SWITCHING TO RENEWABLES

The Road to Renewables

REUTERS PLUS™

PRODUCED BY REUTERS PLUS FOR EPSON

Produced by Reuters Plus for Epson

Commercial Editor Tristan de Souza

Writer David Benady

Art Director Emily McKay

Project Manager Asako Tanaka

Account Manager Yui Kashiwagi

Japan Team Lead Melynie Yoneda

Introduction

Switching to renewable electricity is a vital step in the fight against climate change. But there are a series of formidable obstacles in the way of the renewables transition.

Governments worldwide are dramatically ramping up[1] renewable electricity generation as they race to hit net zero carbon emissions by 2050. Epson believes that there are solutions to these problems, and has built many of them into its processes today.

The COP28 climate conference in Dubai saw more than 120 countries and regions make a historic pledge to triple renewable energy generation globally by 2030. This significantly increases installation targets for an industry already running flat out to hit current production rates. Epson has consistently worked with its suppliers to ensure the demand signals exist for renewable technology producers to plan for a future in which their products are widely deployed in organizations across all sectors.

Renewables capacity has expanded rapidly over the past decade, and growth was expected to soar by a third in 2023, the largest ever annual increase in wind and solar power generating capacity. Renewables accounted for 27.8% of global electricity generation in 2021 and further steep increases in capacity will require dedication and innovation by nations, governments and businesses.

Tripling renewable energy capacity has been described as “ambitious yet achievable” by the International Energy Agency. Reaching this goal will require lifting renewable generation to at least 11,000 Gigawatts (GW) by 2030, 20% higher than the current forecast from Bloomberg NEF of 9,000 GW. Investments in renewables, which hit $600bn in 2022, will need to be raised even further.

Achieving 100% renewable energy use in manufacturing worldwide will require a monumental effort. But the tools to reach this goal exist. Momentum is building. Manufacturing is moving towards a renewables revolution.

1 https://www.reuters.com/sustainability/climate-energy/cop28-plan-triple-renewables-is-doable-not-easy-companies-say-2023-12-12/

Challenges facing the energy transition

Many business leaders are pledging to hit decarbonization targets to meet the goals of the 2015 Paris Agreements, which aim to limit global warming to 1.5 degrees centigrade above pre-industrial levels. Slashing carbon emissions to net zero is essential for hitting this target and transitioning to renewable electricity is a key step to reaching this goal. But while businesses have signaled a clear commitment to switching to renewables, there are still significant barriers to the supply of renewable electricity. Renewable generators must overcome hurdles such as obtaining permits and making grid connections.

Obtaining permits to open new wind farms can be tricky, running up against complex bureaucracy, local opposition and difficulties in finding appropriate sites.[2]

Once renewable sources are built, another challenge is connecting them to the electricity grid, made up of an extensive network of cables, substations and transformers which bring power to the end consumer. Renewable energy projects can wait years to get connected to the grid as bottlenecks build up with increasing numbers of new projects looking to hook up their supply. Urgent action is required from grid operators and governments to increase connections. It is also necessary to have a menu for purchasing renewable electricity that guarantees a reliable supply.

When renewable capacity comes on stream, it is vital to move away from the system of national energy monopolies. Instead, a deregulated system is needed that allows businesses to freely buy electricity from renewable sources. Otherwise, they are obliged to buy from a central generator, often reliant on fossil fuels.

On a positive note, the costs of building renewable capacity have fallen steeply over the past decade as the technology has become more prevalent.[3] Costs have tumbled as suppliers of photovoltaic cells and wind turbines have increased production. But some of those gains are unravelling as supply shortages and inflation stoke price rises for raw materials. Combined with a lack of a skilled labor force for the installation and upkeep of renewable plants, the goal of tripling renewable capacity looks like a considerable undertaking.

The goal of the 2015 Paris Agreement is to limit global warming to

1.5°C

2 https://www.weforum.org/agenda/2023/01/speeding-up-sustainable-energy-bottlenecks-and-how-you-resolve-them-davos2023/
3 https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2017/Nov/%20IRENA_Sharply_falling_costs_2017.pdf

The average target year to achieve 100% renewables among RE100 global manufacturing companies is 2050.

Overcoming energy transition hurdles

Businesses will have to play a big role in driving the transition, making ambitious pledges and carrying them through. Over 400 companies have joined RE100, an international initiative that aims for companies to use 100% renewable energy to power their business operations. By acting together, large corporates can exert significant influence on governments and the power generation industry to speed up the switch to stable and inexpensive renewable energy.

A handful of businesses have already made good progress in switching to 100% renewable electricity. US tech giant Apple announced in 2018 that all its corporate offices, data centers and retail stores worldwide were powered solely by renewable electricity. The company has encouraged its suppliers to switch to renewables and in 2022 announced that suppliers had more than doubled renewables usage. In 2023 it launched its first carbon neutral products with the Apple Watch range and plans to make every product carbon neutral by the end of the decade.

In its 2023 Annual Report, RE100 listed 31 of its member companies as independently verified as having made the switch to 100% renewables by 2021. The list was varied – ranging from Canary Wharf Group and Etsy to Lloyds Banking Group and Tesco – but in 2021 was predominantly made up of companies based in Europe and the US.

Sam Kimmins, director of energy at Climate Group, which runs RE100, says the best way for governments to help businesses switch to renewable electricity is by deregulating the electricity supply; this will allow companies to buy power from renewables suppliers. Businesses can then strike Power Purchase Agreements with providers of wind farms and solar power, paying an annual fee for a supply of renewable electricity. “Opening up the market to competition and providing a means for companies to buy renewables directly is enabling renewables producers to compete on a level playing field,” says Kimmins.

Another model is for companies to produce their own renewable electricity, placing solar panels on their estates and building windfarms. Furniture chain Ikea has 575 wind turbines in 17 countries, 20 solar parks and almost a million solar panels on the roofs of its stores and warehouses.

85 Japanese companies are members of RE100 – the organization’s second largest national membership after the US – all of whom are committed to achieving 100% renewable electricity.

At the start of 2024 Epson announced that it had become the first company in the Japanese manufacturing sector to switch to

100%
renewable electricity

4 https://www.there100.org/sites/re100/files/2023-01/CDP_RE100_Report_2023%20%282%29.pdf

Japan – the land of rising renewables

Japan still has a long way to go in transitioning to renewables. In 2022, fossil fuels accounted for 71% of the nation's electricity generation, compared to just 39% in the European Union according to figures from Ember.

The Japanese government's most recent Strategic Energy Plan, its sixth, published in 2021, committed Japan to moving between 36% and 38% renewables by 2030, though some businesses argue that this is insufficiently ambitious and recommend a 50% target. Over 80 Japanese companies are RE100 members, and they have lobbied the nation's government to raise its renewables targets and speed up the transition by strengthening policy, legislation, and investment.

Epson, the global manufacturer has achieved a significant milestone towards its renewables goals. At the start of 2024, Epson announced that as of December 2023 it had become the first Japanese manufacturing company in RE100 to switch to 100% renewable electricity in all its global operations. Epson consumes some 876 GWh of electricity a year and reduces carbon emissions by some 400,000 tons a year based on 2022 standards.

The speed of Epson's energy transformation has been notable. In 2017, only 1% of Epson's electricity use was from renewable sources. In just six years, the company has overcome skepticism and converted its entire operations to clean electricity. This is a major development in Japan, which has struggled to increase renewable electricity generation.

Epson's ground-breaking move to 100% renewable electricity across its global operations, not only increases demand for clean energy and gives a boost to capacity but also lays out a pathway to inspire other businesses. The move shows that Japanese companies can lead the way in decarbonization and push their government to do more to boost renewable capacity.

Japan is a signatory to COP28's pledge to triple renewable generation. The nation's businesses are demonstrating that this is an achievable, desirable, and worthwhile goal.

Japan committed to moving to between

36%–38%

renewables by 2030

Epson’s Philosophy

Epson was established in 1942 in Suwa City in the Japanese prefecture of Nagano, home to Lake Suwa.

Harmonious co-existence with the communities has long been core to Epson’s mission and the company has a history of environmental commitments. It was one of the world’s first advanced companies to eliminate CFCs from its manufacturing process.

Epson is a global technology leader whose philosophy of efficient, compact and precise innovation enriches lives and helps create a better world. The company is focused on solving societal issues through innovations in home and office printing, commercial and industrial printing, manufacturing, visual and lifestyle.

With a fifth of revenues coming from Japan, slightly larger proportions from Asia Pacific and Europe and nearly a third of revenues generated in the US, Epson is a significant global player. It has around 80,000 employees worldwide and annual revenues hit 1,330.3 billion yen ($9.98bn) in fiscal year ended March 31, 2023.

This global coverage offers both opportunities and challenges as Epson looks to boost sustainability and social responsibility.

Underpinning Epson’s management philosophy and environmental consciousness are the triple notions of efficient, compact, and precise innovation.

This is captured in the Japanese phrase “Sho Sho Sei”.

They firmly believe that energy saving solutions, space saving innovation and ultra-high precision help to protect the natural environment and enrich communities. With their philosophy of efficient, compact, precise innovation, they deliver more meaningful value that enriches lives and helps create a better world.

To further embed this way of thinking into the company ethos, in 2022 Epson published a corporate purpose statement: “Our philosophy of efficient, compact, and precise innovation enriches lives and helps create a better world.” Epson’s goal is to collaborate with its customers and partners to achieve sustainability and enrich our communities.

Epson announced their intent, in Environmental Vision 2050, to become carbon negative and underground resource free by 2050. In line with this vision, Epson will pursue decarbonization and resource recycling programs, provide products and services that reduce environmental impacts, and develop environmental technology.

Epson plans to spend and invest 100 billion yen ($700m) on decarbonization, resource recycling, and environmental technology development over the 10 years to 2030. It expects these efforts to enable the company to reduce greenhouse gas emissions in the supply chain by more than two million tonnes.

Alongside this significant investment, Epson will concentrate its management resources on developing products and services to reduce environmental impacts for its customers across the board.

Lessons for others to follow

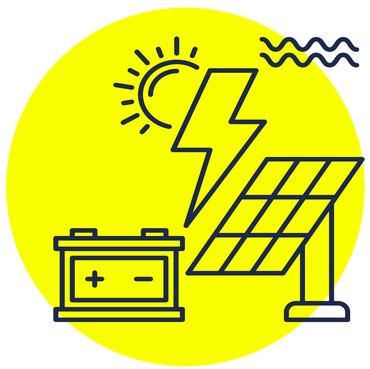
When corporations switch to a renewable electricity supply, they send a strong demand signal both to the generation market and to governments, encouraging them to facilitate the spread of clean energy. They also show other enterprises that the transition is cost-effective, feasible, and desirable. With commercial and industrial enterprises accounting for half of the world's end-use electricity[5], businesses must step up and play their part in driving the transition to renewables.

Epson's journey to using 100% renewable electricity, which the company completed in 2023, offers lessons for other businesses both in Japan and globally as they look to make a decisive impact on their carbon emissions.

Electricity usage in Japan accounts for approximately 60% of Epson's total electricity usage. In November 2021, Epson became the first Japanese manufacturing company in RE100 to convert to 100% renewable electricity for all its sites in Japan– four months ahead of schedule – transitioning some 530 GWh annually to clean energy generation. This reduced the company's annual CO2 emissions by 250,000 tons.

"Things were very difficult in the beginning. Japan has a poor penetration rate in terms of renewable energy. We discussed the matter with energy companies, but they did not have a 'menu' for selling renewable electricity," said Junichi Watanabe, Managing Executive Officer / General Administrative Manager, Production Planning Division, whose role encompasses the promotion of Epson's procurement strategies in the supply chain, including the use of renewable electricity.

Epson started renewable electricity procurement efforts in 2016. At the time, when renewable electricity was not widespread, electric power companies did not have options for selling it. However, after two years of discussions and negotiations, Electric power companies set a menu for purchasing renewable electricity with Epson.



In just

6 years

Epson converted its entire operations to clean electricity

5 https://www.there100.org/about-us

The key to demonstrating that Epson was serious in its aims was creating a long-term contract with partners and local renewable energy suppliers. Creating stable, long-term demand for renewable energy has brought cost reductions and this also benefits Epson.

Any business seeking to transition to 100% clean energy needs to clearly set out the company's goals early on and remember this is not a one-horse race. Partnerships with suppliers, electricity generators, local government and fellow manufacturers are all key elements in achieving the transition.

A portion of the electricity charges Epson pays in Nagano is used to develop new renewable energy sources. This holds out hope for a broader decarbonization of Japanese society through similar partnerships between businesses, local governments, and electric power companies.

In addition to purchasing renewable electricity, Epson co-creates and develops other power sources through continuous renewable electricity purchases. In partnership with Nagano Prefecture and Chubu Electric Power Miraiz Company, Inc., Japan, the company began support of hydroelectric power plants in Nagano Prefecture. Two are already in operation (totaling 5,770 kilowatts) and another is scheduled to begin operation in 2024. The plan is to increase that number to five by 2025.

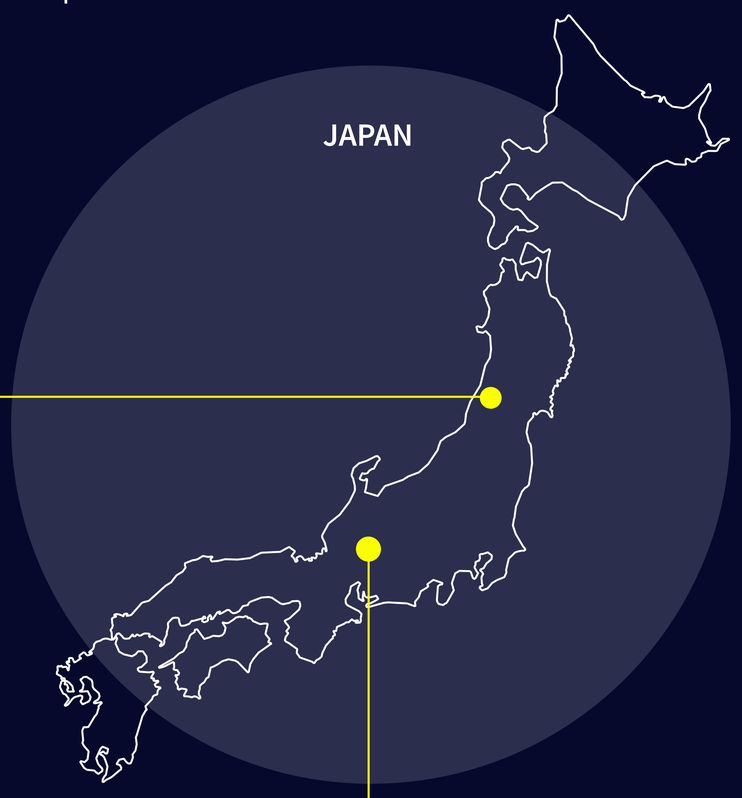
There has already been a knock-on effect of Epson's transition. Other companies in the Nagano region have followed in Epson's footsteps and switched to renewable energy, and there has been a steady expansion in the use of renewables.

> **"We believe that the key is to expand the development of power sources that are rooted in the local community and to make them cheaper and easier to use."**
>
> **Junichi Watanabe**
> Managing Executive Officer / General Administrative Manager, Production Planning Division

In the Tohoku region, Epson taps into local hydropower from Tohoku Electric Power Co. To power its semiconductor fabrication plant in the city of Sakata, Epson expects to be able to purchase a stable amount of electricity at a stable price over a significant period under a long-term contract. This embeds renewable energy infrastructure and gives it steady demand and a long-term future.

Adapting to local market

Tohoku area:
Epson taps into local hydropower to power its semiconductor fabrication plant.



Nagano Prefecture:
Epson utilizes the abundant water sources for hydroelectric power.

250,000 tonnes

The amount of C02 emissions Epson cut by Nov. 2021

Renewables go global

Using local natural resources – whether solar power, hydro power, wind or sustainable biomass – rather than importing energy resources from afar is a key strategy in pursuing a renewable future. Energy localism has widespread benefits, from creating jobs in local energy generation to boosting the availability of renewable energy across the region. Focusing on local generation both cuts carbon emissions and strengthens communities.

Rooftop power from solar panels

Japan has excelled in the use of solar power, which is highly attractive for businesses switching to renewables since solar panels can be placed on rooftops or any vacant spaces within a company's facilities. Solar has been described by the IEA as offering "the cheapest source of electricity in history." Epson has installed solar panels on the roofs of some of its factories, where they can be used to maximize power generation.

Another approach is to implement Power Purchase Agreements (PPAs) where external companies install, run, and maintain solar production on-site. PPAs have become mainstream as they dispense with the need for investment by the company and mean a business need not develop expertise in operating and maintaining the solar panels. Epson's sites decide whether to adopt self-investment or PPA according to the individual circumstances of each country and region. After achieving 100% renewable electricity in Japan, Epson's next target was overseas. Some 40% of Epson's electricity usage is from sites and operations outside Japan. As a global player, Epson faces an uneven set of challenges. Different countries or regions have wildly varying provisions of renewable energy. Europe, for example, is comparatively advanced in offering renewable options, while much of Asia, where much of the world's manufacturing is based, has room for improvement. Epson sites have converted to renewables in stages.

Between 2017 and 2020, Epson production sites in Italy, the UK and Philippines began the switch to renewables. Sites in China, South Korea, Australia, and Thailand joined the transition in 2022. Epson Precision Thailand achieved 100% renewables in 2022. Operations across Brazil, Indonesia and the US made good progress in converting to renewables in 2023.

Each nation or region follows its own solution to renewables. In Indonesia, for example, Epson subsidiary PT Indonesia Epson Industry switched to sustainable biomass energy, using natural sources including palm kernel shells (PKS) formed from the palm trees that are plentiful in the area.

The renewable electricity is supplied through an agreement with the local electricity supplier which was transitioning from coal to biomass energy.

In September 2023, Singapore Epson Industrial Pte. Ltd. (SEP) announced it had reached 100% renewable electricity. This is a significant achievement as Singapore has a limited supply of renewable energy due to space constraints.

SEP, which provides plating and finishing services, entered into a Power Purchasing Agreement at one of its plants. A solar power generation system was installed on the rooftop of the plant, making it the 14th facility in the Epson group to install rooftop solar energy. Some 25 GWh of the annual electricity consumption by SEP will come from on-site generation and renewable energy certificates will be used. These allow companies to buy coupons to demonstrate renewable energy production. While this does not fully meet the criterion of locally produced electricity as set out by RE100, it adopts the next best option.

Manufacturers use a huge amount of electricity compared to offices, so in countries or regions like Japan, Taiwan, and Singapore where the supply of renewable electricity is limited, renewable electricity is much more expensive than regular electricity. Making commitments to continue to purchase renewable electricity in the future places a significant burden on management. Epson advance investment to achieve sustainability and enrich communities, in other words, in society and future generations to create social value. Epson is working to popularize the use of renewable electricity, even if it means accepting the short-term cost increases that may result.

Kimmins is impressed with Epson's transition to renewables. The 100% renewables switch will be examined and audited by the global group The Carbon Disclosure Project (CDP), and he says: "While we are yet to verify this officially through CDP, this would be an incredibly impressive achievement. Epson has shown great ambition as a leader in renewable electricity. When a Japanese company achieves near to or at a 100% renewable electricity, it really shatters the narrative that this is too difficult and demonstrates to others across Asia that this is perfectly possible, and that they should get a move on."

The power of partnerships

While large companies can bear the costs associated with switching to 100% clean energy, the volume of renewable electricity must increase dramatically if small and medium-sized enterprises and society are to make the switch.

Transition to renewable electricity is a very big step. However, since most Epson's emissions come from the supply chain, it is essential that progress of collaboration between Epson and its suppliers and the decarbonization of society.

Epson will also lead efforts across its entire supply chain, including setting decarbonization targets for suppliers and monitoring the status of renewable electricity introduction.

Epson is only one company, and its efforts alone cannot change society. They believe that by increasing the number of people and businesses who share their philosophy and collaborating with various partners, they can accelerate social change to the benefit of the whole planet.

Use of Renewable Electricity at Epson Sites Worldwide In 2023

Renewable electricity: Power Purchase Agreement or Certificate Purchasing

Looking to the Future

Epson is reaping the benefits of its switch to renewables. Putting into practice its core philosophy of innovation means that it is not just talking the talk: it’s walking the walk.

While the transition to 100% renewables may have added operational costs, by promoting a stable supply of renewable sources, the company has ensured that those costs will come down in the long term.

One of the biggest gains for society has been promoting renewable infrastructure which other businesses and households can use.

Epson’s transition will inspire other companies in Japan, across Asia and globally to make the switch to renewables. They can see from Epson’s experiences that decarbonization is eminently achievable. With inspired leadership and sufficient dedication, every large company can rapidly make the switch to clean energy within a few years.

REUTERS PLUS™

PRODUCED BY REUTERS PLUS FOR EPSON