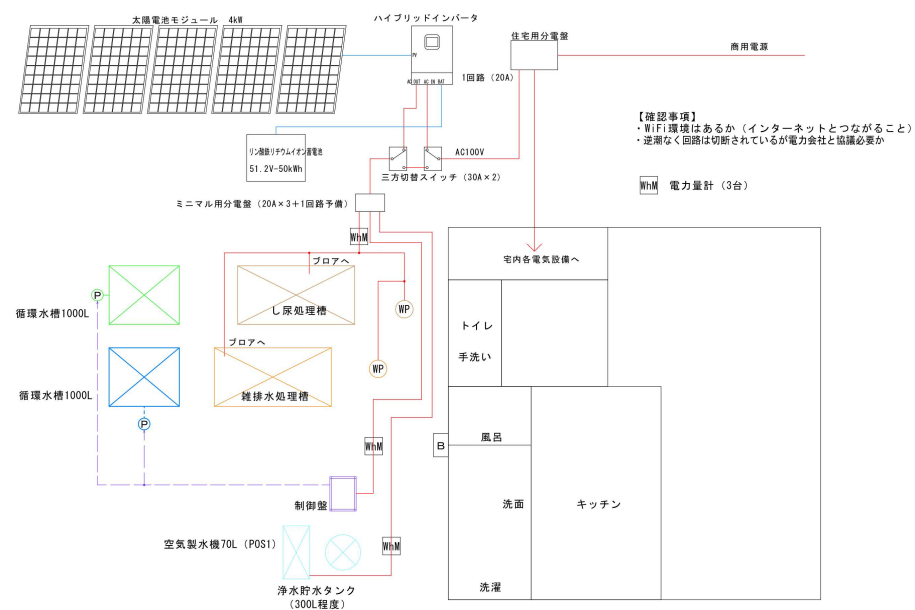
These regenerated buildings welcome people once again and are eventually passed on to future generations.

This process, starting from ruins, is part of sustainable resource circulation and represents value creation in harmony with the community and environment.





Conceptual drawing of completion

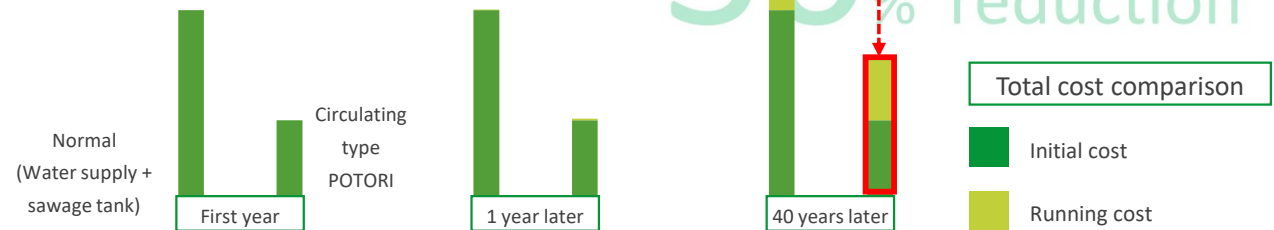


Inherent economic rationality due to not relying on infrastructure

In addition to being environmentally friendly and disaster-resistant, this system also demonstrates excellent economic rationality from a long-term perspective.

We will explain the cost structure that creates value that exceeds the initial investment.

Significantly reduced running costs
reduce long-term total costs by **30%**
(40 years later)



Costs incurred in the conventional model (tap water + sawage tank)		Cost reduction achieved by models equipped with this system	
<ul style="list-style-type: none"> Water pipe installation costs Sawage tank installation costs 	Initial cost	<ul style="list-style-type: none"> No water pipe installation work required No sawage tank installation work required 	
	Running cost (Recurring payments)	<ul style="list-style-type: none"> No water or sewer fees required No septic tank maintenance costs <p><small>*Only small electricity costs for the air purifier and consumables such as filters are required.</small></p>	

Creating maximum benefits in areas with underdeveloped infrastructure

*The replacement cycle for water main pipes is 40 to 50 years.

3

VISION & INFORMATION

Future outlook and supplementary information

Representative's thoughts

There are many people around the world who cannot take clean water for granted. Without access to drinking water, daily life becomes a struggle, and there is little room to envision a hopeful future - this harsh reality still remains in many regions. We refuse to accept this situation as inevitable; instead, we aim to change it through the power of technology and passion.

What we have developed is a technology that creates water from air. Centered on this technology, we have built a system called "Minimal Infrastructure," which can independently supply drinking water, household water, and toilet water without relying on conventional water pipelines. If water cannot be delivered, we deliver it from the air - this is one of our answers.

This system proves effective not only in areas lacking water infrastructure but also during disasters, on remote islands, and in depopulated regions. We are confident that it will go beyond mere technology provision, enabling local operation support and job creation.

Realizing a society where everyone, regardless of where they are born, can live without water scarcity and with hope for life - this is the mission entrusted to us as technology developers and a responsibility to future generations. With this conviction, we will continue to work step by step, together with our partners, to build practical solutions.



FREE Co., Ltd. Representative Director
Yuji Takahashi

Take this step towards hope for the world

This demonstration experiment is the first step towards our grand vision. Based on the results, we aim to achieve the following.

Expansion in Japan

As a disaster prevention and mitigation solution

- Offering packages for temporary housing and reconstruction housing in the event of a disaster
- Proposed as a "self-sustaining disaster prevention base" for local governments and businesses

Expansion in Japan

Regional revitalization and infrastructure solutions

- Glamping promotes permanent settlement in depopulated areas, marginalized communities, and remote islands
- - Business development in locations where infrastructure development, such as facilities and mountain huts, is difficult

Overseas expansion

Towards solving global social issues

- Providing and exporting technology to developing countries and regions with underdeveloped infrastructure
- Appealing to the international community as Japanese technology that contributes to achieving the SDGs (especially Goals 6 and 11)

We believe that the innovation that begins with this small house will transform the future of Japan and the world into a safer and more sustainable place.

Company Profile

Mission

Save the world with water in the air

Company Name	FREE Co., Ltd.
Head Office	1F Itsuki Building, 5-15 Reizei-cho, Hakata-ku, Fukuoka City, Fukuoka Prefecture
Capital	12 million JPY
Founded	November 21, 2012
Representative	Yuji Takahashi

Business Activities

- **Atmospheric Water
Generator Business**
- Solar Power Business
- Printer Business
- LED Business

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Official
website



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