

JAPANESE INDUSTRY AND POLICY NEWS

July - August, 2021

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Legislation and Policy News

International standard for smart city infrastructure development and operation framework issued

The Ministry of Economy, Trade and Industry announced on July 8 that the International Organization for Standardization (ISO) has issued an international standard on the "framework for the integration and operation of smart community infrastructure" proposed by Japan. With the spread of this standard, the process of development, operation, and maintenance of urban infrastructure will be standardized worldwide, and the impact of differences in business customs and development practices of the destinations will be minimized. The further advancement of Japanese companies in the overseas smart city market will be expected.

In smart community infrastructure, multiple systems such as energy, transportation and ICT systems that make up a city are required to be coordinated and function in cooperation with each other without waste. Under such circumstances, the problem is that the products of Japanese companies, which have a high degree of contribution to energy saving, are not properly evaluated because the cooperation of multiple individual infrastructures is not properly planned. Furthermore, since a series of processes such as urban development, urban operation, and infrastructure maintenance are different for each country / region, a great deal of cost is forced, such as asking a consultant who is familiar with local projects to deal with this.

The two international standards issued this time were formulated by considering a framework that Japanese companies can easily handle. ISO37155-1 is mainly for the purpose of ensuring proper interaction between multiple infrastructures, and ISO37155-2 is mainly for the purpose of validating and verifying infrastructures in each infrastructure life cycle. For example, the roles, responsibilities, and recommendations of stakeholders are defined for each phase, such as "In the basic design phase, identify interactions with other infrastructures and consider countermeasures based on the risks to each.

When Japanese companies expand overseas in smart city and smart community infrastructure development projects, they often expand into

individual infrastructures and components rather than developing the entire city. On the contrary, the US and European companies expand into the entire city and they tended to have an advantage in business. In response to this situation, it is expected that this international standard will become widespread and promote the active overseas expansion of Japanese infrastructure and component manufacturers.

METI website: https://www.meti.go.jp/english/press/2021/0708_002.html



Concept of ISO from METI website

Emissions in 2030, reduced by about 37% in the industrial sector and about 50% in the business sector

On July 26, the Ministry of Economy, Trade and Industry and the Ministry of the Environment presented a draft of the "Global Warming Countermeasures Plan" at a joint meeting of the two ministries to consider Japan's climate change countermeasures. It clarified the goal of reducing greenhouse gases by 46% from FY2013 to FY2030, and reduce energy-derived CO2 by about 66% in the household sector, about 37% in the industrial sector, and 50% in the business and other sectors.

The following is a guideline for the amount of energy-derived CO2 emitted by the secretariat in each sector in FY 2030.

Estimated emissions of energy-derived CO2 in FY 2030 in each sector

	FY 2013	Estimated amount of emissions in FY 2030	Reduction rate
Industrial sector	463	290	37%
Business sector, etc.	238	120	50%
Household sector	208	70	66%
Transportation sector	224	140	38%
Energy conversion sector	106	60	43%
Total of energy-derived CO2	1,235	680	45%

Unit: Millions of t-CO2

Other 2030 targets are as follows.

- Non-energy-derived CO2: Approximately 70 million tons-CO2 (down approximately 15% from FY2013)
- Methane: Approximately 26.7 million tons-CO2 (down approximately 11%)
- Nitrous oxide: Approximately 17.8 million tons-CO2 (down approximately 17%)
- 4 gases such as CFC substitutes (HFCs, PFCs, SF6, NF3): Approximately 21.8 million tons-CO2 (down approximately 44%)

Regarding greenhouse gas sinks, the goal was to secure about 38 million tons-CO2 as a forest sink, and about 9.7 million tons-CO2 by promoting measures for agricultural soil carbon sinks and urban greening.

The draft plan states that carbon neutrality in 2050 and the achievement of the

46% reduction target in 2030 is not easy at all, and decarbonization is positioned as one of the main issues in all socio-economic activities. In order to achieve the goal, the government would promote policies that contribute to growth centered on decarbonization.

In addition, looking at emissions on a consumption basis (carbon footprint), the report introduced that about 60% of the total is from households, saying that "each citizen needs to work on global warming countermeasures." It also includes the promotion of "shifting to a carbon-free lifestyle."

The current global warming countermeasure plan was approved by the Cabinet in May 2016. A joint meeting was launched in September 2020, and review work is still underway.

METI website (in Japanese):

https://www.meti.go.jp/shingikai/sankoshin/sangyo_gijutsu/chikyu_kankyo/ondanka_wg/008.html

Survey and Business Data

World production of 8 passenger vehicle manufacturers of Japan increased by 30% in the first half of the year

According to the production, sales and export results of the first half of 2021 (January to June) announced by eight passenger car manufacturers on July 29, the total global production of the eight companies increased by 30.0% from the same period of the previous year to 12,299,447. It is the first time in three years that it has exceeded the same period of the previous year. In the same period of the previous year, it was depressed due to the spread of COVID-19, and the reactionary increase came out. On the other hand, the global shortage of semiconductors has had an impact.

Overseas production increased by 38.1% to 8,307,285 units. It is the first time in four years that Nissan Motor will be positive in the first half. Honda's production in China reached a record high in the first half due to strong sales of the sports utility vehicle (SUV) "CR-V" and the hatchback "Civic."

Domestic production increased by 16.0% to 3,992,162 units. Seven companies were positive except for Honda, which was affected by production adjustments. Daihatsu's production of registered vehicles reached a record high for the first half of the year, and the total number of vehicles including micro vehicles also reached a record high of 494,261 units. The total domestic sales of the eight companies increased by 11.7% to 2,241,518 units.

The shortage of semiconductors affected the production of each company. Mitsubishi Motors' global production was affected by about 57,500 units in March-June. On the other hand, Toyota Motor Co., Ltd., whose global sales exceeded 5 million units for the first time in the first half of the year, explained that "the impact on semiconductor shortage production could be limited" (Toyota).

Global production in June 2009 increased by 26.5% from the same month of the previous year to 2,106,512 units. It was positive for 5 consecutive months.

Production, Sales & Export of 8 Passenger Vehicle Manufactures of Japan
(Jan.-Jun. 2021)

	Domestic production	Domestic sales	Export	Overseas production	Total production
Toyota	1,558,436 20.0	815,863 14.8	936,821 21.0	2,958,751 46.9	45,171,187 36.3
Nissan	284,597 22.5	251,953 6.3	170,122 49.8	1,584,043 29.0	1,868,640 28.0
Honda	316,493 -14.3	315,806 0.8	24,451 -49.8	1,817,263 29.3	2,133,756 20.3
Mitsubishi	224,117 5.7	43,900 16.2	115,988 -4.7	291,035 27.4	515,152 17.0
Mazda	418,604 43.3	90,462 1.3	349,149 54.8	184,186 -6.1	602,790 23.5
Suzuki	451,330 14.3	346,345 18.0	105,347 38.1	1,033,195 71.4	1,484,525 48.8

Daihatsu	82,544 19.4	319,160 17.3	0 0	301,751 46.1	798,012 28.2
Subaru	242,324 6.9	58,029 9.1	198,663 6.9	137,061 0.8	379,385 4.6
Total	3,992,162 16.0	2,241,518 11.7	1,900,541 23.0	8,307,285 38.1	12,299,447 30.0

* Unit: No. of unit (Unit below: % to the same period of the previous year)

Company & Organization News

Supercomputer "Fugaku" surpasses "K", the world's number one for three consecutive terms

RIKEN and Fujitsu announced on July 28 that the jointly developed supercomputer "Fugaku" ranked first in four world rankings competing for supercomputer computing performance. The rank is announced every six months, and has achieved four crowns for three consecutive terms, following June and November last year.

Fugaku won the "TOP500", which shows the overall performance that enables stable execution of high-speed calculations, and the "HPCG" which mainly measures the processing performance when simulating (simulating experiments) physical phenomena with a computer, "HPL-AI" which is a calculation index often used in the development of artificial intelligence (AI), and "Graph500" which shows the analysis performance of big data and phenomena expressed in networks such as road networks. The power of Fugaku in a wide range of applications was shown again.

In TOP500, Fugaku's predecessor, K won the championship in June and November 2011, but Fugaku achieved the feat of maintaining the top position for a longer period of time.

According to the data of the organization that aggregates this ranking, the computers up to 4th place was the same as last time. The second place was "Summit" of Oak Ridge National Laboratory, the third place was "Sierra" of Lawrence Livermore National Laboratory and the fourth place was "Shenwei Light of Taihu Lake" of Wuxi Supercomputer Center, China. In fifth place was

“Perlmutter” from Lawrence Berkeley National Laboratory, which just went live this spring.

As the main Japanese who ranked 10th or lower, the "AI Bridging Cloud (ABCI)" of the National Institute of Advanced Industrial Science and Technology, which was 14th last time, was significantly upgraded and ranked 12th as "ABCI 2.0".

The ranking and calculation speed of the main supercomputers in TOP500 are as follows(number of calculations per second, K = ten quadrillion).

- 1) Japan Institute of Physical and Chemical Research "Fugaku" 44K 2010 trillion times
- 2) Oak Ridge National Laboratory, USA "Summit" 14K 8600 trillion times
- 3) Lawrence Livermore National Laboratory, USA "Sierra" 9K 4640 trillion times
- 4) Wuxi Supercomputer Center, China " Shenwei Light of Taihu Lake " 9K 3014 trillion times
- 5) Lawrence Berkeley National Laboratory, USA "Perlmutter" 6K 4590 trillion times
- 6) US semiconductor manufacturer NVIDIA "Selene" 6K 3460 trillion times
- 7) Guangzhou Supercomputer Center, China "Tianhe 2A" 6K 1444 trillion times
- 8) Jülich Research Center, Germany "Jewels Booster Module" 4K 4120 trillion times
- 9) Italian energy giant Any "HPC5" 3K 5450 trillion times
- 10) University of Texas, USA "Frontera" 2K 3516 trillion times

Fujitsu website: <https://www.fujitsu.com/global/about/resources/news/press-releases/2021/0628-01.html>



Image of “Fugaku” from Riken website

Mitsubishi Corporation invests in an Australian carbon credit sales company to absorb CO2 by regenerating virgin forest

Mitsubishi Corporation announced on July 29 that it has acquired a 40% stake in Australian Integrated Carbon Pty Ltd (AIC), which absorbs CO2 and sells acquired carbon credits through a primeval forest restoration project in Australia.

AIC's primeval forest restoration project promotes the restoration of primeval forests that have disappeared due to past logging and overgrazing. By reviewing and improving the livestock farming process of farmers, the primeval forest will be regenerated, and by absorbing and fixing CO2 in the atmosphere, carbon credits officially certified by the Australian government will be obtained and sold. Through the expansion of its portfolio, AIC is expected to contribute to the absorption of up to about 5 million tons of CO2 annually and the cumulative total of about 100 million tons of CO2 by 2050.

Mitsubishi Corporation intends to continue its self-help efforts to reduce its own CO2 emissions, and to absorb CO2 in the atmosphere through such primeval forest restoration projects, etc., and contribute to the realization of a global low-carbon society. With this capital participation as a foothold, they will acquire the know-how of a competitive primeval forest restoration project and expand the project to Australia and other regions of the world. The company plans to work on solving important sustainability issues such as "coexistence with the community".

The Australian Government has contributed a total of A \$ 4.55 billion since 2015 to establish a carbon credit purchase system and has a large number of bids to date. The volume of transactions in the bidding market reached one of the largest in the world at about 16 million tons per year in 2020, and is still growing.

In addition, the primeval forest restoration project achieves both high business feasibility and cost competitiveness among decarbonization methods, and brings about maintenance of biodiversity, improvement of soil, improvement of

resistance to drought, stabilization of profits of farmers, etc. The Australian government has encouraged the introduction of the project and has positioned it as an important initiative in achieving the goals of the Paris Agreement in the country.

Mitsubishi corporation website:

<https://www.mitsubishicorp.com/jp/en/pr/archive/2021/html/0000047526.html>

Human-Induced Regeneration



Deforested by overgrazing and other unsustainable practices



Regenerated thanks to more sustainable grazing

Image from Mitsubishi corporation website

Joint survey on commercial-scale hydrogen imports in the Netherlands, Mitsubishi Corporation and Chiyoda Corporation

On July 30, Mitsubishi Corporation and Chiyoda Corporation announced that it will start considering importing hydrogen from overseas to the Netherlands on a commercial scale together with two Dutch companies, utilizing Chiyoda Corporation's hydrogen storage and transportation technology (SPERA Hydrogen TM).

"SPERA hydrogen" is a technology that reacts hydrogen with toluene to convert it to methylcyclohexane (MCH), and stores and transports hydrogen in the state of MCH. MCH can be handled at normal temperature and pressure, and has the advantage of being able to utilize the infrastructure of existing petrochemical products.

This time, Mitsubishi Corporation, Chiyoda Corporation, Rotterdam Port Authority of the Netherlands and Koole Terminal have agreed to conduct a joint survey on the construction of an international supply chain by importing hydrogen to Rotterdam Port in the Netherlands using "SPERA hydrogen", and signed a memorandum of understanding between the four companies.

Large-scale hydrogen imports are required to reduce CO2 emissions to zero. Therefore, the Rotterdam Port Authority announced the hydrogen master plan in May 2020, aiming to promote the construction of a supply chain for green hydrogen in northwestern Europe and become a hub for hydrogen imports.

They promote efforts with the goal of handling 20 million tons of hydrogen annually at the Port of Rotterdam by 2050, with the goal of handling 100,000 to 200,000 tons of hydrogen in 2025 and 300,000 to 400,000 tons of hydrogen in 2030. It is expected that "SPERA hydrogen" will play an important role in promoting this initiative.

Based on this memorandum, with the aim of realizing a business that promotes the import and use of competitive hydrogen for the reduction of long-term CO2 emissions in Europe, the four companies will cooperate to evaluate and examine the technical and commercial aspects. Mitsubishi Corporation will lead the commercial side in building the hydrogen supply chain business, and Chiyoda Corporation will mainly conduct engineering and technical studies centered on SPERA hydrogen technology.

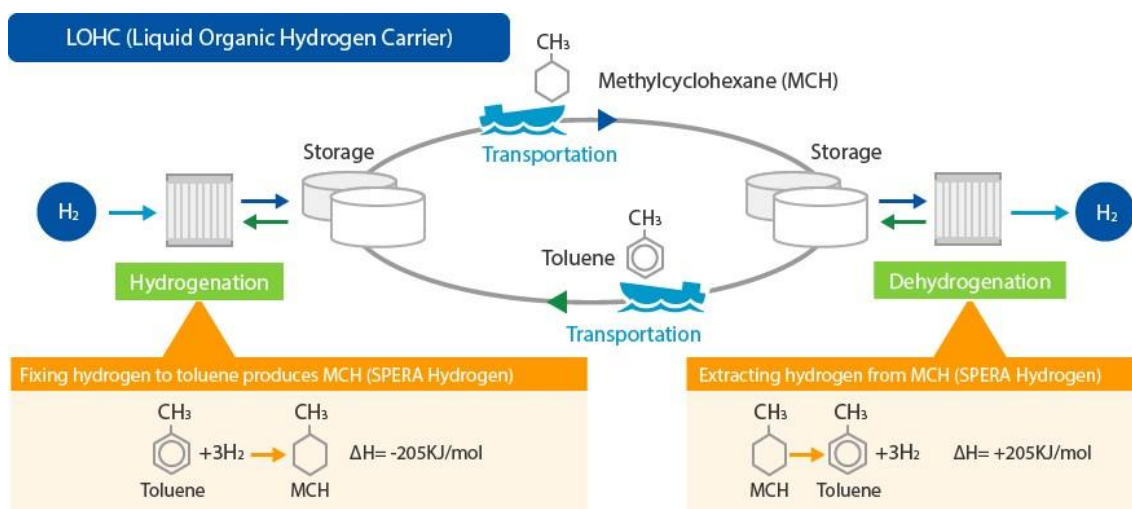
MCH is widely used as a solvent for correction fluid, and can be transported in a liquid state at normal temperature and pressure. In addition, by making maximum use of the infrastructure, standards, and standards of existing petrochemical products, the investment burden on society can be reduced.

Chiyoda Corporation has completed the world's first "international hydrogen supply chain demonstration" connecting Brunei Darussalam and Japan in

December 2020 using this MCH-based technology (more than 100 tons in 10 months of operation) safely and stably.

Mitsubishi corporation website:

<https://www.mitsubishicorp.com/jp/en/pr/archive/2021/html/0000047567.html>



Concept of SPERA hydrogen system of Chiyoda Corporation
from Mitsubishi corporation website

JFE Steel Co., Ltd. and Hiroshima University, promote the use of steel slag on land and sea for SDGs

On August 3, JFE Steel Corporation and Hiroshima University announced that they will hold a second joint research course aimed at accelerating the practical application of technology for effective utilization of steel slag which is a recycled resource. This joint research confirms the effective utilization in the land & sea fields and further advances the research in the first phase of the course from 2018 toward practical use.

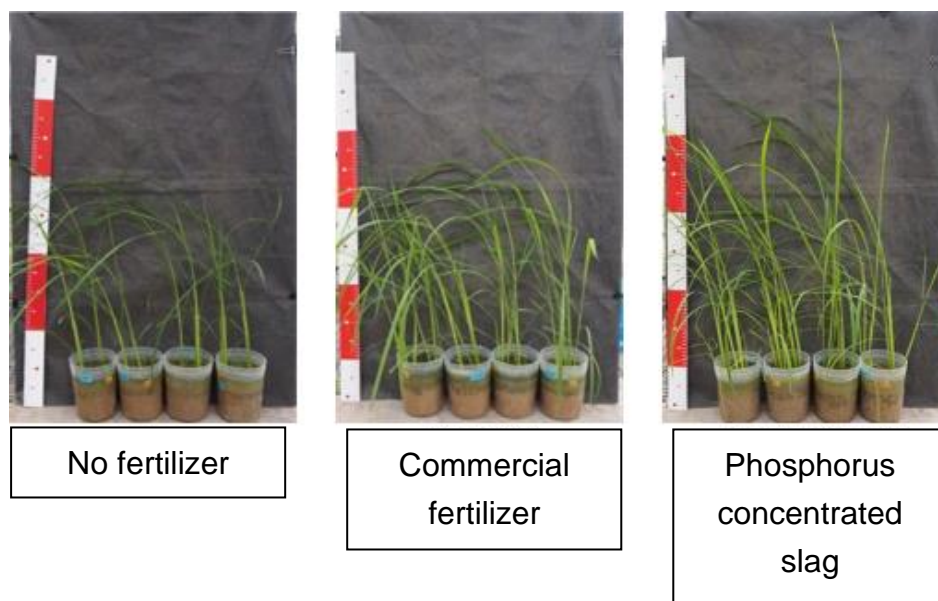
- Green Field Project

In the first phase, they investigated the characteristics of phosphorus-enriched slag under development by JFE Steel as a fertilizer. As a result of studying crop species and soil conditions that can be effectively absorbed, it became clear that plants can absorb phosphoric acid in phosphorus-enriched slag and

have an effect of improving growth (photo). In the second phase, they plan to further consider improving absorption efficiency.

In addition, in the slag produced by JFE Steel's new smelting process “DRP”, not only the effect of applying silicon but also the effect of improving soil pH was confirmed in gramineous crops that require a large amount of silicon. In the second phase, they plan to start a practical test and aim to commercialize it as a fertilizer.

State of rice cultivation



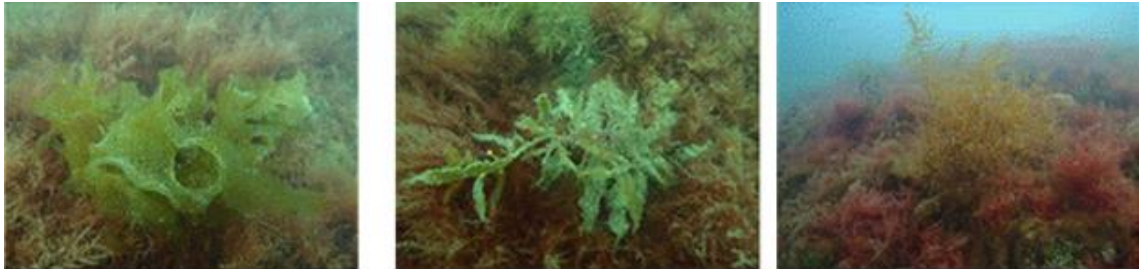
- Marine Forest Project (sea area field)

In the first phase, they investigated the biofouling base and water purification function of massive slag materials. It was confirmed that large brown algae and small seaweeds settled and propagated (photo) on the slag material laid on the seabed along the coast of the Seto Inland Sea, and could serve as an attachment base for seaweeds.

In the second phase, they will develop technology to form underwater forests that can be expected to have high ecological services (ecosystem functions that are beneficial to people) using slag as a base material. They will conduct research focusing on carbon dioxide fixation and ocean acidification prevention function by the alkaline component of slag, and improvement of blue carbon and biological productivity by seaweed.

Seaweeds that have settled and propagated on slag materials installed along the coast of the Seto Inland Sea

Large brown algae



Small seaweeds



JFE website: <https://www.jfe-steel.co.jp/release/2021/08/210803.html>

Chubu Electric Power and Kawasaki Kisen install tidal current power generation in Canada, the first phase, 500 kW in 2023

Chubu Electric Power Co., Inc. and Kawasaki Kisen Co., Ltd. announced on August 4 that they have signed a joint development agreement with DP Energy, an Irish renewable energy development company, for the "Uisce Tapa tidal current power generation project" planned in Nova Scotia, Canada. This is the first time for a Japanese company to participate in a tidal current power generation business overseas.

This project will start operation of the first submersible turbine generator in 2023 and the second and third submersible turbine generators in 2026 in the Bay of Fundy, Nova Scotia, Canada. The power generation output is 1,500kW x 3 units. The submersible turbine generator is manufactured by Andritz of Austria.

The estimated annual power generation is expected to be about 17 million kWh (equivalent to about 5,400 ordinary households).

In addition, a 15-year electricity sales contract (\$ 530 / MWh) will be signed with Nova Scotia Power Incorporated, and the Ministry of Natural Resources of Canada will provide a total of approximately C\$ 30 million as a subsidy for the project. The business license is currently under consideration for approval by the Canadian Ministry of Fisheries and Oceans.

The contract is limited to the contribution of expenses for the development of the project, and the company will continue to consider participating in the project with the start of construction of the first unit.

Tidal current power generation is a method that uses the kinetic energy of the tide flow and generally converts it into rotational energy with a water wheel to generate electricity. The maximum tidal range of the Bay of Fundy, where the project is carried out, is about 16m, which is one of the most tidal points in the world. The peak current exceeds 10 knots (5 m / s), and it is suitable resources for tidal current power generation.

DP Energy is engaged in renewable energy development projects such as wind power, ocean energy, and solar power. According to the DP Energy website, the Uisce Tapa current power generation project plans to increase to 9 MW in the second phase after the completion of the first phase (1,500 kW x 3 units). The project will be an important step in achieving the state's strategic marine renewable energy goal of introducing 300 MW of current power. It also has a goal of using tidal current power to cover 10% of the state's total electricity demand.

Chubu electric power website:

https://www.chuden.co.jp/english/corporate/releases/pressreleases/1206794_5163.html

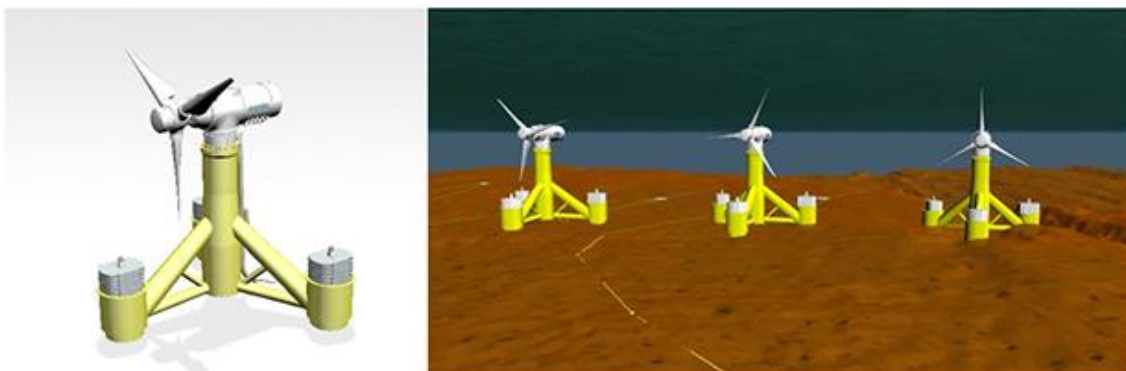


Image from Chubu electric power website

Yokohama Rubber made prototypes tires from biomass-derived butadiene rubber through joint research with NEDO, AIST, and ADMAT

Yokohama Rubber Co., Ltd. announced on August 10 that they succeeded in prototyping an automobile tire with butadiene synthesized from bioethanol, with the same performance as traditional products. It was a joint venture with the New Energy and Industrial Technology Development Organization (NEDO), the National Institute of Advanced Industrial Science and Technology (AIST), and the Advanced Materials High Speed Development Technology Research Association (ADMAT). Butadiene is currently produced from petroleum as an important chemical raw material such as synthetic rubber, which is the main raw material for tires. CO₂ reduction and sustainable raw material procurement are expected in the future.

In 2019, they developed a catalyst system with the highest yield of butadiene in the world at that time, and succeeded in synthesizing butadiene rubber from the produced butadiene. Taking advantage of this knowledge, they investigated a more optimal catalyst in 2020 and succeeded in developing the world's best catalyst system with a butadiene yield of 1.5 times that of 2019.

This achievement is a further evolution of this; the scale-up of the reaction system using the high-performance catalyst system developed in 2020 to the mass production of butadiene and the production of tires using it as a raw material. AIST designed and manufactured a large-scale catalytic reaction device and mass-synthesize butadiene, ADMAT carried out high-purity by distilling the produced butadiene, and Yokohama Rubber used it as a raw

material for rubberization by polymerization of high-purity butadiene and made trial production of tires.

The prototype tire is the 185 / 60R15 size of the grand touring tire "BluEarth-GT AE51". Traditionally, the cap tread and sidewalls of this tire were made of petroleum-derived rubber, but in this prototype tire, all petroleum-derived rubber was changed to bioethanol-derived butadiene rubber and natural rubber, so both parts are made of only sustainable rubber materials. In addition, the prototype tire has the same material performance as when using conventional petroleum-derived rubber.

Yokohama website (in Japanese):

<https://www.y-yokohama.com/release/?id=3625&lang=ja>



BluEarth-GT AE51

From Yokohama website

MOL considers building a green ammonia supply network in Australia with a major Australian energy company

MOL announced on August 11 that it has signed a memorandum of understanding with Australia's energy giant Origin Energy to jointly consider building a supply chain for renewable energy-derived ammonia (green ammonia) in Australia.

Origin Energy is considering multiple green ammonia and hydrogen projects. Of these, the Green Ammonia Export Project in Bell bay, Tasmania, which aims to start exporting in 2026, has invested \$ 3.2 million in a feasibility study. MOL and

Origin Energy will conduct a survey on marine transportation means of green ammonia and demand in Japan and Asia by December 2021, and will jointly consider issues in supply chain construction.

Origin Energy said, "Australia has abundant renewable resources and is close to the Asian market, so it will develop the world's leading hydrogen sector, export low-carbon energy to the world, and meet the clean energy demands of its major trading partners. Many countries have ambitious carbon dioxide emission targets, and partners such as MOL are essential to support the development of a strong hydrogen sector in Australia. "

MOL's "MOL Group Environmental Vision 2.1" announced in June states that the entire group will achieve net zero emissions by 2050. In addition to reducing greenhouse gas emissions from ships operated by the company, it will contribute to reducing greenhouse gas emissions and realizing a low-carbon society by actively participating in the construction of a cleaner energy supply chain.

Ammonia is a promising next-generation clean energy that does not emit carbon dioxide when burned, and as a "hydrogen carrier" that can transport and store hydrogen at low cost, toward the realization of a carbon-neutral society in 2050, which the Japanese government advocates. In addition, green ammonia, which uses renewable energy and does not emit carbon dioxide during production, is expected to contribute to reducing carbon dioxide emissions in the supply chain.

Japanese companies are activating their efforts in the fields of hydrogen and green ammonia. For example, Sumitomo Corporation announced in March that it would start joint studies with six parties, including a Danish shipping company, to implement a project to supply green ammonia fuel to ships in Singapore. In April, Mitsubishi Heavy Industries and Osaka Gas announced that they had invested in Starfire Energy, a US startup that develops green ammonia manufacturing technology.

MOL website: <https://www.mol.co.jp/en/pr/2021/21069.html>



Image from MOL website

ITOCHU collaborates with 4 companies to build a supply network for manufacturing and exporting green hydrogen in Australia

ITOCHU Corporation announced on August 18 that it will start a commercialization survey on the construction of a supply chain for green hydrogen (hydrogen derived from renewable energy) in Australia with four companies in Australia. Four companies are Australia's Gulf management company Dalrymple Bay Infrastructure (DBI), Australia's Gulf management company (government company), North Queensland Bulk Ports (NQB) and Canadian asset management company Brookfield Asset Management (Brookfield).

Through this collaboration, they will consider building the supply chain including the production and storage of green hydrogen using idle land and the export of green hydrogen using existing export facilities at the Dalrymple Bay terminal owned by the Queensland Government of Australia and operated by DBI. The first stage commercialization survey is scheduled to start in 2021.

The terminal is located in the center of the Renewable Energy Zone, a renewable energy development zone designated by the Queensland Government, and is expected to be a green hydrogen production base. The Hay Point area, which includes the terminal, has been designated by the state government as a suitable port for sustainable development. Therefore, it is easy

to improve the hydrogen export system by renovating or expanding existing export facilities, and it is expected to be one of the best locations for building a green hydrogen supply chain.

ITOCHU aims to build a green hydrogen supply chain that includes future supply to Japan with a view to a carbon-free society, making use of the knowledge it has cultivated through its domestic and overseas networks and business in Australia. They are focusing on efforts to build a supply chain for marine ammonia fuel, along with hydrogen, at home and abroad. The construction of a marine ammonia fuel supply chain is being jointly developed in Singapore with VOPAK Terminal Singapore and MOL.

Itochu corporation website:

https://www.itochu.co.jp/en/news/press/2021/210818_2.html



Dalrymple Bay Terminal from Itochu corporation website

Other Topics

China's cotton imports expanded, in the first half of 2021 increased by 70% year-on-year

According to a report released by JETRO on July 30, China's imports of cotton have skyrocketed since December 2020. According to JETRO's analysis based on the trade database "Global Trade Atlas", China's cotton imports in the first half of 2021 were 1.55 million tons, up 72.1% from the same period of the

previous year, and the same period of 2019 before the COVID-19, the ratio also increased by 31.2%. By importing country / region, the United States is 620,000 tons (39.9% share), Brazil is 460,000 tons (29.6%), and India is 320,000 tons (20.9%). It accounts for 90% of the total imports.

According to an estimate released by the China Cotton Association on July 27, the import volume for 2020/2021 (September 2020 to August 2021) is expected to be 3 million tons (up 87% from the previous year), compared to FY2018/FY2019 (2.05 million tons) and FY2019 / 2020 (1.6 million tons), both are expected to increase by more than 1 million tons. On the other hand, domestic consumption in China is estimated to be 8.1 million tons (up 5.9% from the previous year) and production is estimated to be 5.72 million tons (down 3.4%).

China's cotton production of 87.3% (2020) is concentrated in the Xinjiang Uygur Autonomous Region, but the Better Cotton Initiative (BCI), an international organization that certifies cotton, said in March 2020 due to suspicion of human rights issues, it will not carry out certification activities for 2020/2021 in the autonomous region. In January 2021, the US government announced a full reservation of imports of cotton and products from the Xinjiang Uygur Autonomous Region. There is a headwind on cotton from the Xinjiang Uygur Autonomous Region.

According to the results of a survey conducted by the China Cotton Association on 90 cotton-related spinning companies, the breakdown of cotton used by spinning companies in June was 87.2% from Xinjiang Uygur Autonomous Region (4.6 points share down from the same month of the previous year). Other Chinese products were 3.3%, imported cotton was 9.6% (up 3.3 points), and although the share of cotton produced in the autonomous region decreased, the share of imported cotton increased.

Meanwhile, China is building its own cotton certification system. In June, several industry groups such as the China Clothing Association, led by the China Cotton Association, officially launched the "'China Cotton' Sustainable Development Project". It is said that it will build a certification system for

"Chinese cotton" and promote the sustainable development of the cotton industry. The China Cotton Association announced the "China Cotton" Production Control Code on April 22 which is for setting standards for the production and management of "China Cotton", supplying high-quality cotton, reducing the environmental burden and guarantee the rights & welfare of workers.

JETRO website (in Japanese):

<https://www.jetro.go.jp/biznews/2021/07/f11d7d798fe7a966.html>



Cotton field in Xinjiang Uygur Autonomous Region, photo from Yahoo! Japan

Number of influential papers Japan, the lowest 10th in history, China is the first leader

Among the academic papers in the field of natural science published in 2017-19 in the world, Japan is the lowest in the world in the number of influential papers that are cited in the top 10% of other papers. The National Institute of Science and Technology Policy (NISTEP) of the Ministry of Education, Culture, Sports, Science and Technology announced on August 10..

Meanwhile, for the first time since the start of the analysis, China has overtaken the United States to become number one in the world. NISTEP calculated the annual average number of papers by country for the papers published worldwide in 2017-19. Co-authored papers by researchers from multiple countries counted the contributions of each country as percentage. In terms of the total number of papers, China ranked first with 353,174 books for the second consecutive year. Following 285,717/ the United States and 68,091/ Germany, Japan kept the fourth place with 65,742.

On the other hand, China ranked first with 40,219 citations for the first time in the top 10% of each field. This was followed by 37,124/ the United States, 8,387/ the United Kingdom, and 7,248/ Germany, and Japan, which had 3,787, retreated from 9th place in the previous term (16-18 year average) to 10th place after India. In terms of the number of top treatises with the top 1% of citations, the United States remains the number one and China is the number two. Japan maintained 9th place. The greater the number of citations, the higher the attention of the treatise, and it is evaluated that it left a great impact on the development of science. While Japan has been declining since the mid-2000s, China has grown in influence at the same time.

According to NISTEP, "The number of researchers and the growth of research expenses have a great influence on China's breakthrough." Regarding Japan's slump, they said, "The research time of university faculty members is decreasing, and the number of treatises is sluggish." The negative effects of the government's "selection and concentration" route of public research funding have been pointed out, but NISTEP said, "(the impact) needs a little more analysis."

Based on the number of papers, NISTEP also analyzed the effect of the spread of the COVID-19 on research activities. Although the number of papers published worldwide (provisional value) in 2020 increased from 2019, the growth rate decreased in 6 of the 8 major fields except 2 fields of clinical medicine and basic life science. There may be reasons such as the inability to use the laboratory due to the spread of infection, but NISTEP pointed out that "there is a time lag between research activities and publication of papers. The impact may appear in statistics after 2009."

NISTEP website (Mainly in Japanese):

<https://www.nistep.go.jp/research/science-and-technology-indicators-and-scientometrics/benchmark>

China announces list of top 100 retailers, growth of EC companies is remarkable

Japan External Trade Organization (JETRO) reported on August 10 that the China Commercial Union Association (CGCC) and the China National Commercial Information Center (CNCIC) announced on July 6 that it was two months ahead of the usual year, "List of the top 100 retailers in China in 2020." Despite the impact of the spread of the COVID-19 in 2020, the total sales of the top 100 retailers in China increased by 19.8% from the previous year to 10.3 trillion C yuan (about JP¥ 164.8 trillion/1 C yuan = about JP¥ 16) grew positively, and its share of total retail sales of consumer goods (39,198.1 billion C yuan) increased by 5.4 points from the previous year to 26.3%.

Of the top 100 companies, 8 companies sold more than 100 billion C yuan. The breakdown is Tmall (3.22 trillion C yuan), JD.com (2.6 trillion C yuan), Pinduoduo (1.667.6 billion C yuan), Suning.com Group (416.3 billion C yuan), Dashang Group (328.9 billion C yuan), Weibo Pinhui (165 billion C yuan), Gome Retail (140.8 billion C yuan) and Yonghui Supermarket (104.5 billion C yuan).

Among top 20 companies, the growth of the EC companies such as Tmall, JD.com and Pinduoduo are remarkable. The Vipshop's sales in 6th place increased 77% year-on-year to 165 billion C yuan, the highest growth rate among the top 100. In addition, Yunji, a membership-based e-commerce company listed in the stock market of the United States in May 2019, ranked 19th. The total sales of these five EC companies amounted to 7,670.5 billion C yuan, accounting for about 75% of the total sales of the top 100 companies. Looking at the Japanese companies ranked in the top 100 companies, AEON ranked 32nd (24.7 billion C yuan), Family Mart ranked 54th (9.4 billion C yuan), Seven-Eleven ranked 66th (7.2 billion C yuan), Lawson ranked 74th (6.5 billion C yuan) and Ito-Yokado ranked 81st (5.5 billion C yuan). Sales in 2020 were down for many companies year-on-year. According to the China National Commercial Information Center, the retail value of real stores decreased by 8.8% in 2020, and it seems that the impact of refraining from going out during the period of the spread of the COVID-19 led to a decrease in sales.

JETRO website (in Japanese)

<https://www.jetro.go.jp/biznews/2021/08/316e06ac91f530fb.html>

Japanese retail companies in top 100 ranking in China

(Unit: 100 million of Chinese yuan)

Ranking	Companies	Sales in 2020	Sales in 2019	% 2020/2019
32	AEON MALL	247	280	-12
54	Family Mart	94	100	-6
66	Seven-Eleven	72	74	-3
74	Lawson	65	60	8
81	Ito-Yokado	55	60	-8

Data: presented by JETRO based on announcements from the China Commercial Union Association

North Korea's 2020 trade value, down 73.4% year-on-year

According to Japan External Trade Organization (JETRO) 's report on August 12, The Korea Trade and Investment Promotion Agency (KOTRA) estimated that North Korea's trade in 2020 would be \$ 863 million, down 73.4% from the previous year. Both imports and exports fell sharply compared to the previous year, and the trade balance continued to record a large deficit (\$ 648 million).

A KOTRA official said, "Trade with China has plummeted due to the blockade of the China-North Korea border due to the effects of the COVID-19, and trade in light industrial products has slowed." By country, trade with China, its largest trading partner, fell 75.4% to \$ 760.8 million. Its share of total trade was 88.2%, down from the previous year (95.4%), but its reliance on China remains high. After China, Russia, Vietnam, India, and Nigeria had the highest trade value in that order. Other African countries such as Mozambique, Tanzania and Ghana and Thailand ranked high, but all accounted for less than 1% of total trade. Regarding Japan, there has been no trade record since 2009 due to the Japanese government's own sanctions.

By item, the main export items are mineral products (down 45.8%), textile products (down 38.8), footwear and hats (down 92.2%), steel and metal products (down 55.9%), watches and their products. Almost all products, including parts (down 86.3%), decreased significantly.



Imports fell sharply, prepared foods including fats & oils (down 55.5%), chemical products (down 70.9%), plastics & their products (down 86.9%) and textiles (down 90.9%). The largest import item is mineral fuel (30.9% of total trade), which includes an estimated value of crude oil imports from China (\$ 220 million, about 525,000 tons). The value of crude oil imports has been "zero" in China's customs statistics since 2014, but KOTRA separately estimates the value of crude oil imports from China.

JETRO website (in Japanese):

<https://www.jetro.go.jp/biznews/2021/08/619fdf91d42a8b36.html>

Top 10 trade partner countries of North Korea (in 2020)

Ranking	Countries	Exports		Imports		Total trade		Ratio
		Value	Growth rate	Value	Growth rate	Value	Growth rate	
1	China	48.0	-77.7	712.8	-75.2	760.8	-75.4	88.20
2	Russia	0.7	-76.9	41.9	-6.5	42.6	-11.0	4.94
3	Vietnam	14.8	-40.4	0.7	-77.4	15.5	-44.4	1.80
4	India	1.7	15.2	4.3	-58.3	6.0	-49.3	0.70
5	Nigeria	4.5	139.4	0.0	-100.0	4.5	82.0	0.52
6	Switzerland	0.0	-	2.6	-21.7	2.6	-21.7	0.30
7	Mozambique	2.2	207.7	0.3	19.0	2.5	152.1	0.29
8	Tanzania	1.9	73.7	0.1	-81.3	1.9	41.3	0.23
9	Ghana	1.2	-42.6	0.7	-	1.9	-7.0	0.22
10	Thailand	0.2	-40.4	1.7	197.3	1.9	120.3	0.22

* Source: JETRO by KOTRA data

* Trade with South Korea is not applicable