

sustainable japan

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Green frontiers: The sustainability mission in space

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An earnest, 40-something executive leans forward, speaking into the tabletop microphone. The camera catches the flash in his eyes as he poses this era's most popular question: "How can we change? How can we move away from a society where we use it once, or use it for a short period of time, and then throw it away? To one where we service it and extend its life, or repair it?" His question is often asked about plastic, in the hope of cleaning up our oceans. But Chris Blackerby is talking about something different. He is talking about satellites. To save the Earth, he is trying to clean up space.

The Japan Times Sustainability Roundtable, hosted by Ross Rowbury, is an English-language interview series with some of the most interesting people in Japan. Available on the Sustainable Japan site as well as its YouTube channel, this past year it has featured many guests, like a U.N.-trained ocean activist, a green finance consultant and an architect carefully documenting Japan's ecological past. In each hourlong episode, Rowbury delights in learning the details of their efforts and their personal stories. The series showcases sustainability in all its many forms, and how those who practice it are making the world a better place.

Startup Astroscale takes off
The October guest took the conversation



Chris Blackerby and Ross Rowbury get ready for the Roundtable event, held at The Japan Times offices
MARIANGELES DEJEAN

higher. Blackerby is the group chief operating officer of Astroscale, a Japanese company that seeks to secure the safe and sustainable development of space itself. With offices in Tokyo, Harwell Oxfordshire, Denver, Tel Aviv and Washington, Astroscale is a privately held business that has (pardon the metaphor) achieved orbit. It operates on a global scale to develop technologies, influence policies and, as Blackerby explained, "keep the highways of space clean and safe." And while the mission itself is unexpected, the details of their efforts and the seriousness of the challenge are even more surprising.

Rowbury and Blackerby helped frame the conversation by revealing some facts: High above our heads, moving between six to eight times the speed of a bullet, are many, many objects. Some are incredibly precious to us; others are incredibly dangerous. Today there are roughly 3,000 active satellites, ranging in size from a toaster to a small car. They enable all of modern society's critical functions, such as food production, travel and medicine.

As important as they are, these fragile linchpins of our lives are in constant danger. They travel within a rapidly growing sea of orbital debris. For starters, there are the 5,000 inactive satellites circling the Earth in different orbits and at different speeds. Around these bigger objects are over 30,000 pieces of space debris larger than a baseball. And objects smaller than 10 centimeters — a metal screw, or a flake of paint — are



Astroscale Holdings Group Chief Operating Officer, Chris Blackerby
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estimated to number 10 million. Blackerby explained that the consequences of these numbers could be grave. "One dead satellite gets hit, or collides with another ... and instantly, that's a thousand more threats out there. And once those objects fan out, across their orbit, how many more collisions would follow? See, the problem quickly becomes exponential."

Don't litter ... in space

For a long time, such debris wasn't seen as a problem. "Even within the few orbital

bands that we use, there is of course still a lot of space between these objects," Blackerby said. "But not caring ... that was the same logic we once used for oceans. As in, 'Stick a piece of plastic in there, no problem, right?' Now there's a shift to see our orbital highways as natural resources, places which need to be kept clean and safe. Unfortunately cleaning them up won't be easy." For once during the conversation, Blackerby's energy dimmed as he considered the problem.

It is in these efforts that Astroscale shines.

"For us, it's about 'prepare, remove and repair,'" Blackerby said. "Prepare" is about building satellites with the capacity to be easily removed. "Remove" is about taking the debris out — like the many 2- or 3-ton rocket bodies just floating around in upper orbit. And then finally there is "repair" — the refueling, maintaining and altitude control of existing and functioning satellites." Astroscale treats each of these three missions as a separate business, with engineers, policy analysts and software all built to overcome challenges and service different clients.

Introducing 'space Roomba'

To bring their efforts to life, Blackerby brought along a sidekick to the Roundtable: a small model of Astroscale's first satellite, named ELSA-d. This small cleanup satellite was built in Kinshicho ("It's the Cape Canaveral of Tokyo," exclaimed a delighted Rowbury), then carried to space on a rocket launched in Kazakhstan. In August, ELSA-d passed the first of a series of increasingly difficult tests: It caught its first debris — or, more specifically, it played catch with one piece.

Blackerby explained that ELSA-d was launched with a piece of test debris attached to its side. The test debris has a small magnetic docking plate, the kind that Astroscale and many other companies now advocate all satellites be launched with. In August ELSA-d's robot arm let go of the test debris, then found it and secured it using the plate. The next tests will see ELSA-d releasing the debris for longer periods, spinning it and completing other types of maneuvers. Each test will prove how soon an army of ELSA-d satellites might autonomously clear the mistakes of past generations from our orbital space.

The conversation with Blackerby ranged across many subjects, from the politics of space to the constellations of tiny satellites now being launched by corporations like SpaceX. Since this single article cannot cover it all, those interested should watch the



A toy version of ELSA-d aimed to educate about space sustainability while steeling people's hearts
MARIANGELES DEJEAN

hourlong episode. You will learn how sustainability principles are urgently needed in the most unlikely places, and how one Japanese company in a Tokyo suburb is making a difference that could one day affect us all.

Towards the end of the conversation, Blackerby spoke about the challenges ahead. "On Earth, there are shared resources, there are national borders. Space doesn't have that! In lower orbit, every 90 minutes the objects are circulating the Earth. What we need is government and industry, jointly solving the problem. On the positive side, a lot of governments are recognizing this. But on the negative side, there are so many groups studying, advising and being involved. We now have people around the world focused solely on the policy side of this issue." Rowbury exclaimed that the many challenges of Astroscale seemed rather complex. His COO guest, still boyish in his energy, raised his hands and laughed. "That's right! It's technology, it's economics, it's policy. It's all interconnected. That's what makes my job so fun!"



Roundtable is a monthly series of English-language events organized by The Japan Times Cube. For more information visit <https://sustainable.japan-times.com/roundtable>



Papermaker Oji forms solutions to environmental, social needs

ESG/SDGs

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The 2021 U.N. climate summit, COP26, closed with nations that are accelerating their measures against climate change announcing new and renewed targets for reducing emissions. Such measures ought to differ from country to country, industry to industry and company to company. The global community should appreciate diverse paths toward achieving the common goal of making the world sustainable.

Oji Holdings, one of the world's major pulp and paper producers, headquartered in Tokyo's Chuo Ward, has its own ways of reducing carbon emissions while still contributing to meeting new needs from society amid pandemic conditions.

During a recent interview with The Japan Times, Oji's Sustainable Management Office General Manager Yoshimasa Tanaka explained that Oji is taking two major approaches to achieve its ambitious 2030 target of reducing greenhouse gas emissions by 70% compared with 2018 levels: 20% through switching to renewable energy and increasing energy efficiency, and 50% through absorbing and fixing carbon dioxide.

Black liquor produced during the paper-making process is used as fuel at Oji's own biomass power generation facilities. Oji also treats the water used during the paper making process. This treatment is done as dewatering the pulp sludge by dehydrating and concentrating the used water. The treated pulp sludge is also used as biofuel for power generation, and the treated water



The bed used in temporary shelters in disaster-hit areas
OJI HOLDINGS

is reused for paper making process again. The company is also looking into various other possibilities for reducing dependency on coal, such as solar power, hydropower, mixing wood chips with coal, gas and the potential for using ammonia.

Although Oji is also making efforts to further increase energy efficiency, it is already extremely efficient because it uses the heat left over from burning fuel to generate electricity for the drying process of paper production.

One of the main ways to absorb and fix carbon dioxide is, of course, planting trees. Oji has been engaging in sustainable management of forest resources for more than a century. It has about 580,000 hectares of forest in Japan and abroad, which last year absorbed as much as 9.5 million tons of carbon dioxide. About 450,000 hectares is managed to produce mainly timber, and the rest is protected for the sake of biodiversity and the environment.

"We partition production forests and conservation forests," Tanaka said. "While we continue the cycle of planting, growing, using and then planting trees again in our production forests, we conduct water quality and biological surveys in adjacent conservation forests to make sure that the ecosystems are unharmed." Such efforts by Oji keep both kinds of forests healthy, and also protect them from pests and disasters such as forest fires.

Oji's forest management also contributes to increasing employment opportunities and improving infrastructure in the many regions of the world where it owns forests. "We are trying to keep our forests healthy from all aspects, including those that are hard to evaluate or measure," Tanaka said.

These efforts may have been overlooked for many years in the long history of Oji's sustainable forest management, but investors and shareholders are becoming increasingly sensitive about companies' achievements in ESG (environmental, social and governance) factors in recent years. Public Relations and Investor Relations Department General Manager Kazu Ikeda pointed out that investors from Europe are especially interested in environmental topics. "There are also Japanese investors and shareholders who ask us to set up meetings to discuss only ESG topics," Ikeda said.



MPM Oji Eco-Energy's biomass power generation facility
OJI HOLDINGS

She also indicated that it is becoming increasingly necessary to involve the entire supply chain in the company's sustainability efforts. "Some companies in our supply chain are asking us questions like how much CO2 is emitted or fixed in production and logistics by the time our products reach them," Tanaka said. Ikeda explained that customers are also keen to know information such as to what degree carbon emissions can be reduced by replacing plastic packages with Oji's paper ones, or how much carbon dioxide is generated or fixed during the process of manufacturing certain products.

Oji also considers it important to quickly react to extreme situations such as the COVID-19 pandemic and meet the needs of society. When medical clothing and face masks were most needed, it managed to increase its production capacity of nonwoven fabrics to make isolation gowns and to convert and enhance its clean rooms in order to produce face masks. It also catered to the rising need for cardboard boxes in online shopping by launching Oji Flex Pack, a system that can automatically make cardboard boxes in various sizes to suit their contents. After receiving a request from Airweave Inc., Tokyo 2020 official bedding partner, Oji also co-developed the cardboard bed used in the Olympic Village this year. The beds can be used in temporary shelters in disaster-hit areas as well.

Oji, a company with almost 150 years of history, will continue to commit to sustainability and the changing needs of society in its own ways for the next century to come.



Share Summit gathers ideas to create a circular economy

ESG/SDGs

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Over 5,000 participants gathered online at the Share Summit 2021 on Oct. 5 to contribute ideas promoting the sharing economy to replace or supplement current socioeconomic systems, which are faced with the need to change due to the pandemic as well as global sustainability issues.

The event, organized by the Sharing Economy Association, Japan, invited 65 speakers as individuals or representatives of organizations both public and private with solutions to share about how a mature economy can sustain itself through sharing.

The opening session consisted of messages from former Digital Transformation Minister Takuya Hirai, Taiwanese Digital Minister Audrey Tang, Zoom Video Communications Inc. CIO Harry D. Moseley and Yuji Ueda, the representative director of Sharing Economy Association, Japan and CEO of Gaix Co., a startup studio for new businesses mainly in the categories of social media and the sharing economy.

Afterward 13 panel discussion sessions and one pitch session were held, covering diverse topics such as sustainable management, ESG investment, digital transformation, the role of the sharing economy in achieving the U.N.'s sustainable development goals, rebuilding tourism in sustainable ways and community development based on the concept of sharing.

Why is the concept of sharing becoming such a hot topic not only in people's lifestyles but also in business and the economy? The answer could be found in the panel



Participants at the online session "The Idea of Sharing: The Future of an Economic Society that Realizes Essential Wealth"
SHARE SUMMIT 2021

discussion led by Kohei Saito, an economic thinker and associate professor at Osaka City University, and Kazuto Ataka, the chief strategy officer of Yahoo Japan Corp. and a professor in the Faculty of Environment and Information Studies at Keio University. They shared a sense of urgency in addressing climate change, which is already causing or escalating other global issues. Their discussion centered around the limitations of a capitalist economy that focuses on ever more consumption and growth, and presented the view that global crisis is unavoidable unless people's habits and attitudes on consumption change.

Sharing can be an alternative form of consumption, and more things can be shared than society does now. One of the sessions focused on different ways of working and the sharing workforce, with some examples of "hybrid work," in which employees are able to work from home or other locations in addition to the office, and "slash careers," in which people maintain multiple income streams through simultaneous different professional identities.

"To realize diversity in a workplace and make it possible for various people to work together, we need to allow free and flexible ways of working that can unite workers beyond time and space," said Hideto Fujino, the representative director, chairman, president, CEO and chief investment officer of Rheos Capital Works Inc., pointing out that whether or not a company can do that will have a direct impact on its productivity and competitiveness.

"What we think of as the conventional system of employing full-time workers in Japan was actually created to fight wars efficiently," said Koichiro Yoshida, president and CEO of CrowdWorks Inc. "So private ownership has a short history. It may have even worked, as a temporary system." He explained that in contrast, sharing publicly owned assets and resources had been the usual practice for a much longer period of time. He said it is quite natural that diverse work styles, as well as sharing work and workers, are starting to attract attention at a time when the conventional employment system seems to have come to a dead end.

The last session focused on four young people who actually live and work in diverse unconventional ways as freelanc-



Opening words by Takuya Hirai, Member of the House of Representatives and former Minister of Digital Affairs
SHARE SUMMIT 2021

ers and career slashers. Their hands-on experiences sparked interest among the audience, and the comments section of the livestreamed video was filled with questions and comments about the speakers' lifestyles.

In the pitch session, 11 speakers presented ideas and services that support new ways of working and enable sustainable ways of living based on the concept of sharing, such as the umbrella service i-Kasa and the parking service Nokisaki.

There were also online booths exhibiting companies, online platforms and tools such as Zoom and Slack, the eKYC (electronic know your customer) solution provider Trustdock, the space-sharing service provider Space Market Inc. and Aini, a platform that introduces people to the daily lives and activities of various communities through guides and workshops.

Even though the Share Summit 2021 was conducted entirely online, it contributed to connecting people and served its purpose of presenting the kinds of positive changes that the sharing economy can bring about and encouraging action to achieve a sustainable and circular society based on sharing.



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