環境省

Appendix

Meet the Policy Makers (UNFCCC COP26)

October 21, 2021

Ministry of the Environment

Joint Crediting Mechanism (JCM)

- Japan will help fight global warming by disseminating advanced decarbonization technology to developing countries. This contribution to global emission reductions will be appropriately evaluated and used to achieve Japan's own reduction targets.
- This system will help us address the issue that high-performing environmental technologies and products generally have high initial costs that prevent spread to developing countries (support for the formation of projects such as the JCM Funding Support Program is ongoing).

Renewable Energy

Solar power (Farmdo)


Floating solar farm (TSB)


Small-scale hydro power (Toyo Energy Farm)

Energy Conservation (Industry)

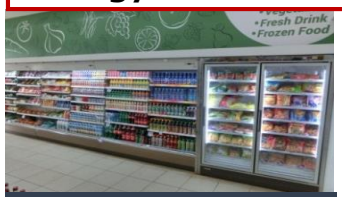

Power generation by waste heat recovery from cement factory (JFE Engineering)


Cogeneration system (Toyota Tsusho & Kawasaki Heavy Industry)


High-performance industrial ovens (Toyotsu Machinery)


Energy-saving loom (TORAY & Toyota)

Energy Conservation (Consumer-oriented fields)



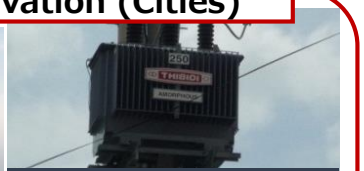
Store with energy-saving facility (Panasonic)


High-efficiency refrigerators (Mayekawa MFG)


High-efficiency air conditioners (RICOH, NTT data, Daikin, Hitachi)

Energy Conservation (Cities)


Wireless control of high-efficiency LED street lights (MinebeaMitsumi)


High-efficiency amorphous transformer (Yuko-Keiso & Hitachi Metals)

Waste


Power generation by methane gas recovery (NTT Data)


Waste-to-energy plant (JFE Engineering)

Transportation


CNG-mixed combustion equipment for public buses (Hokusan)

Ministry of the Environment's JCM Funding Support Program: Breakdown of Successful Technology Adoptions

- 213 technologies have been adopted in 17 countries.
  * A single project often involves multiple technologies.
- The majority of technologies are related to renewable energy (51%) and energy conservation (40%).

As of September 2021

Waste (4) 2%

- Waste power generation
- Methane recovery power generation

Transportation (3) 1%

- Digital tachographs
- Reefer containers
- CNG-diesel mixed-fuel buses

REDD+ (2) 1%

- Suppression of slash-and-burn agriculture

Fluorocarbons (2) 1%

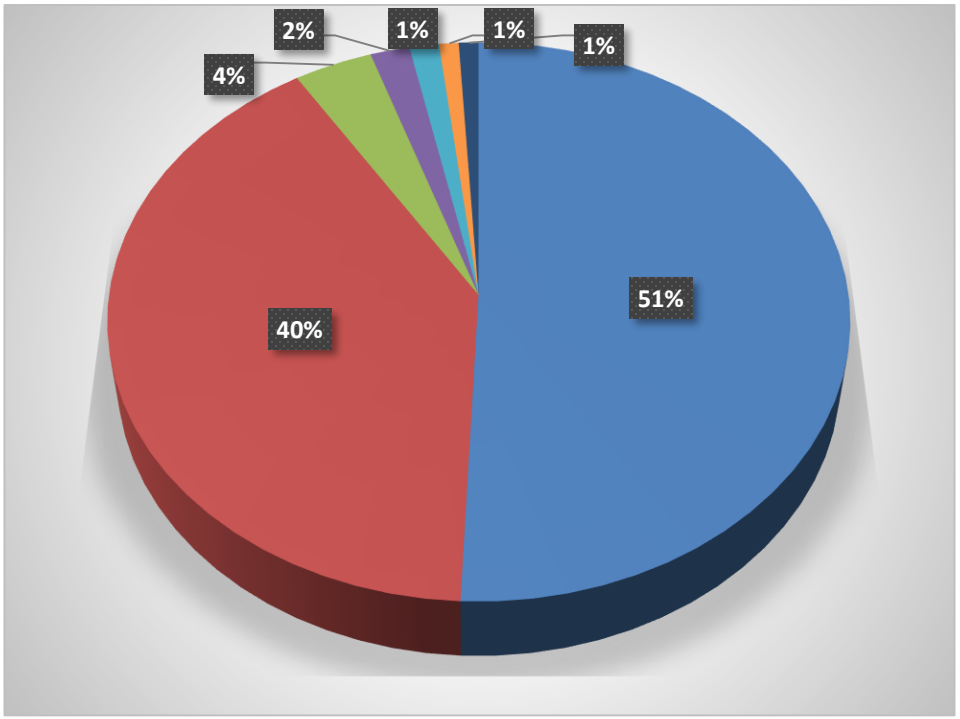
- Recovery and destruction of fluorocarbons

Effective use of energy (8) 4%

- Power generation using waste heat
- Gas co-generation

Energy saving (86) 40%

- Boilers
- Air-conditioners
- Refrigeration equipment, coolers
- Power transformers
- LED lights
- Others



Renewable energy (108) 51%

- Solar power
- Small-scale hydro power
- Wind power
- Biomass power
- Geothermal power
- Other

Ministry of the Environment Initiative for Decarbonized Infrastructure, Announced June 15, 2021

- To contribute to a successful decarbonization transition, Japan will promote overseas deployment of environmental infrastructure through the Joint Crediting Mechanism (JCM), which will enable companies to count emission reductions overseas toward their own reduction targets.
- By FY2030, Japan will seek to achieve cumulative greenhouse gas emission reductions of about 100 million tons of CO_2 for JCM projects through public-private partnerships (fund diversification to enable accelerated development of public-private partnerships up to about 1 trillion yen in scale).

Focus areas of the JCM

Renewable energy
e.g.,) Solar, wind, hydro, geothermal, biomass, green hydrogen

Solar power

Wind power

Green logistics (incl. cold chain)
e.g.,) Non-fluorocarbon cooling systems, modal shift, airports and ports

High-efficiency refrigerators

Modal shift

Waste infrastructure
e.g.,) Waste power generation, recycling facilities, final disposal sites, etc.

Waste power generation

Disposal site improvement (Fukuoka method)

Four steps to expanding JCM use

1. Take the initiative to create international rule
Lead discussions on the Paris Agreement Article 6 (market mechanism) to make JCM the de facto world standard.

2. Fund diversification
Co-financing with JBIC and JOIN, formation of JCM projects with ADB, use of World Bank funds, and improvement of the environment for JCM projects with a focus on private sector funds.

3. International and regional development
Expand target regions in the Indo-Pacific, introduce advanced technologies through collaboration with third countries such as the U.S. and Australia, and apply JCM in CORSIA.

4. Development of a decarbonized market
Contribute to the transition from the formulation of long-term strategies to the implementation of countermeasures, support wide-spread creation of zero-carbon cities, and use the JCM platform for overseas installation of environmental infrastructure.

Tables of seminars at Japan Pavilion (1st week)

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*TBC

GMT	11/2(Tue)	11/3(Wed)	11/4(Thu)	11/5(Fri)	11/6(Sat)
10:30 ~ 12:00	**National Institute for Environmental Studies (NIES)** Development and utilization of information platform towards climate resilient societies in Asia-Pacific Region	**PCCC** Strengthened Resilience to Climate Change in the Pacific - from Capacity Building to Climate Investment	**Institute for Global Environmental Strategies** Mutual Learning Program for Enhanced Transparency: capacity building for reporting under Article 6.2 and 13	**University of Tokyo** The Official Launch of Energy Transition Initiative - Center for Global Commons (ETI-CGC), University of Tokyo - Seeking a pathway of Japan to achieve the carbon neutral by 2050 -	**Sasakawa Peace Foundation** Climate Change and the Ocean —Contribution of the UN Ocean Decade
13:00 ~ 14:30	**MOE, ICLEI, IGES** Leading efforts towards achievement of Zero Carbon City （Tentative）	**Japan International Cooperation Agency (JICA) Overseas, Environmental Cooperation Center (OECC)** Climate action under the Paris Agreement toward a decarbonized and climate resilient society in Southeast Asian Countries -Lessons learned from JICA's Technical Cooperation in Indonesia, Thailand, and Viet Nam-	**JICA Ogata Sadako Research Institute for Peace and Development, Hosei University, Oberlin University, OECC, IGES** The challenging issues of Environment/Climate Change Institution and Policy under SDGs Regime	**University of Tokyo** University of Tokyo has just joined in Race to Zero: Dialogue with Students	
15:00 ~ 16:30	**MOE** GHG Monitoring Projects for the Global Stocktake 2023	**MOE** Nature-based Solutions to Combat Climate Change and Their Diverse Benefits	**Sasakawa Peace Foundation** For Strengthening Resilience of Coastal Cities —CORVI Platform		
17:00 ~ 18:30		**IEA** The role of hydrogen in the transition to net-zero	**UNU-IAS, OECC** Carbon neutrality and social agenda - Role of UNU -		

Table of seminars at Japan Pavilion (2nd week)

環境省

*TBC

GMT	11/8(Mon)	11/9(Tue)	11/10(Wed)	11/11(Thu)	11/12(Fri)
10:30 ~ 12:00	**OECC** Implementing the JCM and creating various benefits for stakeholders	**Nikkei, Inc.** A Road to develop a net-ZERO society Presented by NIKKEI net-ZERO Project	**MOE, IGES, OECD, ICLEI** Roles of multi-stakeholders towards subnational decarbonization （Tentative）	**MOE** Green hydrogen to support the energy transition toward a decarbonized society	**METI** Carbon Neutral Policy Japan Initiative (TDB)
13:00 ~ 14:30	**Climate Youth Japan（CYJ）** Learnings from the Tokyo 2020 Olympics and Expectations Towards the 2025 Osaka Expo from a Youth Perspective		**Office for Fukushima Regeneration Project Ministry of the Environment** Fukushima, 10 years passed Fukushima, to the next stage	**RITE, International Institute for Applied Systems Analysis (IIASA)** Energy demand changes induced by technological and social innovations and the model intercomparison	**MOE** Toward Strengthening Transparency activities by the private sectors ～from the experience of the Partnership to Strengthen Transparency for co-Innovation(PaSTI) in Asia～
15:00 ~ 16:30	**Japan Climate Initiative** Towards Zero: Japanese Non-State Actors Tackling Climate Crisis	**METI, NEDO** ICEF2021 Pathways to Carbon Neutrality by 2050 with Roadmap Launching Event	**METI** Green innovation to contribute to energy transition in the Asian region with JCM and CEFIA	**MOE, IGES, NIES** Partnerships between Japan and the rest of Asia for a new age – Using the Asia-Pacific Integrated Model (AIM) to pave the way for carbon neutrality in the region	
17:00 ~ 18:30	**METI** Utilization of satellite data and sustainable tropical peatlands management through Japan Industrial-Government-Academia Collaboration	**National Institute of Advanced Industrial Science and Technology (AIST)** Challenge of AIST toward realizing carbon neutrality	**CHAdeMO Association** Tackling the Climate change with CHAdeMO V2G	**MOE** Circular Economy * Carbon Neutrality	

List of Exhibition 1/3

	Organization	Overview	Key Points
Lifestyle/Regional	**Fukushima Decarbonization x Reconstruction**	The Ministry of the Environment will introduce the efforts toward decarbonization and town development aiming at recovery from the Fukushima nuclear accident and advancement of decarbonization in the area. And we will present the current situation in Fukushima correctly, which prevents harmful rumors.	Evacuees have gradually returned, and Fukushima has become a pioneer in aiming to be an environmentally advanced region in the wake of the earthquake. The Japan Pavilion will introduce Fukushima's efforts for environmental regeneration and becoming an environmentally advanced region, and hold a seminar hosted by the Ministry of the Environment on November 10.
	CYJ (Climate Youth Japan)	Evaluation of the Tokyo Olympics from the perspective of sustainability and recommendations for the 2025 Osaka Expo.	National youth network on typical climate change issues in Japan.
Energy	**Panasonic Corporation**	Contributing to local decarbonization by utilizing stationary hydrogen fuel cells as a distributed power source	First installation of stationary hydrogen fuel cells in specific areas
	Mitsubishi Heavy Industries, Ltd.	Highly efficient gas turbines aiming for decarbonization in the energy sector by using hydrogen as fuel.	Using hydrogen in gas turbines with world-class highest energy efficiency.
	TODA CORPORATION	Practical application of floating offshore wind power generation in Goto City, Nagasaki Prefecture.	The optimal solution for localization and cost reduction measures.
	Ministry of the Environment (MOE)	The MOE aims to promote decarbonization through hydrogen supply chain demonstration projects using local energy resources.	The hydrogen demonstration projects across Japan can help the efficient use of regional energy resources, to contribute to the large-scale CO2 reduction and local revitalization.

List of Exhibition 2/3

	Organization	Overview	Key Points
● Materials/Circular economy	**The Chugoku Electric Power Co.,Inc Kajima Corporation Denka Company Limited Landes Co., Ltd. Mitsubishi Corporation**	Commercial ready Japanese Carbon Negative Concrete technology already used in various applications in Japan	✓The world's first commercialized carbon negative concrete ✓Combination of cement replacement with special additive and carbonation curing ✓Developed by Kajima, Chugoku Electric, Denka, Landes and business development by Mitsubishi Corporation
	JGC Group	Three chemical recycling technologies, monomerization, pyrolysis, and gasification, that can significantly improve the recycling rate of plastic waste.	Making it possible to decompose plastic waste which is difficult to recycle by other methods, into various products e.g. variety of chemicals, oil, ammonia, hydrogen by making full use of three chemical recycling technologies that have the world's only long-term commercial track record.

List of Exhibition 3/3

	Organization	Overview	Key Points
Satellite	**Japan Aerospace Exploration Agency**	Global observation of Greenhouse Gas emissions and removals such as forests using Greenhouse gases Observing Satellite IBUKI and Advanced Land Observing Satellite-2 DAICHI-2.	Only Japan has more than 10 years of global GHG observation data and global forest data using Synthetic Aperture Radar effective for forest monitoring.
	IHI Corporation ／ Sumitomo Forestry CO.,Ltd.	In order to take specific action against global climate change, we will expand the world's only sustainable peatland management model all over the world; by using satellite, UAV and meteorological observation technologies.	The only initiative in the world using scientific field data and state-of-the-art technology for managing tropical peatland.
CCS	**Mitsubishi Heavy Industries, Ltd. (MHI)**	CO2 capture technology and CCUS initiatives	MHI has the world's largest market share of CO2 capture system from exhaust gas. Its capture rate, purity, and energy efficiency are the world best in class. MHI also contributes to the CCUS value chain through a wide range of technologies and solutions that go beyond CO2 capture technology to accelerate the carbon neutrality.
	Japan CCS Co., Ltd.	Results and future prospects of the Tomakomai CCS demonstration project	The Tomakomai CCS demonstration project is the world's first CCS project conducted near a large city with the understanding of the local community.
Other	**Hitachi, Ltd.**	Hitachi's efforts towards decarbonization, including its Cyber-Proof of Concept which can simulate carbon neutrality transition scenarios for societies.	A unique simulation technology integrating AI and the humanities that can visualize multiple decarbonization scenarios and support policy-planning for an uncertain future through human-AI cooperation.

List of Exhibition at Virtual Pavilion 1/7

	Organization	Overview	Key Points
Energy	**JGC Group**	Creation of a hydrogen energy supply chain including ammonia fuel	The world's first successful demonstration of a hydrogen / ammonia value chain through ammonia synthesis and power generation using green hydrogen derived from renewable energy, and ammonia fueled power generation.
	Hitachi Zosen Corporation	Methane synthesis (Methanation) equipment from the raw materials of CO2 and hydrogen.	Succeeded in the development of our own high-performance methanation catalyst, achieving high-efficiency and high-purity methane synthesis.
	NEC Corporation	Providing the adjustment capability required to make renewable energy the main power source by supporting demand response on distributed energy resources (with a virtual power plant, or VPP).	Participated in a demonstration project by the Ministry of Economy, Trade and Industry to build a VPP not yet spread in Japan. Also providing cloud services to revitalize the VPP market.
	Challenergy Inc.	Vertical-axis wind power that can generate electricity even in harsh wind conditions such as typhoons	The world's first practical application of the Magnus Vertical Axis Wind Turbine (Magnus VAWT)
	Toshiba Corporation	Lightweight and flexible film-type perovskite solar cells and highly efficient Cu2O tandem solar cells	Perovskite solar cells with the world's highest efficiency of 15.1% for a large-area film-type module. Cu2O tandem solar cells with the energy conversion efficiency of 26.1%.
	Asahi Kasei Corporation	Large-scale alkaline water electrolyzer that produces hydrogen using renewable energy.	The 10MW alkaline water electrolyzer delivered to Fukushima Hydrogen Energy Research Field (FH2R) by NEDO is the largest single unit in the world

List of Exhibition at Virtual Pavilion 2/7

	Organization	Overview	Key Points
Energy	**Fujitsu Japan Limited**	Providing energy-saving solutions using high-efficiency gallium nitride high-electron mobility transistors.	Fujitsu has developed a GaN-HEMT power amplifier with the world's highest power conversion efficiency.
	TROMSO CO., LTD	Ground rice husks are compressed, heated and molded to produce solid fuel(briquette). The fuel is being used in developing countries as an alternative fuel for coal and firewood.	Applied technology utilizing declining local shipbuilding technology. Expanded to Africa as part of the JICA project.
	Daiseki Co., Ltd.	Industrial waste treatment emitting less GHG, and recycled fuel saving fossil fuels	One of the best companies in Japan for industrial waste treatment emitting less GHG
	Next Energy & Resources Co., Ltd.	Circular economy and wider use of renewable energy with self-consumption PV systems.	Easy to install the solar power systems in places which have previously been of little value, ensuring safety and durability regardless of technical level or conditions.

List of Exhibition at Virtual Pavilion 3/7

	Organization	Overview	Key Points
Materials	**Biomass Resin Holdings Co.,Ltd.**	Rice resin, a biomass plastic derived from non-edible rice and rice resources produced in fallow fields.	Unlike conventional plant-derived plastics, the plant can be reduced in size for production of smaller quantities.
	The Chugoku Electric Power Co.,Inc Kajima Corporation Denka Company Limited Landes Co., Ltd. Mitsubishi Corporation	Commercial ready Japanese Carbon Negative Concrete technology already used in various applications in Japan	✓The world's first commercialized carbon negative concrete ✓Combination of cement replacement with special additive and carbonation curing ✓Developed by Kajima, Chugoku Electric, Denka, Landes and business development by Mitsubishi Corporation
	AGC Inc.	Alternative from HFCs and HCFCs to HFOs with extremely low GWP(Global Warming Potential)	AGC is one of the few companies in the world that has commercialized multiple HFOs with our unique technology
	Eco Research Institute Ltd.	Developed and commercialized technology of ERI is the only one in the world that processes virgin paper or waste paper from paper companies and printing factories into fine powders to create bio-based plastics containing more than 51% paper.	The Eco Research Institute is the only company with the technology to create materials containing paper powder. There are no similar products in the world. It is expected that the uniform mixing of resin mass produced with drying paper powder is almost impossible with existing equipment in the plastic industry.
	Business Innovation Partners Co., Ltd.	Practical application of biodegradable bioplastics made from hemicellulose contained in unused resources such as trees and plants.	The world's first successful development and manufacture of bioplastic resin using hemicellulose as a raw material.

List of Exhibition at Virtual Pavilion 4/7

	Organization	Overview	Key Points
Circular economy	**JGC Group**	Three chemical recycling technologies, monomerization, pyrolysis, and gasification, that can significantly improve the recycling rate of plastic waste.	Making it possible to decompose plastic waste which is difficult to recycle by other methods, into various products e.g. variety of chemicals, oil, ammonia, hydrogen by making full use of three chemical recycling technologies that have the world's only long-term commercial track record.
	Asahi Group	Change the source of electric power generation using biomethane gas of wastewater treatment process from a thermal heat source (via combustion), to electrochemical power generation by using fuel cell.	Succeeded in continuous stable power generation for more than 10,000 hours in the laboratory.
	AC Biode Ltd.	Upcycling biomass ash and sewer sludge ash into absorbent or antibacterial materials.	The only technology in the world to recycle ash as functional materials that can adsorb contaminants not only physically but also chemically.

List of Exhibition at Virtual Pavilion 5/7

	Organization	Overview	Key Points
● Satellite observation	**Japan Aerospace Exploration Agency**	Global observation of Greenhouse Gas emissions and removals such as forests using Greenhouse gases Observing SATellite IBUKI and Advanced Land Observing Satellite-2 DAICHI-2.	Only Japan has more than 10 years of global GHG observation data and global forest data using Synthetic Aperture Radar effective for forest monitoring.
	Asia Air Survey Co., Ltd.	Aircraft mounted laser devices measure the shape of forests, etc., making it possible to measure carbon accumulation in forests more accurately.	Track record of analyzing forest resources not only in Japan but also in forests in Southeast Asia and Northern Europe.
	Toshiba Energy Systems & Solutions Corporation	Social implementation and development of CCUS which separates and captures CO2 from incineration plants and power plants, and power to chemicals (P2C) which produces valuable resources with renewable energy using CO2 as a raw material.	As for CCUS, we constructed the world's first large-scale carbon capture plant with BECCS capability that captures CO2 from the biomass power plant flue gas, and as for P2C, we are developing a CO2 electrolyzer which has the world's highest CO2→CO conversion rate and studying SAF (Sustainable Aviation Fuel) business model as one of the uses of CO. Both projects are commissioned by Ministry of the Environment.
	JGC Group	CO2 separation and recovery technology HiPACT and DDR-type zeolite membrane	Reduced CCS costs due to high temperature durability and CO2 absorption performance(absorption method), or high CO2 separation performance and durability under high CO2 partial pressure (membrane separation method).

List of Exhibition at Virtual Pavilion 6/7

	Organization	Overview	Key Points
CCS/CCUS	**Mitsubishi Heavy Industries, Ltd. (MHI)**	CO2 capture technology and CCUS initiatives	MHI has the world's largest market share of CO2 capture system from exhaust gas. Its capture rate, purity, and energy efficiency are the world best in class. MHI also contributes to the CCUS value chain through a wide range of technologies and solutions that go beyond CO2 capture technology to accelerate the carbon neutrality.
	Japan CCS	Results and future prospects of the Tomakomai CCS demonstration project	The Tomakomai CCS demonstration project is the world's first CCS project conducted near a large city with the understanding of the local community.
	Carbon Recycling Fund Institute	Providing research grants for carbon recycling that utilizes CO2 as a resource.	Support for basic research with excellent originality and innovation in carbon recycling.

List of Exhibition at Virtual Pavilion 7/7

	Organization	Overview	Key Points
Lifestyle/Regional development	**NISSIN FOODS HOLDINGS CO., LTD.**	Cup Noodle made with plant-based meat technology, sustainable palm oil, and a container with more than 80% biomass content.	In addition to reducing the environmental impact of Cup Noodle, the Group has achieved the SBT certification and is promoting further CO2 reduction.
	Losfee Co., Ltd.	Mitigation of heat in cities and reduction of air-conditioning energy consumption of architecture by nature-based designed sun-shade (Fractal shape) reproducing the trees	The fractal shade fabric and paper which inspired by ORIGAMI and trees are unique patents
	SEVEN & i HLDGS. Co., Ltd.	Seven & i aims at carbon neutrality and a circular economy: store operations with 100% renewable energy using reused batteries, PET bottle collection machines installed at the group stores to promote recycling.	Seven & i formulated the group-wide environmental declaration as a general retail/distribution group. Aiming for a prosperous and sustainable society, Seven & i group engages with customers at the stores.
	Foundation for Promoting Personal Mobility and Ecological Transportation	Aiming to reduce regional transport impact on the environment by popularizing slow mobility (electric vehicles with a maximum speed of less than 20km / h)	Co-benefits include meeting the demand for decarbonization, and low-speed, low-volume transport for an aging population.
	CYJ (Climate Youth Japan)	Evaluation of the Tokyo Olympics from the perspective of sustainability and recommendations for the 2025 Osaka Expo.	National youth network on typical climate change issues in Japan.
Other	**Japan International Cooperation Agency（JICA）**	Formulated the Global Agenda, which is an issue-specific strategy for climate change, setting the pillars for promoting the implementation of the Paris Agreement and promoting co-benefits climate change countermeasures.	One of the few development aid agencies that implements cooperation by combining loans, grants, technical cooperation, and private sector investment finance.
	OSINTech	Building an information platform that focuses only on primary information from governments, UN agencies, NGOs, etc.	The only service in Japan that visualizes the trends of each country's rule making trend using AI.
	ARK INC.	With its mission to decentralize aquaculture, ARK is popularizing a small, distributed, closed recirculating aquaculture system that allows anyone to farm fish anywhere.	Amid the trend for larger facilities, this rare initiative enables people to farm fish by themselves in an area as small as one parking space.