

## Sharp and the SDGs

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## Sharp and the SDGs: Business Philosophy and the SDGs

In 1973, Sharp put into writing its business philosophy, which says the company will “contribute to the culture, benefits and welfare of people throughout the world” and that “our future prosperity is directly linked to the prosperity of our customers, dealers and shareholders.” These and other vows of the business philosophy share the aims of the Sustainable Development Goals (SDGs), which the UN enacted in 2015.

Under its business philosophy, Sharp carries out ESG management with a two-pronged approach: creating solutions to social problems through business and technological innovation, and reducing social and environmental impact through sustainable business activities. This approach will help achieve the SDGs and thereby contribute to a sustainable and better world where no one on Earth is left behind.

### Business Philosophy

We do not seek merely to expand our business volume. Rather, we are dedicated to the use of our unique, benefits and welfare of people throughout the world.

It is the intention of our corporation to grow hand-in-hand with our employees, encouraging and aiding them to reach their full potential and improve their standard of living.

Our future prosperity is directly linked to the prosperity of our customers, dealers and shareholders ...indeed, the entire Sharp family.

### SUSTAINABLE DEVELOPMENT GOALS



## Smart Appliances & Solutions BU

Offering support through AIoT\*1 for a safe, healthy, and comfortable lifestyle. Yielding a humanity-empowering smart life through people- and society-oriented AIoT.

\*1 AIoT is a word coined by Sharp, combining the words AI (artificial intelligence) and IoT (Internet of things). Sharp is pursuing a more people-oriented world through AIoT-driven devices and services.



### Business Overview

In its aim to help improve people’s quality of life and create a sustainable society, the Smart Appliances & Solutions BU supplies end consumers and B2B customers globally with a variety of appliances, such as air conditioners, refrigerators, washing machines, microwave ovens, and air purifiers.

### Major SDG Contribution Examples

- The Smart Appliances & Solutions BU continues to develop energy-saving technologies for individual white goods, such as air conditioners, refrigerators, washing machines and other energy-demanding appliances, and to develop resource-saving designs, such as for water-saving No-Holes Tub washing machines, while also expanding the incorporation of recycled plastics through the use of closed-loop material recycling technology\*2. In addition, the Smart Appliances & Solutions BU is continually working on the development of AIoT-compatible devices that automatically save energy while being adapted to each user’s lifestyle. In fiscal 2023, it developed 104 AIoT-compatible models for the Japanese market. Overseas, it updated and expanded the range of services it offers that are tailored to the needs of foreign markets, including ASEAN, Taiwan and North America.
- The Smart Appliances & Solutions BU works in collaboration with other businesses to address social issues. It has begun offering air conditioners and refrigerators that are compatible with the Life Eee Connect (solar home appliance connection) service\*3, which is the first in the industry\*4 to connect solar power generation with home appliances to reduce home appliance-related electricity bills. In addition, the BU has begun offering local governments an IoT elderly care monitoring system service, which utilizes IoT home appliances from multiple companies to help address the risks of isolation for elderly people and those in need of care.

\*2 Jointly developed with Kansai Recycling Systems Co., Ltd., a consumer electronics recycling company established in Japan with joint investment from Sharp and five other companies. See page 047.

\*3 See page 021 (Sharp Energy Solutions Corporation).

\*4 For home appliance management HEMS services. As of February 20, 2024; based on Sharp findings.



Sharp’s Plasmacluster air conditioner is the industry’s only air conditioner with CO<sub>2</sub> sensor and cloud connection. It saves energy while creating a comfortable environment



This large-capacity refrigerator combines a slim, beautiful kitchen design with enhanced AIoT-driven energy saving performance

### Awards and Honors

- ES-X11B enhanced hybrid drying front-loading washer/dryer wins METI Minister’s Award, and the Connected Lighting Control Solution, which addresses logistics challenges of 2024, wins ECCJ Chairman’s Award at the Energy Conservation Grand Prize 2023
- AIoT home appliances equipped with speech functionality\*5 wins Audience Award at PHASE FREE AWARD 2023 (3rd)

\*5 This award is given to products and services that are useful in both normal usage situations as well as during disasters. The award was jointly received with the National Research Institute for Earth Science and Disaster Resilience.



Left: ES-X11B Plasmacluster front-loading washer/dryer  
Right: Connected Lighting Control Solution system diagram

### Business Outlook and Growth Story

In order to help create a sustainable society, the Smart Appliances & Solutions BU provides products and services that address pressing social issues, such as climate change and the circular economy, through more energy-efficient white goods, which includes the use of AIoT, through a responsiveness to the growing awareness of the need to conserve electricity and water, and through a concerted effort to reduce the use of virgin plastics.

In addition, by leveraging the strength of its AIoT as an open platform, which can be integrated with other companies’ devices, the BU will increase comfort and convenience, as well as create new value through utilization in disaster prevention and other contexts to thereby contribute to a safer and more secure society.

# Sharp Energy Solutions Corporation (SESJ)

Providing eco-friendly, energy-producing solar power systems to countries around the world to help realize carbon neutrality. Making life easier with energy solutions (systems and services) that make smarter use of electricity.



## Business Overview

SESJ carries on the philosophy of founder Tokuji Hayakawa as it operates energy solutions businesses in Japan and overseas. As countries and companies accelerate their efforts to achieve carbon neutrality, SESJ is actively contributing to the drive to realize a decarbonized society by providing appropriate solutions.

## Major SDG Contribution Examples

- Expansion of Life Eee Connect service

In November 2023, the COCORO ENERGY cloud-based HEMS\*<sup>1</sup> service launched Life Eee Connect (solar home appliance connection), the industry's first\*<sup>2</sup> such service. It uses proprietary AI to effectively utilize electricity from solar power systems to operate home appliances and residential equipment. Compatible devices have been expanded to include air conditioners, water heaters, and refrigerators.

SESJ will continue to pursue device operation optimization as it aims to realize zero energy homes that make astute use of generated electricity.

\*<sup>1</sup> HEMS: Home energy management system. A system for managing and controlling the energy used in a home.

\*<sup>2</sup> For home appliance management HEMS services. As of February 20, 2024; based on Sharp findings.

- Construction of numerous solar power plants both domestically and overseas

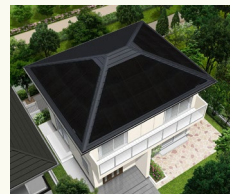
SESJ applies its extensive know-how and proven technology to solar power plants in everything from design to construction and maintenance.

- Release of residential solar modules

SESJ is undertaking the appropriately timed release of its BLACKSOLAR ZERO (e.g., NQ-230BP), which has a high load capacity and a design that blends beautifully with rooftops, and a high-output model (e.g., NU-435PP), which is suitable for gabled roofs with large installation areas. By offering these on the market, SESJ is contributing to more widespread adoption of solar power and the creation of clean energy.



Samegawa Aono Solar Power Plant



Installation image (hipped roof)



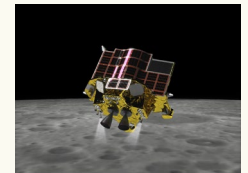
Installation image (gabled roof)

## Awards and Honors

- Installation on SLIM lunar exploration spacecraft  
SLIM\*<sup>3</sup>, JAXA's\*<sup>4</sup> spacecraft equipped with thin-film compound solar cells developed and manufactured by Sharp, successfully made a pinpoint landing on the Moon's surface on January 20, 2024. It has been confirmed that the solar cells continued to operate normally following the landing. SESJ will pursue broad application of technologies that enable stable operation in harsh environments, such as outer space, and will utilize them to improve the reliability of a diverse range of products.

\*<sup>3</sup> SLIM (Smart Lander for Investigating Moon) is a small-scale lunar exploration spacecraft developed by JAXA.

\*<sup>4</sup> JAXA: Japan Aerospace Exploration Agency



SLIM (artist rendering; ©JAXA)

## Business Outlook and Growth Story

SESJ launched the JH-WE2301, the industry's smallest and lightest\*<sup>5</sup> electric vehicle (EV) converter capable of charging and discharging EVs, and built a V2H system for connecting EVs to homes. In order to make effective use of solar power, SESJ began offering the Eee Connect system. As part of the Life Eee Connect service described above, it not only connects with storage batteries and home appliances but also connects with EVs.

Moving forward, SESJ plans to expand applications to include EVs and more, as well as to expand the scope of connections (from homes to cities) that are centered on AI control, to contribute to people's lives by making them cleaner and more enriching.

\*<sup>5</sup> As of February 15, 2024; based on Sharp findings.



EV converter installation image



Eee Connect system

## Smart Business Solutions BU

By strengthening B2B solution proposals built on the customer’s perspective, the Smart Business Solutions BU is contributing to the resolution of business and social issues in ways that will help foster a sustainable society by providing safe, secure environments that let people concentrate on their jobs no matter when or where they are.



### Business Overview

The Smart Business Solutions BU operates globally across three sectors: Smart Offices (centered on digital MFPs), Smart Public (public sector), and Smart Factories. Social changes are prompting reforms in the workplace, including new ways of working and greater adoption of digital technologies. In response, the Smart Business Solutions BU meets customer needs by offering them new added value and services.

### Major SDG Contribution Examples

- Energy-efficient A4 color MFPs

The BP-C533WD/WR A4 color MFPs for the Japanese market released in February 2024 are the first A4 models to feature the toner fusing system used in Sharp’s latest A3 MFPs\*1. By improving the efficiency of the unit that fuses toner to paper, a quick warm-up time\*2 is achieved. Both models are among the top in the industry with a TEC value\*3 of 0.33 kWh/week.

- \*1 BP-70C/60C/50C/40C/70M series
- \*2 Warm-up time is the time required before you can start printing after turning on the power.
- \*3 TEC: Typical electricity consumption. TEC values are derived using measurement methods defined by the international ENERGY STAR program version 3.0 requirements.



- Reducing plastic packaging

From March 2024, the Smart Business Solutions BU has reduced the weight of plastic packaging by 60% for Sharp’s flagship A3 color and B/W MFPs\*4 for the Japanese market by switching from conventional plastic foam to corrugated cardboard for the cushioning material.

- \*4 Before and after the change in packaging material for the BP-70M/70C/60C/50C/40C series.



### Awards and Honors

● ePaper color electronic paper display wins 2024 iF Design Award  
The EP-C251/C131, released in October 2023, is environmentally friendly color electronic paper that does not require power (0 W) to maintain the displayed image\*5, uses 30% recycled material for the plastic of the main cabinet, and uses recycled materials for the packaging and cushioning.

- \*5 Power is consumed when the display is updated.



EP-C251/C131 ePaper

### Corporate Social Responsibility

- Main production sites receive silver certification from RBA VAP audit

In September 2023, the Smart Business Solutions BU’s main production sites, SOCC\*6 in China and SMTL\*7 in Thailand, received silver certification following a VAP\*8 audit conducted by the Responsible Business Alliance (RBA) to assess their compliance with the RBA code of conduct in areas such as labor, ethics, the environment, and health and safety. For each production site, the VAP audit was an opportunity to strengthen management systems for corporate social responsibility, which they will continue to maintain and improve in the future in order to help Sharp be a company trusted by society.

- \*6 SOCC: Sharp Office Equipments (Changshu) Co., Ltd. (China)
- \*7 SMTL: Sharp Manufacturing (Thailand) Co., Ltd.
- \*8 VAP: Validated assessment program. An audit program related to corporate social responsibility.



### Business Outlook and Growth Story

Amidst a drastically changing social landscape, the Smart Business Solutions BU supports DX-driven business/work style reform in order to continue to contribute to the resolution of social issues via unique, environmentally friendly products, services, and solutions that are grounded in Sharp’s business creed of “Sincerity and Creativity.”

#### Target Social Issues

- Development of environmentally friendly products
- Reduction of greenhouse gas emissions
- Aging of the population and labor shortages
- Compliance with legal requirements
- Rapidly rising distribution volume
- Reduction of environmental impacts
- Changing workstyles
- Prevention of resource scarcity
- Environmental and community service shortages
- Prevention of environmental pollution



Dynabook Inc.

Dynabook is making people’s lives and society better by “changing the world through computing and services,” developing “true computing that reflects real needs and that supports communities,” and offering “new added value and services developed from the user’s standpoint.”



Business Overview

Dynabook plans, develops, manufactures, sells, supports, and services personal computers and system solutions. We are pursuing the fusion of hardware (“dynabook as a Computing”) and services (“dynabook as a Service”) and strengthening the technology that supports this endeavor.

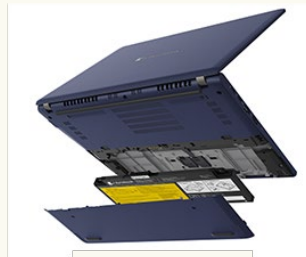
Major SDG Contribution Examples

- PC with self-replaceable battery contributes to reduced business downtime

Dynabook released a PC that features a self-replaceable battery mechanism, which allows customers to safely and easily replace a degraded or expired battery with a new one themselves\*1.

Unlike conventional built-in batteries, this eliminates the time and effort required to send a PC in for repairs, thus reducing the amount of time that the PC is unusable, i.e., business downtime.

\*1 Requires the separately sold self-replaceable battery (L) option.



The dynabook X83 (CHANGER) is a high-end notebook PC that features a self-replaceable battery

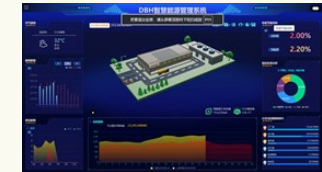
- Solar power system reduces CO2 emissions and supplies green electricity

Dynabook installed a solar power system (polycrystalline silicon solar panels, string inverters, etc.) on approximately 10,000 m<sup>2</sup> of the roof and parking lot at the Dynabook Technology (Hangzhou) Inc. factory in China. The total installed capacity is approximately 1,600 kW, with the electricity being used to power the factory and any surplus being supplied to external parties.



Solar power system

Additionally, by developing its own smart energy management system, Dynabook is able to visualize and perform real-time monitoring of energy consumption.



Smart energy management system

Business Outlook and Growth Story

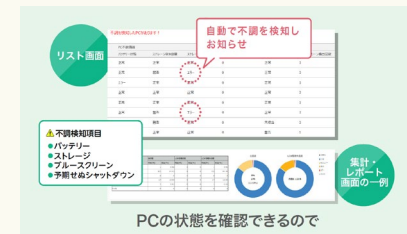
- Expanding the functionality of the PC asset monitoring service to enable security measures and AI-driven analysis

Dynabook’s original asset management ledger system makes it possible to manage PC users, location information, and status. The monitoring service facilitates more efficient PC operation through failure detection, which lets users check the status of their PCs via a portal so that they can ascertain in advance the number of spare machines required and to speed up the timing of PC procurement.

Moving forward, Dynabook will continue to strengthen functionality, including security functions and AI-driven analytical functions.



PC asset monitoring service



## TV Systems BU

Promoting innovation, better health, and environmental protection with ideas that make life more convenient and comfortable.



### Business Overview

The TV Systems BU develops and sells products, such as TVs and wearable neck speakers, with unique features that put them ahead of what other companies are offering. We continue to work to expand the possibilities of AV equipment. In addition to developing basic functionality, i.e., picture and sound quality, we pursue ESG and SDGs-related manufacturing and solutions to deliver ideas that will make life more convenient and comfortable.

### Major SDG Contribution Examples

- **Auto picture quality adjustment (environmental sensing)**

Models released in 2024 have a new feature that enables the brightness and color temperature sensor to detect the brightness of the room in which the TV is being watched and automatically adjust not only the brightness and gradation levels but also the color temperature of the picture according to changes in the color of the external light and lighting. This makes the picture easier on the eyes as well as reduces unnecessary power consumption.



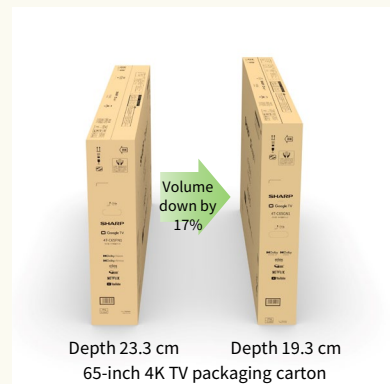
Automatically adjusts picture quality to suit the brightness and color temperature of external light and lighting



Naturally restores shadows affected by external light

- **TV packaging carton downsizing**

The trend of increasing TV screen sizes means larger packaging cartons and more cushioning material. For 2024 models, the TV Systems BU has reduced the amount of plastic cushioning material used and downsized the packaging carton (as much as 17% smaller than previous models) while ensuring shock absorption and durability during transportation. In addition to helping protect the environment by reducing plastic waste and curbing greenhouse gas emissions during transportation by improving loading efficiency, this will also help in addressing the logistics problem facing Japan in 2024\*.



Depth 23.3 cm      Depth 19.3 cm  
65-inch 4K TV packaging carton

\* There are concerns that the tightening of regulations limiting truck drivers' working hours will lead to disruptions in the logistics industry.

### Business Outlook and Growth Story

At Sharp Tech-Day held in November 2023, the TV Systems BU exhibited new TV features and devices, focusing on AI and the SDGs. The response was very good and included requests for early commercialization.

#### Main Exhibits

- **TV AI healthcare trainer**

The TV Systems BU has developed a platform to be used with a large-screen TVs that can be easily adapted for a variety of applications, such as yoga, fitness, and frailty prevention exercises. Using generative AI to analyze posture in real-time based on images captured by a camera attached to the TV, an AI healthcare trainer provides advice to users.



Posture analysis and advice from an AI healthcare trainer

- **TV remote control with built-in solar panel**

The TV Systems BU has developed a TV remote control with a built-in solar panel that efficiently generates electricity using indoor light. Because it can be charged simply by setting it down, the device has no need for dry cells.



TV remote control with built-in solar panel

Mobile Communication BU

Using communication technology to build a society where everyone has an equal opportunity to find decent quality of life and work.



Business Overview

The Mobile Communication BU aspires to be a business unit that leverages communication technology to keep on producing new value. By developing diverse networked devices like smartphones, routers and creating solutions and services, we provide products and services that inspire people to live more joyful lives.

Major SDG Contribution Examples

- AQUOS wish4 smartphone

Like the previous model, the AQUOS wish3, the casing uses recycled plastic, and this environmental-mindedness extends to the slim packaging that cuts down on paper usage. In addition, the percentage of recycled plastic used in the casing has increased, making this a more environmentally friendly model than the previous one.



AQUOS wish4 smartphone

- AQUOS R9 smartphone

Recycled metal materials are used for the exterior metal parts, including the casing, and biomass materials are used for the internal parts. Compared to the previous model, the number of parts made from recycled materials has increased, and the hardness of those parts has also improved. The aim was to improve both performance and environmental friendliness.



AQUOS R9 smartphone

Other Examples

- Inforia for Hotel

This in-room information service facilitates non-contact/non-face-to-face customer reception and better operational efficiency.

- “home 5G” router for NTT Docomo

With simple installation that requires only a power outlet to plug it into, this router turns users’ homes into an ultra-high-speed Wi-Fi environment convenient for telework and online learning.



Upper left: Inforia for Hotel  
Lower right: home 5G

Business Outlook and Growth Story

The Mobile Communication BU will continue to provide products and solutions that help in addressing social and environmental issues, while also aiming to provide new value.

In addition to the already released Medical Listening Plug in-the-ear hearing aid, the BU will keep expanding its wearable devices lineup including XR devices currently under development and, by broadening its business domain beyond smartphones, it will continue creating products and services that further enrich people’s lifestyles and work styles.



Business domain expansion (image)



Corporate Research & Development Group

By using society-changing, proprietary, world-first, and world's-best technology to build entirely new ecosystems and create and expand new businesses, we are contributing to a sustainable society.

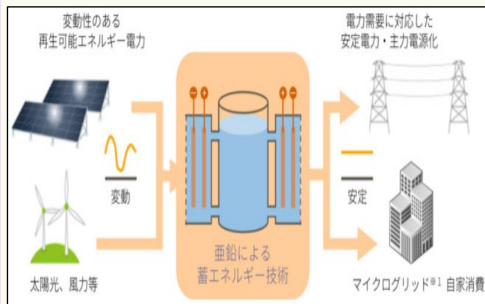


Business Overview

The Corporate Research & Development Group is working to create innovative technologies that will serve as the fundamental engine for innovation company-wide, as well as to build platforms centered on Sharp's unique technologies. Our aim is to help make society both people and environmentally friendly by tackling the challenge of new business creation and accelerating the pace of innovation achievement through the rapid deployment in society of the fruits of development.

Major SDG Contribution Examples

- **Spreading the use of renewable energy and achieving carbon neutrality**  
Sharp has begun developing energy storage technology that utilizes a flow-type zinc-air battery well-suited to large-scale power storage. (Aiming to realize and rapidly commercialize innovative power storage technology)
- **Demonstration of local 5G-driven support for local government operations**  
Sharp has tested local 5G + 8K video transmission in dam inspection and maintenance and in on-site support during disasters.
- **Functional expansion and performance enhancement of 5G**  
Sharp is contributing to the creation of international standard specifications for the 5G-Advanced next-generation mobile communications system. (Aiming to expand scope of use through the evolution of communications)



Energy storage technology utilizing zinc (image)



Local 5G validation testing for dam inspection and maintenance

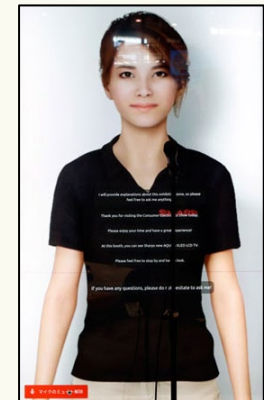
Awards and Honors

- 2024 Telecommunication Technology Committee (TTC) Merit Award goes to three Sharp employees  
This award was presented in recognition of Sharp's active promotion of 4G/5G system standardization in 3GPP\*1 and its contribution to the formulation of specifications.

\*1 3GPP (Third Generation Partnership Project) studies and formulates specifications for mobile communication systems that handle 4G and 5G technologies. The specifications formulated by 3GPP are widely adopted in mobile communication systems in Japan.

Business Outlook and Growth Story

To put into practice ESG-focused management, the Corporate Research & Development Group is using "One Sharp" partnership and collaboration to step up its contributions to carbon neutrality, carry out digital transformation in infrastructure and other areas, and accelerate new business development in growth fields that will help create a more comfortable living environment. Particularly with regard to the advancing innovation in AI technology, the Corporate Research & Development Group will work to create people- and earth-friendly innovations through the application of its proprietary edge AI technology CE-LLM\*2 to improve the performance of AIoT home appliances. Amidst an increasingly diverse and complex array of issues facing society, the Group will contribute to Sharp's continued growth through technological development aimed at creating innovative services and solutions that capitalize on change and put into practice a sustainable society and management.



AI Avatar was on display at Sharp Tech-Day and CES 2024

\*2 CE-LLM (Communication Edge-LLM) is a registered trademark of Sharp Corporation.