





















# APPROACH TO SUSTAINABILITY

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# Business Sustainability

## DX | Device eXperience Division

Sustainability is a core value and key driver of our operations, and we strive to embed it in every product and service that we offer. We will remain committed to activities that minimize our environmental impact, including the use of recycled materials in all stages of mobile device and home appliance manufacturing processes by 2025.

### Use of Recycled Materials

- Galaxy S22 and Tab S8, as well as high-resolution monitors released in 2022, are equipped with parts made with recycled ocean-bound plastic<sup>1)</sup>
- 1) PET bottles and discarded fishing nets, etc
- All the Visual Display models<sup>2)</sup> will use recycled plastic materials in 2022
- 2) TVs, monitors, and remote controls. (including outsourced products)



### Eco-Packaging

- EPS cushions inserted in the box for Visual Display products and plastic used for sub packaging<sup>1)</sup> are made with recycled materials
- 1) Sub packaging: Accessory bag, PP band, box holder, and stand bag
- Eco-Packaging, designed to be upcycled as small and versatile household items, has been implemented in all TV products and is scheduled to be expanded to the vacuum cleaners, air purifiers, Bespoke Qooker and more

### Lifetime Warranty for Key Parts

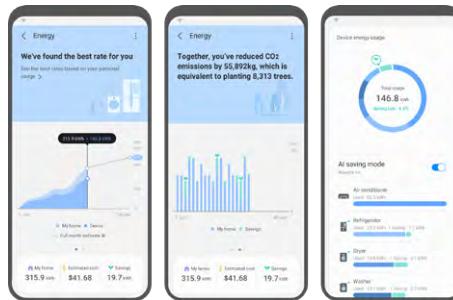
- To reduce home appliance waste, we began to provide lifetime warranties for the key parts (digital inverter motor/compressor) of new products released in Korea from 2021
- Plan to provide 20-year warranty of digital inverter motor and digital inverter compressor for washers sold in the US (for washers made in the US) and refrigerators and washers sold in Europe (From the 2nd Half of 2022)



Image of Lifetime Warranty for Key Parts

### SmartThings Energy

- SmartThings Energy enables users to monitor total power consumption of their household as well as the power consumption for connected smart home appliances<sup>1)</sup>. It also offers the SmartThings Energy Service<sup>2)</sup> designed to help reduce energy consumption by using an AI-based smart power saving mode
- 1) Service available in Korea, the US, the UK, India, and Brazil
- 2) Service available in Korea only
- \* Total power consumption monitoring service is available only for those households connected to a smart meter.



### Reducing the Release of Microplastics

- Through a collaboration with renowned active wear brand Patagonia, Samsung is developing a specialized washer that reduces the release of microplastics, particles that are highly damaging to the world's oceans and our health

### SolarCell Remote Control

- We developed SolarCell Remote Control that can be charged via sunlight or illumination without the need for disposable batteries. Recycled materials are used in the exterior of the remote control (for QLED TV from 2021, expanded to air conditioners in 2022)
- We plan to replace the lithium-ion battery with a supercapacitor, which emits less GHGs, and use this remote control for all smart TV products in 2022



### Samsung Global Goals

- The Samsung Global Goals app introduces our global efforts to meet the 17 Sustainable Development Goals of the United Nations and allows users to donate directly to the goals of their choice
- Donations raised in 2021<sup>1)</sup> amount to USD 2.69 million
- 1) November 2020 ~ October 2021

### Galaxy Upcycling

- Galaxy Upcycling at home program: A recycled smartphone can be repurposed into a sound sensor, illumination sensor, and notification sender for your current smartphone via the SmartThings app
- Digital vision tester (EYELIKE™): This device is designed to diagnose various eye disorders that may lead to loss of vision using a used Galaxy smartphone. Devices are provided to developing countries such as Vietnam, India, Morocco, and Papua New Guinea



# Business Sustainability

## DS | Device Solutions Division

We strive to enhance the energy efficiency of major semiconductor products, including memory devices, image sensors, and driver ICs, to reduce the power consumption of data centers and IT devices such as smartphones and laptops.

### Eco-Conscious Manufacturing Process

- Reducing GHG emissions by 6.03 million tonnes in the manufacturing process
- Reducing GHG emissions by 3.03 million tonnes through improving flue gas treatment, change to alternative gases and reducing fuel consumption
- Reducing GHG emissions by 480,000 tonnes by using high-efficiency equipment and parts, and by managing equipment power systems
- Reducing GHG emissions by 2.52 million tonnes by using renewable energy
- Eco-conscious performance in the semiconductor manufacturing process
- Managing water resources to save 6,857 tonnes of water per day and reducing sulfate ion concentration
- Reducing and recycling waste



### Energy Consumption Reduction

- Reduce the power consumption of LED products
- Improve luminance efficiency of the lighting LED package (LM301B) device by 2% each year
- Improve luminance efficiency of the vehicle head lamp LED solution (C-series) device by 3% each year

- Implementing semiconductor products with lower energy consumption through the commercialization of an ultra-fine foundry process
- Reduce power consumption by nearly 50% compared to the 5nm process by applying gate-all-around technology<sup>1)</sup> to the 3nm process
- Enhance the System on Chip (SoC) design and applying fan-out wafer-level packaging<sup>2)</sup>
- Reduce Large-scale Integration (LSI) power consumption by securing IPs that reinforce its power competitiveness

1) Gate-all-around refers to a modified transistor structure where the gate contacts the channel from all sides and enables continued scaling.

2) Fan-out wafer-level packaging is an integrated circuit packaging technology that carries out redistribution first and then dices the wafer. In this process, the surface area of redistribution is larger than the chip.

### Certification and Award

- 24 products of strategic importance have attained the Carbon Trust's product carbon footprint in 2021



Product carbon footprint labeling	
2019	1 UFS
2020	8 DRAM/SSD/memory cards
2021	4 system semiconductors and 20 DRAM/SSD/memory cards

We have attained low-carbon product certification from the Korea Environmental Industry and Technology Institute (KEITI) and the 'Reducing CO<sub>2</sub>' Label by the Carbon Trust.

- Low-carbon product certification by KEITI: Portable SSD T7 (1TB)
- Reducing CO<sub>2</sub> Label by the Carbon Trust: HBM2E (8GB), GDDR6 (8Gb), UFS 3.1 (512GB), Portable SSD T7 (1TB), and Micro-SD EVO Select (128GB)

\*Lower Carbon Label: Certification for a product that has already attained the Carbon Footprint Label or for its follow-up product found to have reduced GHG emissions across all life cycle stages

- Attained global certifications for the information security management of our foundry business
- Security certification ISO 27001 (Information security management)
- Common Criteria of the German Federal Office for Information Security (Bundesamt für Sicherheit in der Informationstechnik)

- 3 memory products won the CES 2022 Innovation Awards
- PCIe 5.0 SSD PM1743, 512GB DDR5 RDIMM, and ZNS NVMe SSD



- Gained global recognition for LED products
- User-centric lighting<sup>1)</sup>: Winner at the CES 2021 Innovation Awards in the Health and Wellness category
- Plant cultivator lighting<sup>2)</sup>: Included in the 2021 IES<sup>3)</sup> Progress Report

1) Lighting technology that positively impacts biological rhythms by influencing melatonin levels

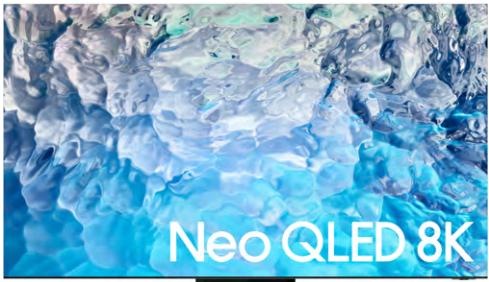
2) Technology emitting light in wavelengths that promote plant growth

3) Illuminating Engineering Society, a not-for-profit organization that develops standards related to lighting

## Sustainability Highlights of Major Products

### TV (Neo QLED 8K TV / QN900B)

- Intelligent energy-saving function (automatic screen-off and power-off using the light sensor and motion sensor)
- SolarCell Remote made with recycled plastics
- Applied Eco-Packaging and recycled EPS<sup>1)</sup>
- Carbon Trust's Reducing CO<sub>2</sub> certification
- 1) Expandable polystyrene (Styrofoam)



### Second Generation Massive MIMO Radio

- 2.7 times higher output and 55% less energy consumption for maximum output compared to the first generation
- Product size reduced by 14% and product weight by 24% compared to the first generation, thereby saving more resources



### Smartphone (Galaxy S22 Series)

- Recycled fishing nets used for the key brackets and interior of S22 Ultra S Pen
- PCM<sup>1)</sup> plastic applied to the speaker modules and interior of the volume key
- Eco-Packaging (made 100% with recycled paper and minimize the use of plastic)
- Carbon Trust's product carbon footprint label
- 1) Post-consumer materials created from recycled plastics



### Mobile DRAM Solution (LPDDR5X)

- Fastest speed (8.5Gbps) among all our existing mobile DRAM solutions (1.3 times faster than LPDDR5 running at 6.4Gbps)
- Energy efficiency improved by 20% compared to the previous generation

### Monitor (ViewFinity S8 / S80PB)

- Energy-saving function applied (Eco-saving plus)
- Grade-A energy efficiency rating (ErP<sup>2)</sup>)
- Recycled ocean-bound plastics used in the back cover of the product
- ENERGY STAR, EPEAT<sup>2)</sup>(bronze), and TCO Certified<sup>3)</sup> certification
- Applied Eco-Packaging

- Carbon Trust's Reducing CO<sub>2</sub> certification
- 1) Energy-Related Products Directive of the EU
- 2) Electronic Product Environmental Assessment Tool of the US
- 3) Sustainability certification created by Swedish Confederation of Professional Employees

## Sustainability Highlights of Major Products



### BESPOKE Grande AI Dryer (DV20B9760NE)

- First-grade energy efficiency rating<sup>1)</sup>
- High-efficiency heat pump
- Energy consumption monitoring and AI-based energy-saving mode (SmartThings Energy)
- AI-based tailored drying function applied to enable the optimization of the temperature and cycle time using 11 sensors

1) A classification of the energy use or energy consumption efficiency of home appliances in Korea



### BESPOKE Refrigerator Infinite Line (RR40B9981APG)

- First-grade energy efficiency rating
- Water filtration system certified by National Sanitation Foundation (NSF)<sup>1)</sup> for its microplastics removal capacity
- Energy consumption monitoring and AI-based energy-saving mode (SmartThings Energy)

1) Certification obtained pursuant to NSF/ANSI 42, 53, and 401 Filtration Systems Standards and NSF/ANSI/CAN 372 Technical Requirements



### Light Solution for the Smart Plant Grower (LM301H EVO)

- World's first solution with a plant-exclusive spectrum (437nm), boasting 6% higher PPFD<sup>1)</sup>
- 50% more nutrients and 20% less microorganisms in plants compared to the previous generation
- Showcased in the 2021 IES Progress Report

1) Photosynthetic photon flux density



### LED Signage (The Wall / LH012IWA)

- Dynamic Peaking technology applied to realize the highest display brightness with lower energy consumption (maximum brightness: 1,600nit)
- Applied Eco-Packaging
- Carbon Trust's Reducing CO<sub>2</sub> certification



### DRAM (14nm EUV DDR5)

- Productivity improved by 20% compared to the previous generation based on its best-in-industry wafer level integration
- Power consumption reduced by nearly 20% and speed increased two-fold (7.2Gbps) compared to the previous generation



### Note PC (Galaxy Book 2 Pro)

- Recycled fishing nets used in the interior of the brackets and touchpad holder of Galaxy Book2 Pro 360
- New algorithm applied to extend the life cycle of the battery, reduce standby power, thereby decreasing the need for battery replacement
- Eco-conscious AMOLED display (UL's GREENGUARD Gold Certification)

## Sustainability Highlights of Major Products

### Signage (Crystal UHD Signage / QH55B)

- Recycled materials used in the back cover of the product
- ENERGY STAR and EPEAT (bronze) certification
- Applied Eco-Packaging
- Carbon Trust's Reducing CO<sub>2</sub> certification



### Wind-Free Air Conditioner (AF20BX934WAN)

- First-grade energy efficiency rating
- Eco-conscious refrigerant (R32)
- Energy consumption monitoring and AI-based energy-saving mode (SmartThings Energy)
- SolarCell Remote



### BESPOKE Grande AI Washer (WF24B9600NE)

- First-grade energy efficiency rating
- Eco Bubble™ Technology (high energy efficiency, reduced cycle times, and minimized damage to cloth)
- AI-based tailored wash technology that automatically dispenses detergent in preset amounts in accordance with cloth type, weight, and soil and stain level
- Energy consumption monitoring and AI-based energy-saving mode (SmartThings Energy)
- "No-detergent wash drum cleaning+" cycle added to enable the cleaning of the wash drum and door frame without detergent



### 8K DTV<sup>1)</sup> SoC

- Lower energy consumption realized through the integration of the DTV SoC and image processor
- Carbon Trust's product carbon footprint label

1) Digital TV

## Sustainability Achievements

### Environment

#### Use of Renewable Energy

**5,278** GWh

\* 31% increase compared to the previous year



#### EHS management system at our production sites

**100** % certified



#### Recycling

**96** % of manufacturing waste



#### Collection

**5.07** million tonnes of discarded electronic goods



\* Cumulative sum, 2009-2021

### Digital Responsibility

#### Cases of internal consulting on privacy protection

**9.7** % increase compared to the previous year



#### 2021 Digital Inclusion Benchmark

**4** th (ICT sector)

\* Digital Inclusion Benchmark conducted by the World Benchmarking Alliance.

### Our Employees

#### Recognition of Our Efforts to Respect Human Rights

Ranked **1** st among companies benchmarked by Global Child Forum (electronics sector)



#### Safety and Health Certification at our production sites

**100** % ISO 45001<sup>1)</sup> certified



1) International standard for occupational health and safety management systems

### Empowering Communities

#### Hours of employees' volunteer work

**9,903,186** hours

\* Cumulative sum, 2012-2021



#### Number of beneficiaries of our CSR activities

**22,150,865** people

\* Cumulative sum, 2012-2021



#### Number of companies adopting Smart Factories

**2,812** companies

\* Cumulative sum, 2015-2021



### Sustainable Supply Chain

#### Suppliers rated outstanding in the comprehensive supplier evaluation

**68** %

\* The comprehensive competitiveness of our suppliers is evaluated each year.



#### All smelters and refiners in our supply chain

**100** % RMAP<sup>1)</sup> certified

1) Responsible Minerals Assurance Process



## Recognition and Awards

### Rankings

5<sup>th</sup> in Best Global Brands 2021 (USD 74.6 billion, 20% increase from previous year)



1<sup>st</sup> in World's Best Employers for two consecutive years in 2020 and 2021



### Awards

#### CES 2022 Innovation Awards

- Selected as the highest rated winner (4 products)
- Selected as the winner (39 products)

#### 2021 Sustainable Materials Management Electronics Challenge by the United States Environmental Protection Agency

- Sustained Excellence for SolarCell Remote
- Gold Tier for excellence in the responsible collection and recycling of electronic waste

### Certifications

#### Product Carbon Footprint Label by the Carbon Trust

- 11 TV models, 3 monitor, and 2 signage
- 10 smartphone models including Galaxy S22 Ultra and 4 tablet models
- 4 system semiconductors
- 20 memory semiconductors

#### Lower Carbon Label by the Carbon Trust

- Galaxy S21, S21+, and S21 Ultra
- 13 TV models, 3 monitor, and 2 signage
- 5 memory semiconductors

#### 4 LED Package Products, Underwriters Laboratories (UL) Certification

#### Carbon Trust Triple Standard

All semiconductor business sites certified for reduced impacts related to carbon, water, and waste—a first for any manufacturer in the industry.



#### Common Criteria Certification<sup>1)</sup> for 5G Solutions

1) Global security certification

#### UL Gold Certification

- Galaxy S22, S22+, S22 Ultra and 16 other models

#### Electronic Product Environmental Assessment Tool Certification (US)

- 6 TV models including BE75T-H, 14 Signage models including LH43QMBEBGCXZA, 90 Monitor models including S27A400UJN, Note PC NP930QDBA, etc.

#### Win-Win Index by Korea Commission for Corporate Partnership under the Korean Ministry of SMEs and Startups

- Rated outstanding for 10 consecutive years



#### ENERGY STAR Awards, US EPA

- Partner of the year awards for environmental protection
- Honored with sustained Excellence nine times



#### IDEA 2021 (48 products)



#### National Quality Management Awards by the Korean Ministry of Trade, Industry and Energy

- Presidential Citation
- Foundry Business for securing unmatched quality eness

#### National Technology Awards by the Korean Ministry of Trade, Industry and Energy

- Presidential Prize
- Foundry Business for developing processing technology for 14nm RF and succeeding in the world's first mass-production

#### Energy Winners of the Year by Consumers Korea

- 8 prizes including Grand Prize and Minister of Trade, Industry and Energy Prize

#### Health-Friendly Company Certification by the Korean Ministry of Health and Welfare

- Minister of Health and Welfare Prize
- Certified for the operation of tailored healthcare programs, in-house clinics, the Musculoskeletal Disorder Prevention Exercise Center, healthcare-themed concerts, etc.

## Sustainability Governance

We strive to achieve sustainability governance through the establishment of company-wide governance system including the **Board of Directors** and **Sustainability Management Office** in each business unit.

The Board oversees our sustainability activities as the overarching decision-making body. The Sustainability Committee under the Board was established in July 2021 by expanding the role of the existing Governance Committee to push ahead with various ESG activities and increase shareholder value. The Sustainability Council brings together heads of business units and functional teams responsible for a wide range of sustainability issues. The Council, previously led by the head of the Corporate Management Office, has been placed under the direct supervision of the CEO since 2022.

As the sustainability management control tower, the Corporate Sustainability Center is responsible for establishing overall strategies for sustainability, monitoring relevant outcomes, and facilitating external cooperation and communication through collaboration with related departments and councils. The Sustainability Management Office of each business establishes sustainability strategies tailored to its operations and characteristics, and supports their execution. Sustainability Management Offices outside of headquarters identify regional issues that concern our stakeholders and establish and implement strategies accordingly. Sustainability training is offered to employees and executives to integrate ESG principles into their day-to-day tasks.

Since 2021, we have included sustainability-related items in our performance evaluation system for executives and business units to ensure adherence to sustainable practices. We plan to continually update our evaluation and compensation system.



- Monitoring overall sustainability direction and performance
- Key agenda: Environmental issues such as climate change and circular economy, social contribution, labor and human rights, safety and health, ethics, and compliance
- Held at least every 6 months

- Reviewing sustainability issues with those in charge of sustainability in different business areas
- \* Agenda items discussed by the Sustainability Council and the results reported to the Board and Sustainability Committee
- Headed by the CEO
- Held at least every 6 months
- Participants

[Corporate Management] Corporate Sustainability Center, Corporate Human Resource Team, Corporate Management Team, Partner Collaboration Center, Global EHS Center, Global CS Center, Compliance Team, IR Team, Global Marketing Center, Communication Team, Mechatronics and Manufacturing Technology Center, and Corporate Citizenship Office, etc.

[Business Units] Heads of major business units and the Sustainability Management Office

### Departments Dedicated to Sustainability

- Corporate Sustainability Center
- Sustainability Management Office of the DS Division
- Sustainability Management Office of major business unit (VD, DA, MX, Memory, Foundry, etc.)
- Sustainability Management Functions at regional offices

### Councils by Category

- [Environment] Environment Management Task Force, EHS Council, Eco Council
- [Digital Responsibility] Security and Privacy Protection Council, AI Ethics Council, Accessibility Council
- [Employees] Labor and Human Rights Council

# Stakeholder Engagement

Engagement with our stakeholders is essential for us to fulfill our responsibilities as a responsible global company. We strive to build a cooperative relationship and enhance mutual understanding in sustainability topics with our stakeholders through various activities such as multi-stakeholder forums, surveys, and on-site visits.

Stakeholders	Major Concerns		Communication Channels		Major Activities	
Customers	<ul style="list-style-type: none"> <li>Product and service quality</li> <li>Product safety</li> </ul>	<ul style="list-style-type: none"> <li>Product information accuracy</li> <li>Communication transparency</li> </ul>	<ul style="list-style-type: none"> <li>Customer satisfaction surveys</li> <li>Contact centers and service centers</li> </ul>	<ul style="list-style-type: none"> <li>Samsung Newsroom</li> <li>Samsung Semiconstory</li> <li>Young Samsung Community</li> </ul>	<ul style="list-style-type: none"> <li>Reinforcement of quality and safety management systems</li> <li>Establishment of country-specific websites to share product information</li> </ul>	<ul style="list-style-type: none"> <li>Identification and resolution of customers' needs</li> </ul>
Shareholders and Investors	<ul style="list-style-type: none"> <li>Economic outcomes</li> <li>Risk management</li> <li>Information-sharing</li> </ul>	<ul style="list-style-type: none"> <li>Sustainability agenda (Environment, Social, Governance, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>IR meetings and roadshows</li> <li>General shareholders meetings</li> </ul>	<ul style="list-style-type: none"> <li>One-on-one meetings</li> <li>Analyst Day</li> <li>Investor ESG roadshows</li> </ul>	<ul style="list-style-type: none"> <li>Stable profit generation</li> <li>Enhancement of shareholder return policies</li> </ul>	<ul style="list-style-type: none"> <li>Reinforcement of transparency in external sponsorships</li> </ul>
Employees	<ul style="list-style-type: none"> <li>Working environment safety</li> <li>Diversity and inclusion</li> <li>Training and career development</li> </ul>	<ul style="list-style-type: none"> <li>Employment security and welfare</li> <li>Labor-management relations</li> </ul>	<ul style="list-style-type: none"> <li>Labor unions and labor-management councils</li> <li>Counseling centers</li> <li>Satisfaction surveys</li> </ul>	<ul style="list-style-type: none"> <li>Internal communication channels</li> <li>Whistleblowing systems (compliance and ethics)</li> </ul>	<ul style="list-style-type: none"> <li>Mentoring by Millennial and Gen Z employees for executive management</li> <li>Management of workplace environments</li> <li>Cultivation of a corporate culture that promotes creativity</li> </ul>	<ul style="list-style-type: none"> <li>Operation of a career design program tailored to individual stages</li> <li>Organization of townhall meetings (business status presentations by individual divisions, etc.)</li> </ul>
Suppliers	<ul style="list-style-type: none"> <li>Fair transactions</li> <li>Shared growth</li> </ul>	<ul style="list-style-type: none"> <li>Labor and human rights of workers</li> </ul>	<ul style="list-style-type: none"> <li>Hotline, online whistleblowing systems, etc.</li> <li>Conferences with partner companies</li> </ul>	<ul style="list-style-type: none"> <li>Partner Collaboration Day</li> <li>Shared Growth Academy</li> <li>Supplier Consulting Group</li> </ul>	<ul style="list-style-type: none"> <li>Promotion of fair transactions and shared growth</li> <li>Support for partner companies' innovative initiatives</li> </ul>	<ul style="list-style-type: none"> <li>Staging of technology transfer fairs</li> <li>Operation of partner company support funds</li> <li>Management of partner companies' working environments</li> </ul>
Local Communities	<ul style="list-style-type: none"> <li>Recruitment of local jobseekers, revitalization of the local economy, etc.</li> <li>Indirect economic effects</li> </ul>	<ul style="list-style-type: none"> <li>Environmental conservation for local communities</li> <li>Community outreach through donations, volunteer work, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Local volunteer centers</li> </ul>	<ul style="list-style-type: none"> <li>Local community councils</li> </ul>	<ul style="list-style-type: none"> <li>Support for SMEs for establishing smart factories, etc.</li> <li>Preservation of river ecosystems near our business sites</li> </ul>	<ul style="list-style-type: none"> <li>Promotion of CSR programs regarding training and employment</li> </ul>
NGOs, Organizations, and Expert Institutions	<ul style="list-style-type: none"> <li>Social responsibility for local communities and the environment</li> </ul>	<ul style="list-style-type: none"> <li>Contributions to UN SDGs</li> <li>Joining UN Global Compact</li> <li>Transparent and prompt information disclosure</li> </ul>	<ul style="list-style-type: none"> <li>Corporate conferences</li> <li>Meetings with NGOs</li> </ul>	<ul style="list-style-type: none"> <li>Meetings with civil society groups</li> </ul>	<ul style="list-style-type: none"> <li>Collection of opinions and suggestions from global NGOs</li> </ul>	<ul style="list-style-type: none"> <li>RBA, and BSR activities</li> <li>EPRM and RMI activities</li> </ul>
Government	<ul style="list-style-type: none"> <li>Indirect economic effects</li> <li>Fair transactions</li> </ul>	<ul style="list-style-type: none"> <li>Occupational health and safety</li> <li>Compliance</li> </ul>	<ul style="list-style-type: none"> <li>Policy conferences</li> <li>National Assembly meetings</li> </ul>	<ul style="list-style-type: none"> <li>Policy advisory bodies</li> </ul>	<ul style="list-style-type: none"> <li>Operation of programs to support SMEs in collaboration with the government</li> </ul>	<ul style="list-style-type: none"> <li>Operation of venture investment counters in collaboration with the government</li> </ul>
Media	<ul style="list-style-type: none"> <li>Transparent and prompt information disclosure</li> </ul>		<ul style="list-style-type: none"> <li>Press releases</li> </ul>	<ul style="list-style-type: none"> <li>Samsung Newsroom</li> <li>Press Interview</li> </ul>	<ul style="list-style-type: none"> <li>Support for news coverage activities</li> <li>PR Planning</li> </ul>	<ul style="list-style-type: none"> <li>Staging of Media Day</li> </ul>

## Joining UN Global Compact (UNGC)

### INTERVIEW

"Samsung Electronics is a very respected player within the RBA Community, and has grown its visibility within RBA a lot as an active member company. Samsung has improved its commitment regarding key sustainability topics, and the company is committed to supporting suppliers. Next step for Samsung may be to scale its efforts to support suppliers with their due diligence practices and systems."

- Bart Devos,

*Senior Director of Public Policy, Responsible Business Alliance -*

"Samsung Electronics has a strong involvement in educating the future generation of leaders. Initiatives like Solve for Tomorrow stimulate youth's potential for innovative thinking and responsible attitude and through this, create the foundation for more sustainable communities whose members are able to act for the common good."

- Alice Dutu,

*Deputy CEO, Junior Achievement Romania -*

"Our work together on the Climate Superstar Challenge demonstrates Samsung's commitment to encouraging sustainability in the next generation. The Challenge presents fun and educational activities that help middle school students understand where their energy comes from and how it can affect the environment. Samsung's support of the Climate Superstars Challenge is a great example of a strong commitment to educating students in meaningful and unique ways."

- Meri-Margaret Deoudes,

*President & CEO, National Environmental Education Foundation (NEEF) -*

"Samsung Electronics Sustainability Management program has made great strides during the past few years. In the US, the program started with a solid foundation on electronics recycling and has steadily expanded recently into an industry-leading consumer self-repair initiative and groundbreaking partnerships like the one announced with Patagonia at CES 2022. Samsung Electronics also provides industry leadership at CTA on sustainability initiatives, including chairing CTA's Environmental Policy Committee from 2019-2021."

- Walter Alcorn,

*VP, Environmental Affairs and Industry Sustainability/Consumer Technology Association -*

We joined the United Nations Global Compact, a global initiative to encourage businesses to align their operations and strategies with universal sustainability principles, in March 2022. By joining the UN Global Compact, we expressed our commitment to embedding its principles in all aspects of our management and corporate culture and expanding our cooperation with global stakeholders, including the United Nations.

As a global corporate citizen, we remain committed to sustainability and take shared responsibility to preserve the environment and build an inclusive world in partnership with stakeholders.

### United Nations Global Compact(UNGC)

The United Nations Global Compact is a non-binding initiative that encourages its participants to incorporate universal sustainability principles on human rights, labor, environment, and anti-corruption into their business operations and strategies. It is joined by over 19,000 members (including 15,000 corporate members) from 164 countries.

- 01 Businesses should support and respect the protection of internationally proclaimed human rights; and
- 02 Businesses should make sure make sure that they are not complicit in human rights abuses.
- 03 Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
- 04 Businesses should seek the elimination of all forms of forced and compulsory labor;
- 05 Businesses should seek the effective abolition of child labor; and
- 06 Businesses should seek the elimination of discrimination in respect of employment and occupation.
- 07 Businesses should support a precautionary approach to environmental challenges;
- 08 Businesses should undertake initiatives to promote greater environmental responsibility; and
- 09 Businesses should encourage the development and diffusion of environmentally friendly technologies.
- 10 Businesses should work against corruption in all its forms, including extortion and bribery.

# Business Model of Sustainability Management

We introduced the integrated reporting framework to more effectively communicate the tangible and intangible values created by our business operations to our stakeholders. This framework classifies all injected capital as financial capital, manufacturing capital, social and relationship capital, human capital, intellectual capital, or natural capital and defines how these six forms of capital work to raise stakeholder value through our organization consisting of two divisions and our five ESG pillars.



# ENVIRONMENT

Based on our strong conviction that the future hinges on the wellbeing of the planet, we take an environmentally conscious approach to business. This approach is reflected in our commitment to advancing the co-prosperity of humanity and nature and building a brighter future for the planet. Our commitment is the driving force behind our continued pursuit of sustainability in everything we do.

Environmental Management	23
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# Environmental Management Governance

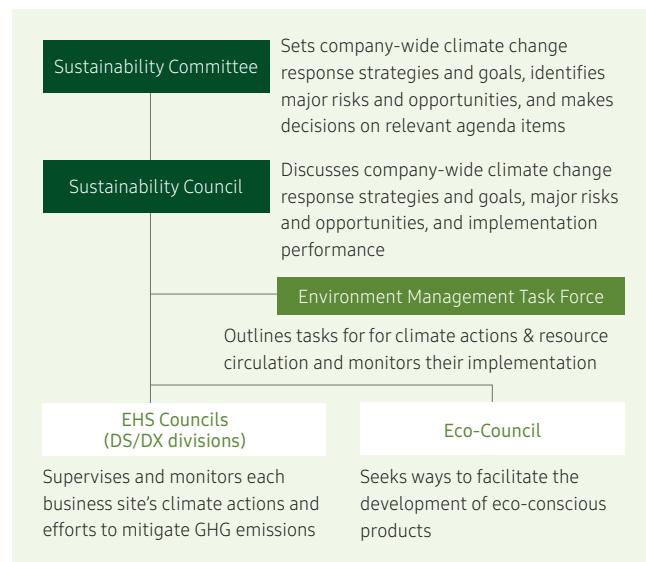
We are in the process of establishing a mid-to-long-term environment strategy to address global challenges on climate and environment that cuts across every aspect of our business. We look forward to sharing this plan as soon as possible.

We strive to address environmental challenges and minimize our impact on the environment from our business.

Climate change, product energy efficiency, water resources, and waste management are the issues that directly affect our operations and financial performance. We report these issues to the Board of Directors, our overarching decision-making body. The Board oversees the implementation of our climate actions and resource circulation measures.

The CEO holds the responsibility and authority to ensure that our environmental strategy and investments are implemented in a manner that achieves our environmental goals. The CEO, together with other chief officers, leads the Sustainability Council. The council, which consists of environment-related executives, works to establish sustainability-related plans and review their outcomes.

## Corporate Environment Management Council



The Environment Management Task Force outlines the tasks required to accomplish such plans and monitors their implementation. Each division operates the EHS Council to monitor its business sites and find solutions to their environmental challenges, including issues resulting from climate change. The Eco-Council seeks ways to facilitate the development of eco-conscious products and monitors the results. The Global EHS Center, Global CS Center, and Environment and Safety Center are also in place to help business sites mitigate GHG emissions and reduce the environmental footprint of our products.

## Management Systems

Our business sites are required to meet international standards for environmental management and energy management systems. As of 2021, all of our business sites have attained ISO 14001 (environmental management system) and ISO 50001 (energy management system) certifications and implemented strategies and tasks within these frameworks across all stages of operations, from purchasing to development, manufacturing, distribution, and recycling.

We also include GHG mitigation levels and other environmental indicators in the performance assessment of each division and business.

In order to raise our employees' awareness on the importance of eco-conscious management and eliminate environmental risks, we conduct environmental training for all employees at least once a year as well as special job-specific training.

## Risk Management

Risks and opportunities related to climate change, waste generation, water resources, and other environmental factors have a serious impact on our products, services, manufacturing processes, supply chains, R&D, and sales. We closely monitor our business sites around the world to identify potential risks pursuant to our risk management processes and manuals for environment and safety, climate change and energy, and compliance.

At the same time, we strive to develop products with high energy efficiency, reduce GHG emissions from our manufacturing sites, minimize landfill waste, and preserve water resources.

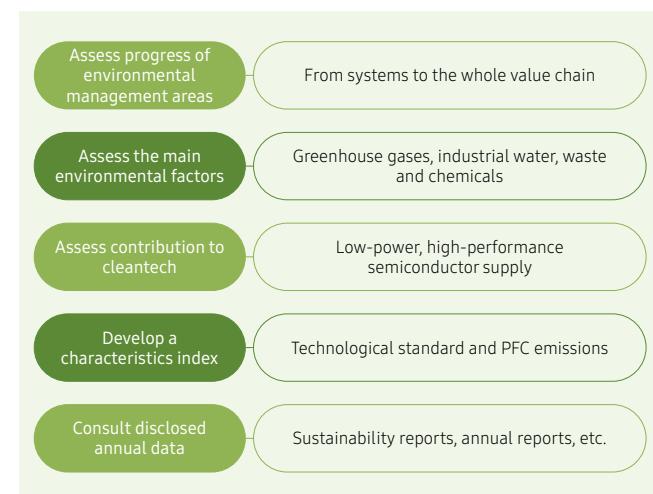
## CASE

### Semiconductor Environmental Performance Index (SEPI)

As semiconductors are being implemented in a growing number of products, achieving eco-conscious semiconductor manufacturing has become a major issue with far-reaching impacts on many industries around the world. To transparently share our performance and practices, we developed environmental management guidelines tailored to the traits of the semiconductor industry and the Semiconductor Environmental Performance Index (SEPI), our internal semiconductor-related environmental management index disclosed on our website. Consisting of 32 indicators within six themes, SEPI is used to evaluate outcomes in four categories: contributions to eco-conscious semiconductor manufacturing, environmental management of partner companies, environmental performance of individual business sites, and environmental benefits for users. We aim to more accurately and efficiently communicate with diverse stakeholders by disclosing our performance systematically assessed through SEPI.

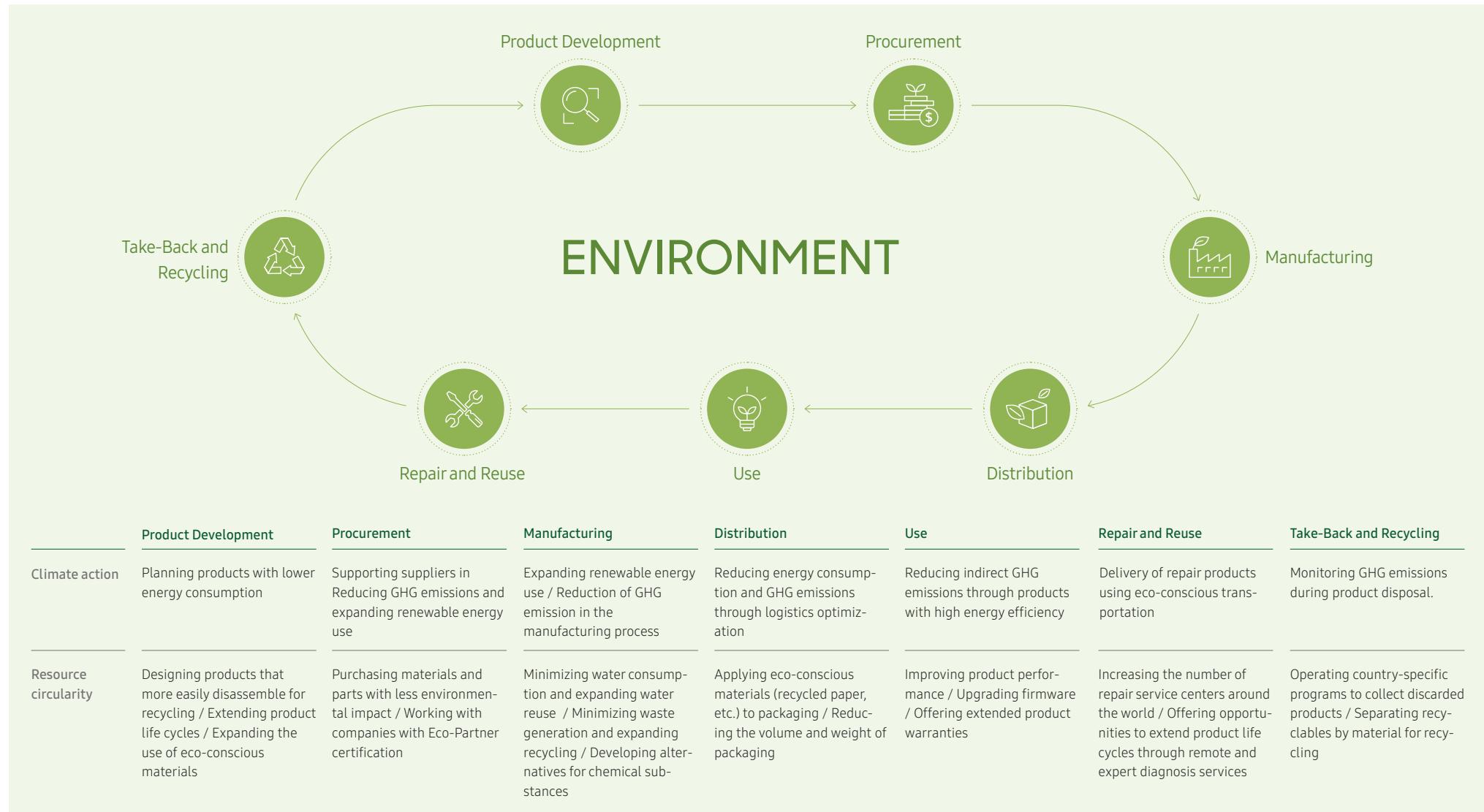
1) Semiconductor Environmental Performance Index

## The SEPI 5 principles



## Eco-Conscious Activities along the Value Chain

We have pushed ahead with diverse environmental initiatives at different stages of the value chain to minimize our environmental footprint across the entire product life cycle, from development to purchasing, manufacturing, distribution, use, and disposal. Improvement plans and tasks for these priorities are established for climate action and resource circularity, the two areas requiring extensive concerted efforts at the global level. Their implementation status is closely monitored on a continuous basis.



# Climate Action

## Our Response to Climate Change

Climate change is one of the most serious threats facing humanity and a challenge that significantly affects our business. As such we have set up a climate change response strategy centered on the expansion of renewable energy use, reduction of gases used in semiconductor manufacturing, and improvement of energy efficiency across the entire manufacturing process.

We are also moving forward with a wide range of programs to mitigate GHG emissions in all stages of our value chain, from product development to manufacturing and logistics. The GHGs emitted outside our business sites, as well as those emitted directly by our business sites, are subject to such programs.

### Our Response to Climate Change by Stage



#### GHG emissions reduction at business sites

- Operating equipment for the abatement of fluorinated gases in semiconductor manufacturing
- Implementing projects to improve energy efficiency throughout the manufacturing process
- Expanding the use of renewable energy



#### GHG emissions reduction in the stage of product use

- Mitigating GHG emissions from product use through the development of products with high energy efficiency
- Developing low-energy semiconductors with power efficiency improved by over 10% compared to the previous generation



#### GHG emissions reduction in other value chain stages

- Controlling GHG emissions from suppliers, logistics companies, business trips of employees, etc.



#### GHG emissions reduction based on cooperation with external partners

- Securing emissions permits through carbon reduction projects with external partners, such as the Clean Development Mechanism (CDM)

## GHG Management

We closely monitor the GHGs generated at all of our business sites around the world. We require each business site to enter GHG data in relation to electricity use, fossil fuel use, and gas use in semiconductor manufacturing into the EHS System. This allows us to identify and analyze the causes of fluctuations in GHG levels at individual sites on a monthly basis. The organizational unit in charge keeps GHG emissions from domestic and overseas sites under control based on the findings of the analysis. The credibility and alignment of the data are verified through the annual third-party audit.

## Climate Change Risks and Opportunities

We identify the substantive financial and strategic impacts of climate change risks, establish response measures in accordance with the magnitude and extent of such impacts, and reflect them in our business. These risks include changes in the global climate system, region-specific regulatory reinforcement, market trends, stakeholder needs, the changing physical environment, and more. In the short term, we view emissions permit price increases, extreme weather events, and the requirement to introduce high-efficiency technologies as potential risks, and emissions permit purchasing and reduced energy costs as opportunities. We project changing consumption patterns and expanded renewable energy use as mid-term opportunities and the physical impacts such as climate change and water stress as long-term risks. We establish response measures for long-term risks based on the country-specific emissions mitigation plans pursuant to the Paris Agreement, emissions scenarios of the Intergovernmental Panel on Climate Change (IPCC), and Energy Technology Perspectives of the International Energy Agency (IEA).

## Climate Change Risk Management Process

### Identification and Assessment of Risks



- EHS, marketing, sales, and compliance organizational units regularly assess risks in relation to business operations, product planning, and external trends based on ISO 14001, ISO 50001, and other international standards for energy management systems.

### Management of Risks and Opportunities



- Energy consumption, GHG emissions, renewable energy use, and impacts of climate change are monitored by organizational units dedicated to EHS.
- Relevant issues affecting global business sites are discussed and managed by regularly convened councils such as the EHS Council.
- The Sustainability Council discusses and makes necessary decisions regarding climate change risks and opportunities.
- The Eco-Council examines business opportunities, shares the results with relevant businesses and organizational units, and implements action plans.

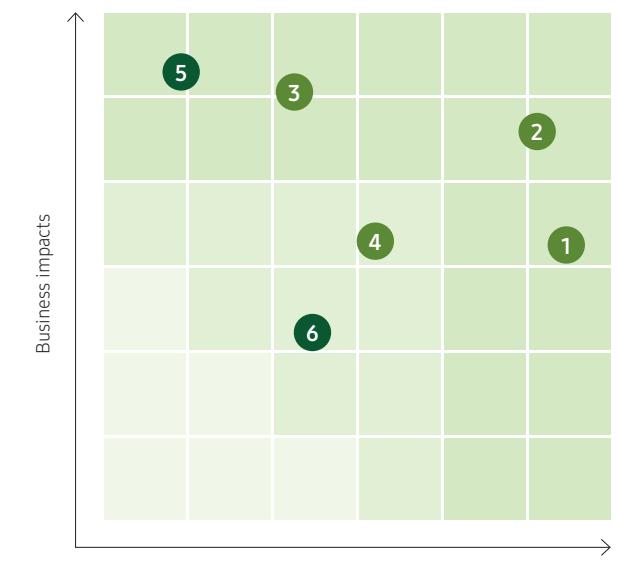
### Integration of Climate Risks and Opportunities into the Company-Wide Risk Management Process



- Climate change-related regulatory risks are managed through the company-wide risk management system in an integrated manner.
- Risks include region-specific risks and global regulatory and market changes that may adversely affect our business and reputation.

## Risks and Opportunity Analysis

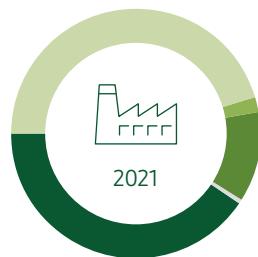
Climate Change Risks and Opportunities		Financial Impacts of Climate Change Risks		Financial Impacts of Climate Change Opportunities	
Transition risks and opportunities	① GHG emissions trading	Short-term →	<ul style="list-style-type: none"> <li>Increased costs due to the rise in GHG emissions permit prices and reinforced pollutant discharge regulations</li> </ul> <p>*Refer to the Annual Business Report.</p>	<ul style="list-style-type: none"> <li>Purchase of permits minimized through GHG emissions reduction activities</li> <li>Easing of price sensitivity by attaining permits through projects in cooperation with outside partners</li> </ul>	
	② Adoption of high-efficiency technologies	Short-term →	<ul style="list-style-type: none"> <li>Increased investment in high-efficiency equipment, GHG emissions reduction equipment, and water resource recycling equipment</li> <li>Increased R&amp;D investment to develop advanced emissions reduction technologies</li> </ul>	<ul style="list-style-type: none"> <li>Reduction of GHG emissions and energy costs of business sites</li> <li>Creation of business opportunities such as energy management systems</li> </ul>	
	③ Changes in customer behavior	Mid-term →	<ul style="list-style-type: none"> <li>Increased costs for attaining high-efficiency and eco-conscious product certifications</li> <li>Reduced sales of products with low energy efficiency ratings</li> <li>Increased R&amp;D costs for high-efficiency and eco-conscious products</li> </ul>	<ul style="list-style-type: none"> <li>Release of high-efficiency and eco-conscious products</li> <li>Leading to increased sales and brand awareness</li> </ul>	
	④ Expansion of renewable energy use	Mid-term →	<ul style="list-style-type: none"> <li>Increased production costs due to the rise in short-term energy costs</li> <li>Reduced B2B sales due to customer demand for renewable energy use</li> </ul>	<ul style="list-style-type: none"> <li>Energy cost reduction by sourcing renewable energy and participation in renewable power generation projects</li> </ul>	
	⑤ Natural disasters such as typhoons and floods	Short-term →	<ul style="list-style-type: none"> <li>Increased investment costs for the installation of environmental/safety/emergency facilities for natural disaster prevention</li> <li>Increased costs for business restoration and lost business opportunities in the event of a natural disaster</li> </ul>	<ul style="list-style-type: none"> <li>Decreased insurance costs through investment in natural disaster response facilities</li> <li>New business opportunities such as the launch of the National Disaster and Safety Network</li> </ul>	
	⑥ Global temperature rise and yellow dust	Long-term →	<ul style="list-style-type: none"> <li>Increased business site operating costs due to cooling and heating device installation, etc.</li> <li>Increased investment costs for air pollution prevention equipment installation</li> </ul>	<ul style="list-style-type: none"> <li>Increased sales from the expansion of high-efficiency air conditioner, air purifier, and dryer businesses</li> </ul>	



## GHG Reduction Activities

We prioritize finding solutions for the eco-conscious treatment of gases used for semiconductor manufacturing, expansion of renewable energy use, and conservation of energy. With the recent expansion of facilities and increase in production, our business sites are working hard to minimize the increase in GHG emissions by enhancing manufacturing process efficiency and reducing energy consumption. For semiconductor manufacturing sites, we established the Decarbonization Committee to monitor their mitigation of GHG emissions every quarter based on our roadmap for the mitigation of GHG emissions. Each site is required to project its GHG emissions, identify tasks for the mitigation of GHG emissions in manufacturing processes, and implement action plans on a yearly basis. In 2021, we reduced GHG emissions by a total of 6.41 million tonnes through 476 projects including improving gas treatment equipment efficiency, installing high-efficiency equipment, and enhancing manufacturing efficiency.

### GHG Emissions Reduction Activities in 2021



## Energy Conservation in the Manufacturing Process

**IoT-Based Infrastructure** We monitor our energy consumption through IoT and AI-based HVAC system for better efficiency and control. Operation data from the central air conditioning system and individual air conditioning units is analyzed every minute to set the optimal control value, which is adjusted based on algorithms. This solution was applied to business sites in Korea, Vietnam, and the US and worked to reduce energy consumption by 11-13% per year. We plan to apply it in Europe, Southwest Asia, and Central and South America as well and are reviewing the possibility of sharing it with our partner companies.

**Energy Reduction in Semiconductor Manufacturing** To reduce energy consumption across all stages of semiconductor manufacturing, we strive to innovate the process, reduce main equipment testing time through operation optimization, improve auxiliary equipment operation temperature conditions, install high-efficiency equipment, and neutralize the wet scrubber (harmful gas processing device). To reduce LNG use, we introduced the Regenerative Catalytic System (RCS) for heat sources on a pilot basis, while also collecting waste heat through the coolant system and heat exchanger and adjusting the air temperature and air flow of outdoor air control units. We plan to expand the implementation of the RCS depending on the results of on-site testing.

**Energy Consumption Monitoring** We analyze our energy consumption in real time based on energy data, the operating status of major facilities, and product manufacturing information collected through IoT modules and sensors and display the findings on the monitoring system. We ran a pilot test of this system at our Vietnam business site in 2021 and plan to apply it to more sites, starting with those with greater energy consumption. The energy consumption monitoring system is capable of real-time energy consumption monitoring, target management, consumption management in accordance with production, and energy consumption pattern analysis for different time periods.

## Reduction of Semiconductor Process Gases

**Improvement of Treatment Efficiency for Semiconductor Process Gases** To improve the efficiency and utilization of gas treatment facilities, we are expanding the installation of the Regenerative Catalytic System (RCS). In July 2020, we developed a new catalyst for GHG emissions reduction equipment through three years of joint R&D with our partner companies and raised the gas treatment rate to 95%.

**Reduction in the Use of Semiconductor Process Gases** We are striving to minimize the use of semiconductor process gases while enhancing efficiency in gas treatment. To this end, we have pushed ahead with a project to optimize the processing time, stages, and recipes for individual processes and continue to monitor our performance on a monthly basis.

**Development of Alternative Gases** We remain committed to developing and applying alternatives to replace gases with high global warming potential (GWP). Since 2018, we have used  $\text{G}_1$  in lieu of  $\text{C}_4\text{F}_8$  for some of the processes. We will continue to actively engage in R&D on alternatives for  $\text{CF}_4$ ,  $\text{CHF}_3$ ,  $\text{C}_4\text{F}_6$ , and  $\text{SF}_6$ .

### CASE

#### Decarbonization Committee Operations

The Decarbonization Committee oversees the operation of GHG emissions mitigation activities at our semiconductor manufacturing sites and secures technologies to address different emitters. The committee is chaired by the Head of Global Manufacturing and Infra Technology and comprises relevant organizational units including the EHS Center, Infrastructure Technology Center, and Manufacturing Technology Center. The committee establishes roadmaps for the reduction of emissions for different sources of GHGs, from semiconductor process gases to fossil fuels, electricity, and renewable energy. It also monitors the outcomes of GHG emissions mitigation activities on a quarterly basis.

## Expansion of Renewable Energy Use

### Mid-to-Long-Term Renewable Energy Plan

We are expanding the use of renewable energy at our business sites around the world. The legal systems and infrastructure conditions, which vary by region, require region-specific transition plans. The business sites<sup>1)</sup> in the US, Europe, and China were converted to 100% renewable energy sources in 2020 and are in the process of replacing their REC system with the PPA system.

1) Includes non-manufacturing operations in buildings/office spaces that are owned by Samsung Electronics and those in rental spaces that consume over 1,000 MWh/year.

The rate of renewable energy in Brazil and Mexico increased to 94% and 71% in 2021, respectively. We expect to be able to attain 100% renewable energy in Latin America and Southwest Asia by 2025. These regions are considered more advantageous as PPA and Green Pricing are common practice.

We will actively expand the use of renewable energy in areas where the use of renewable is relatively low such as Southeast Asia and Africa, considering the legal system and infrastructure of respective countries.

### Mid-to-Long-Term Roadmap for Renewable Energy Usage

2018	Declaration to expand the use of renewable energy
2020	Business sites in the US, Europe, and China powered with 100% renewable energy
2025	Business sites in Central and South America and Southwest Asia powered with 100% renewable energy

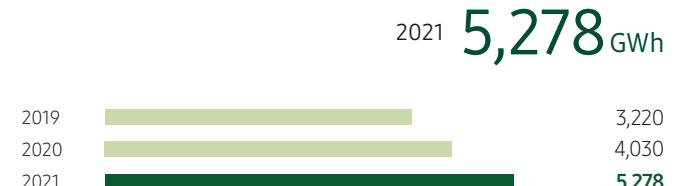
## Status of Major Business Sites

**Korea** The Suwon and Giheung business sites are equipped with 1.9MW and 1.5MW-capacity photovoltaic power generators, respectively. The Pyeongtaek business site is equipped with a 0.4MW-capacity photovoltaic power generator and 200RT-capacity geothermal power generator. We installed a 0.08MW-capacity photovoltaic power generator at the Onyang business site in 2021. We plan to install an additional 0.2MW-capacity photovoltaic power generator at the Onyang business site and a 0.15MW-capacity photovoltaic power generator at the Gumi business site. We also purchased 490GWh of renewable energy using the Green Premium implemented in 2021. We will continually expand the use of photovoltaic and geothermal power generators, and the Green Premium, at our domestic business sites.

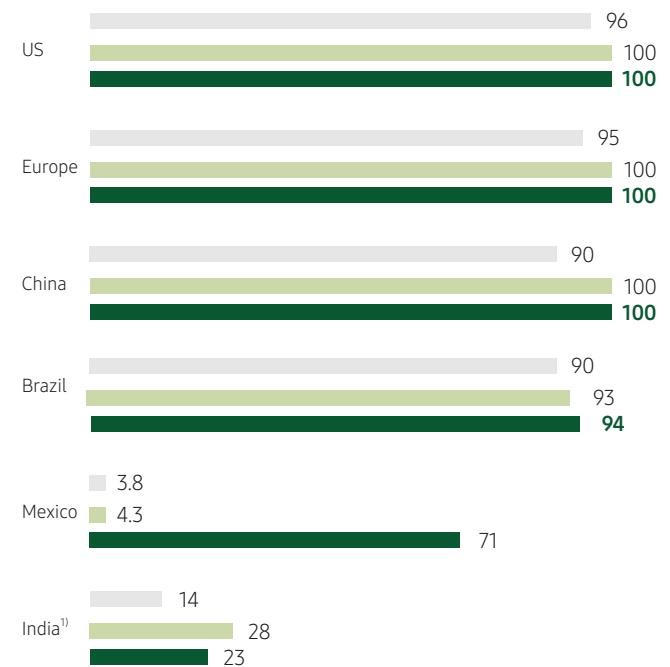
**Central and South America** The business site in Campinas, Brazil, completed its conversion to 100% renewable energy in 2021 by signing power supply contracts with local wind power, photovoltaic power, and hydropower stations. The business site in Manaus, Brazil, is currently powered by 92% renewable energy sourced from Green Pricing. The site plans to use 100% renewable energy by 2025. The business site in Mexico increased its share of renewable energy to 71% in 2021, up from 4% in 2020, through contracts including REC purchases. This site is seeking to further expand its renewable energy suppliers and achieve conversion to 100% renewable energy by 2025.

**Southwest Asia** The business site in Chennai, India, achieved 53% conversion to renewable energy by sourcing electricity from local photovoltaic power, wind power, and biomass power stations. The business site in Noida, India, installed photovoltaic power generators with a total capacity of 0.7MW in parking lots and pedestrian passages and is seeking to expand its network of renewable energy suppliers.

### Renewable Energy Use (Unit: GWh)



### Renewable Energy Use in Major Regions with Operations (Unit: %)



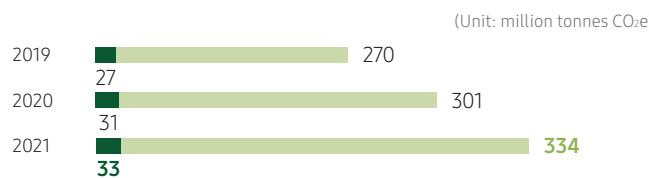
1) In 2021, the rate of renewable energy use in India decreased, due to the increase in power consumption.

2019 2020 2021

## Product Energy Efficiency

We closely monitor the latest developments in environmental regulations and technologies to reduce energy consumption via the company-wide Eco-Council consisting of specialists in the field and each business unit's consultative body of working-level staff members. To mitigate GHG emissions in the product use phase, we continually develop and implement energy efficiency measures for new products. In 2021, the annual energy consumption of our products was reduced by an average of 33% compared to 2009 through the implementation of the high-efficiency heat exchangers for air conditioners, enhanced cleaning power for washers, and high-efficiency driver ICs for TVs.

### GHG Emissions Reduced in the Product Use Phase<sup>1)</sup>



## Home Appliances

SmartThings Energy is our AI-based solution that allows more energy-efficient use of connected home appliances. The solution monitors<sup>1)</sup> the energy consumption of smart home appliances, including refrigerators, washers, dryers, and air conditioners. It also offers a smart energy-saving mode<sup>2)</sup>.

1) Korea, the US, the UK, India, and Brazil 2) Korea

## PCs

We enhanced the energy efficiency of our laptops by adding circuits designed to reduce the electricity loss of the OLED panel and optimized the energy consumption of chargers by eliminating standby power.

### Feature Story

#### Our eco-conscious efforts for the planet, SolarCell Remote

While seeking ways to produce more eco-conscious remote controls, we noted that existing remote controls all use disposable batteries. This means that each household discards 14 batteries throughout the typical life cycle of a TV, which is about seven years, by changing the disposable batteries once a year. To eliminate the use of disposable batteries, we developed the low-power SolarCell Remote that can charge itself with sunlight as well as indoor lighting. We plan to apply SolarCell Remote to all of our TV products released from 2022 onwards. Based on the estimated sales of TVs around the world, we expect to reduce the use of 200 million disposable batteries in 2022 alone.

"As remote controls remain stationary most of the time and lights stay on after dark until bedtime, it is quite easy to charge them with indoor lighting. We can reduce GHG emissions by approximately 12,960 tonnes by replacing the disposable batteries in remote controls with solar cells considering the life cycle of TVs."

- Kim Kwanyoung (Visual Display Engineer) -



## Semiconductors

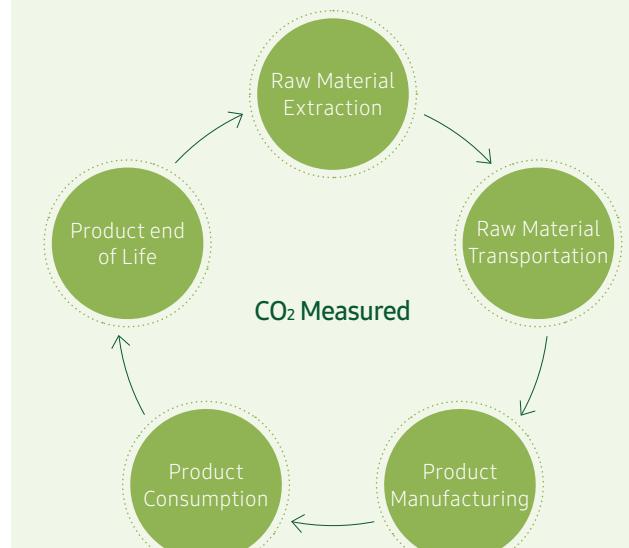
Starting with the Green Memory Campaign launched in 2009, we have showcased low-power memory solutions every year as part of our effort to produce more environmentally responsible products. Low-power semiconductors contribute to the mitigation of GHG emissions from IT devices and data centers handling massive volumes of data. We also aim to achieve more environmentally responsible semiconductor manufacturing by identifying the carbon footprint and emissions factors across all of our product-related processes.

**Low-Power Semiconductor Memory** We aim to reduce the energy consumption of global data centers by enhancing the energy efficiency of our semiconductor memory solutions. The power consumption of a data center rises in proportion with the amount of data it has accumulated. Increased traffic also leads to heating that requires more power to cool. The heat generated by SSD has been drastically lowered, thereby reducing energy consumption by 50% compared to HDD. The energy efficiency of high-performance SSD memory (PM9A3, E1.S) exclusive for data centers has been enhanced by approximately 50% compared to the previous-generation products and has helped reduce data center operating costs. New products (LPDDR5X DRAM, DDR5 module, etc.) with the latest technologies (Extreme Ultraviolet Radiation, High-K Metal Gate, Through-Silicon Via, etc.) work to ensure better performance with minimized increases in energy consumption, and more energy-efficient data processing.

### CASE

#### Life Cycle Assessment Process for Semiconductors

We went beyond attaining carbon footprint certification for some of our leading products and established the life cycle assessment (LCA) process for all of our products. We plan to develop assessment methods optimized for different product categories and ensure the credibility of the established process through third-party auditing. This is expected to more effectively deliver carbon emissions data to our corporate customers aiming to achieve carbon neutrality. It will also enhance transparency in information disclosure regarding semiconductor manufacturing. We will strive to further reduce our products' environmental impact across their life cycle stages.



**Leadership in Process Technology** We developed advanced processing and design technologies to deliver high-performance semiconductors that consume less energy. For Exynos, our system-on-chip (SoC) series, we have continually enhanced the energy efficiency of the major cores of CPU, GPU, and NPU. At the same time, we have also installed AMIGO (Advanced Multi-IP Governor), our exclusive solution, to reduce battery consumption when activating high-definition and graphically demanding games and programs. For image sensors, we pioneered ultra-fine pixel technologies to deliver ultra-high resolution and minimize energy consumption during previews. For DTV, the SoC has been integrated with the high-resolution upscaling IC, while the previously separated two TCONs for 8K TVs have been integrated into one to minimize energy consumption. Our efforts to improve energy efficiency in all areas, from design to manufacturing and everyday use, are expected to reduce not only the battery charging time for smart devices, but also the energy consumption of other electronic products, thereby contributing to the mitigation of carbon emissions.

#### Green Technology Certification

Our technological innovations aimed at achieving greater energy efficiency are certified as Green Technology by the Korean government. Since the inception of this system in 2010, we have attained certifications for a range of technologies. As of 2021, we hold ten Green Technologies, and 136 products featuring these technologies are confirmed as Green Technology Products.

#### Green Technology Certification Status

Product categories	Green Technologies	Cases
Home Appliances	Dryers equipped with a high-efficiency heat pump and heat exchanger, energy efficiency improvement technology, etc.	7
Monitors	Monitors equipped with standby power reduction technology	1
Laptops	Laptops powered by high-efficiency power conversion technology	1

\*Sleep-mode energy consumption reduction technology for printers (1 case)

## Reducing GHG Emissions in Other Areas

### Supplier Management and Support

We joined the Supply Chain Program of the Carbon Disclosure Project (CDP) in 2019 to monitor the GHG emissions of our major suppliers and provide incentives to encourage renewable energy use.

### Improving Logistics Efficiency

We are engaging in measures to optimize transport routes, improve loading efficiency, and reinforce transport management to ensure greater logistics efficiency. As a result, we reduced a total of 16.6 million tonnes of GHG emissions in 2021 alone. Emissions from our logistics activities in Korea in 2021 decreased by 5% compared to 2020.

### Minimizing Business Trips

In 2021, business trips were restricted due to the COVID-19 pandemic, and GHG emissions from business trips decreased by 38% compared to 2020. We promoted the use of video conferencing, and a total of 220,000 meetings were held online throughout 2021 (616 per day on average). This marks a 10% increase from 2020. We plan to further improve the accessibility and convenience of the video conference system.

### Replacing Corporate Vehicles with Zero-Emission Vehicles

We plan to replace all of the corporate vehicles, including passenger cars, shuttle buses, and trucks, used at our domestic business sites with electric vehicles by 2030. We will also install additional electric vehicle charging stations.

## Collaboration to Address Climate Actions

### Obtaining Emissions Permits

We operate the Clean Development Mechanism projects in Kenya and India. In Kenya, we have provided low-carbon cooking stoves fueled by bioethanol to refugee camps since 2017. In India, we have distributed high-efficiency refrigerators tailored to local lifestyles since 2013. As the operator of these projects, we are entitled to emissions permits in accordance with our yearly GHG emissions reduction performance as approved by the United Nations. In Korea, we purchase emissions permits through landfill gas treatment at large landfills and N<sub>2</sub>O reduction activities in nitric acid production processes.

#### CASE

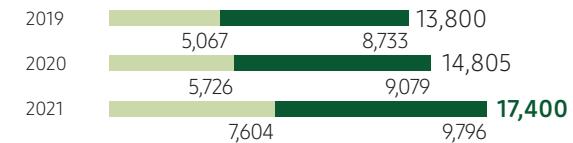
#### Smartphone Recycling

As an extension of our efforts to combat climate change, we operate a range of programs to recycle used smartphones. For example, we developed and launched the Samsung Knox-based app to enable African Clean Energy, a B Corp-certified company that distributes solar-biomass hybrid energy systems in developing countries, to connect used Galaxy phones to solar-powered cooking stoves distributed to households in Africa and measure data regarding their use.

## GHG Emissions

Our total GHG emissions in 2021 stand at 17.4 million tonnes CO<sub>2</sub>e, a 17% increase from the previous year. While we made efforts to decrease the amount of GHGs generated and increase the percentage of renewable energy used at each business site, our total GHG emissions increased due to the installation and activation of the new semiconductor manufacturing lines. We plan to continually make efforts to reduce greenhouse gas emissions by expanding the use of renewable energy, improving process gas treatment efficiency, developing alternative gases, replacing high-efficiency facilities, etc. To this end, we are developing a plan to predict our mid- to long-term greenhouse gas emissions and reduce greenhouse gas emissions continuously.

### GHG Emissions (Unit: thousand tonnes CO<sub>2</sub>e)



● Direct emissions (Scope 1) ● Indirect emissions (Scope 2)<sup>1)</sup>

1) Market-based GHG emissions that reflect renewable energy use / Location-based GHG emissions that do not reflect renewable energy use: 16,065 thousand tonnes CO<sub>2</sub>e in 2019, 17,571 thousand tonnes CO<sub>2</sub>e in 2020, and 20,173 thousand tonnes CO<sub>2</sub>e in 2021

# Maximizing Resource Circularity

We are striving to shift toward a circular economy where resources are reused and recycled efficiently from the linear economy that follows a “take-make-dispose” paradigm. To this end, we have established our own circular economy principles and have engaged in a range of activities across all product life cycle stages such as development of circular products, improvement of repairability, take-back of e-waste, etc.

Circular Economy Principles

## Efficient Use of Resources

### Recycled Materials

We are expanding the application of recycled plastic across a range of product categories including refrigerator, washer, air conditioner, vacuum cleaner, TV, monitor, smartphone, and PC. In 2021 alone, we used 33,000 tonnes of recycled plastic from discarded electronic goods, fishing nets, and plastic bottles, reaching a cumulative sum of 310,000 tonnes from 2009.

Amount of Recycled Plastic Used<sup>1)</sup> (unit: 10,000 tonnes)



● Amount used in the calendar year ● Cumulative amount used

1) Cumulative from 2009 based on the total weight of plastic containing recycled materials

### CASE

#### Recycled Ocean-Bound Plastic in Our Products

We strive to increase the use of sustainable materials in smartphones and tablets. To that end, we have developed innovative technologies to recycle waste fishing nets to reduce ocean plastic pollution. The Galaxy S22 series smartphones and Galaxy Tab S8 series tablets are built with parts that contain ocean-bound plastic. We plan to apply recycled plastic to the entire Galaxy series.

**Mobile Devices** The packaging for Galaxy S22, Galaxy Tab S8, and other flagship models are made with 100% recycled paper, while film screen protectors are made with 100% recycled PET bottles. We are replacing the plastic materials used for DLC bands and APS covers with paper to achieve plastic-free packaging by 2025.

**Semiconductors** All paper packaging for our products is made with 100% sustainably sourced paper, and we are working to apply paper packaging to more products. We first replaced the plastic tray packaging of our portable consumer SSDs with paper packaging in 2020, and now three of our consumer SSDs come with plastic-free paper packaging.

### Eco-Package

We are replacing plastic and vinyl materials with paper and recycled materials to reduce the environmental impact of our product packaging. We are also reducing the volume and weight of packaging to mitigate GHG emissions in the transportation and shipping process. We use sustainably sourced paper and recycled paper.

**Displays and Home Appliances** We use recycled expandable polystyrene (EPS) cushions in the packaging for our major TV models and plan to include them in the packaging for all of our products from 2022 onwards. In 2020, we introduced TV packaging designed to be upcycled into a range of objects for pets or small pieces of furniture based on ideas from consumers around the world. This Eco-Packaging was used for all TV models and some home appliances including air purifiers.

### Modular Design

The modular design of our customizable BESPOKE refrigerator line-up enables users to update the design of their product by simply replacing the door panels. The BESPOKE Cube Air Purifier is stackable as a modular unit. If greater capacity is required, additional units can be purchased and stacked on the existing unit, thereby saving resources and space.

## Product Life Span Extension

### Durability

To ensure the longevity and consistent performance of our products, we conduct various international standards tests, including durability, drop, water-resistance, and life span tests, as well as our own stress tests such as free drop tests for different angles and flooring materials and water-resistance tests under a range of conditions.

### Repairability

Repairability is one of our main priorities in product development. We design our products in a manner that allows users to easily disassemble and repair them to prolong their use and make it easy to recycle discarded parts. We continually research ways to develop products with enhanced repairability.

#### Highest Grade in France's Repairability Assessment

It has become mandatory for electronic goods marketed in France to label their 'Indice de Reparabilite'. Our smartphones (including the Galaxy S22), TVs, and frontloading washers have attained the highest grade (Dark Green). We will further reinforce the information provided in product manuals and strive to ensure a stable supply of parts and materials at reasonable prices to enhance repairability.

\*Refer to our website for product-specific rating information and other details.

## Software Updates

In February 2022, we announced our plan to provide four generations of Android OS upgrades for Galaxy mobile devices. For example, the Galaxy S22 series powered by Android 12 and can receive up to four Android OS upgrades in total, starting with Android 13. Through this new standard, we aim to give users the security to enjoy their Galaxy mobile devices for an extended period of time.

## Repair Service

The accurate diagnosis and prompt repair of any defects or malfunctions are essential to prolong a product's life span, maintain its performance, and enhance resource circulation efficiency. We operate a comprehensive global service channel and region-specific service channels optimized for local needs to improve accessibility, while also ensuring consumer convenience by offering services powered by digital technologies.

**Global Service Channel – Service Centers** As of the end of 2021, we operate 12,807 Service Centers in 214 countries to ensure convenience for our customers around the world. Service Center managers and repair technicians are trained to provide the highest-quality services based on our expertise and service guidelines. We operate training programs for product repair, product use guidelines, and the introduction of new product features.

**Environmental Activities for Customer Service** As an extension of our efforts to reinforce environmental management practices in customer service, we engage in a range of relevant activities.

**Eco Repair** The Eco Repair Service is designed to minimize parts replacement and maintain originally installed parts to extend their use as much as possible. For mobile phones, the Eco Repair Service is available in 19 countries including the US and Germany as of 2021.

**Eco Paper-free** We issue consumer documents such as receipts, submission proof slips, etc. in digital format instead of on paper upon request. This service was first introduced in India in 2021 and will be made available in other regions in the near future.

**Eco Packaging** We deliver repaired products in sustainably sourced paper box. This service is currently offered in 11 countries including the Netherlands and the UK and will be made available in other regions in the near future.

**Eco Box** We have installed used mobile phone and accessory collection boxes at repair centers in major cities to take back e-waste.

**Eco Delivery** We deliver repaired products using eco-conscious means of transportation, such as bicycles and electric vehicles, to those customers who request this service. This service was first introduced in the Netherlands in 2021 and will be made available in other regions.

**CASE****Eco Delivery Service in the Netherlands**

Our subsidiary in the Netherlands offers a mobile phone pickup and repair service in collaboration with bicycle couriers. Mobile phones are picked up and delivered after repair by bicycle. We plan to make this eco-conscious service available in more cities in the near future.

**Other Services**

**Video Troubleshooting** Our Contact Centers have offered video troubleshooting since 2019. This service allows customers to connect with Contact Center experts via video on their smartphones and troubleshoot problems with their product. Customers can access this service by simply pressing an SMS link sent by our staff members without installing an additional app. Once the problem is identified, our staff members provide the solution or proceed with further troubleshooting procedures. This effectively reduces both repair time and costs. As of 2021, this service is available in 72 countries including the US, the UK, Spain, and Brazil.

**Visual ARS** We offer video ARS that allows customers to visually check and access the services they need on our automatic response system. We plan to continually enhance the user experiences of those with hearing impairment and the elderly. As of 2021, this service is offered in eight countries, including Korea and Australia, and will soon be made available in other regions as well.

**CS Chatbot** We offer around-the-clock troubleshooting through our AI-based chatbot service developed in 2017 by Samsung Research. As of 2021, this service is available in six countries including Korea, the US, and the UK.

**Sign Language Service** We provide sign language interpretation for hearing impaired customers. We first introduced this service in Turkey in 2015 and offer it in 55 countries as of 2021.

**Service Quality Control**

**Operation of Standardized Services and On-Site Audits** We provide standardized services at our Service Centers and Contact Centers based on our work standards and process guidelines. Our global subsidiaries offer training tailored to each region's needs as instructed in the guidelines, while also sharing customer information via the Customer Service Portal. We regularly conduct on-site audits to check if the standard procedures are being followed and make improvements based on the findings.

**Service Skills Training** We offer training on new products and proper customer response for our Service Center managers and repair technicians. Both video sessions and off-line group sessions are provided depending on individual countries and products. The repair scope allowed for each product is determined based on each technician's capacity. Managers and technicians can access training videos and materials via our website and mobile app anytime, anywhere.



## Take-Back and Recycling

We operate a wide range of recycling programs in 56 countries, including in Korea. The Asan Recycling Center, Korea's very first recycling center for electronic goods, has been in operation since 1998 and is connected to our logistics centers in various regions for e-waste collection. Our overseas subsidiaries take back and recycle discarded electronic goods in collaboration with local recycling organizations and service providers. Collected electronic goods are sorted, pre-processed, and pressed to be reused as materials for new product manufacturing. We also operate internal Requirements for Recycling Service Partners that specify EHS-related laws and regulations, supplier management, the prohibition of illegal waste export, etc.

## Take-Back and Recycling Achievements

We collected a total of 5.07 million tonnes of e-waste from around the world from 2009 to 2021. In Korea, the Asan Recycling Center recovered 32,731 tonnes of valuable resources such as copper, aluminum, iron, and plastic in 2021 alone. We used 5,587 tonnes of plastic materials recycled from discarded products in the manufacturing of new products, thereby minimizing plastic waste generation and the use of petrochemical materials in the production process.

Amount of Collected E-Waste (Unit: 10,000 tonnes)



● Cumulative amount collected in previous years

● Amount collected in the calendar year

\* Cumulative from 2009

## Global E-Waste Take-Back and Recycling Status



## Waste Management

To minimize waste generation, we design our products with a focus on resource efficiency and continually improve our manufacturing processes. All of our global business sites review the amount of waste generated and recycled each month and seek ways to further enhance the recycling rate by examining their waste disposal methods.

### Waste Management Activities



#### Product Development

- Operating the eco-conscious design assessment process
- Assessing eco-friendliness in the development stage (resource efficiency, environmental impact, and energy efficiency)



#### Waste Disposal

- Setting waste recycling targets
- Developing waste disposal technologies
- Expanding measures to mitigate environmental impact (low-toxic substance and alternative development, neutralization, etc.)



#### Waste Transportation

- Complying with the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
- Monitoring the travel routes of waste transportation vehicles



#### Waste Disposal

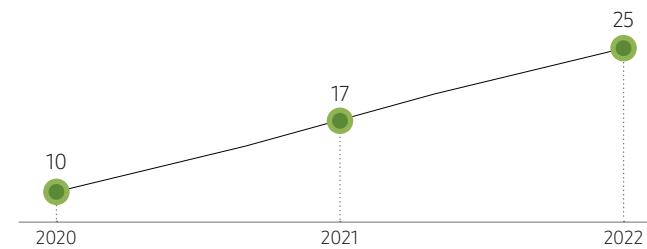
- Ensuring the compliance of waste treatment service provider
- Conducting eco-friendliness assessments of waste disposal companies on a yearly basis (operating capacity, environmental management, etc.)

## Waste Recycling Improvement

We achieved a waste recycling rate of 96% in 2021. Our semiconductor business sites established the goal to further improve the recycling rate to reach 99.5% by 2025 and reduce non-recyclable waste to less than 6,000 tonnes. To this end, they continue to advance the circular economy by discovering added value in waste and developing recycling technologies. Our semiconductor business sites succeeded in accomplishing Zero-Waste to Landfill for the first time in the industry in 2021. We will strive to have all of our global business sites attain zero waste to landfill certification in the near future.

### Zero Waste to Landfill Certification

(Unit: number of business sites, cumulative sum)



## Waste Treatment Technology Development and Process Innovation

We are developing waste treatment technologies and reinforcing our system to separate recyclable waste to achieve zero waste to landfill and promote resource circulation.

## Reduction of Waste for Landfill, Incineration, and Neutralization

We have recycled approximately 2,000 tonnes of waste generated from our semiconductor business sites. In the past, wooden parts and outdoor air conditioning unit filters consisting of composite materials had to be incinerated. However, we succeeded in developing technologies to separate and recycle these materials. Consumables used to polish wafers were previously incinerated due to harmful substances. They are now cleaned and recycled to reduce incinerated waste.

We also achieved zero waste to landfill by succeeding in recycling epoxy molding compound (EMC<sup>1)</sup>), which was previously buried, and clean vacuum (CV) dust<sup>2)</sup>. We are now able to extract and utilize a new plastic material from EMC waste and valuable metals such as gold and tungsten from CV dust.

1) A material applied in the last stage of packaging in semiconductor manufacturing to protect semiconductor circuits from external shock

2) Dust generated and captured from semiconductor manufacturing equipment

**Finding Added Value in Waste** The main type of waste generated from semiconductor manufacturing is sewage sludge. In order to raise the added value of waste, we recycle copper extracted from the sludge and have succeeded in producing an alternative substance to fluorspar, which is needed for steelmaking, in cooperation with Hyundai Steel.

**Attaining Recycled Resource Quality Marker Certification** In 2020, the eight-inch wafer box and IC tray from the Onyang business site attained Recycled Resource Quality Marker Certification from the Korea Environmental Industry & Technology Institute for the first time in the domestic industry. In 2021, the eight-inch wafer box of the Giheung business site and three nonferrous metals from the Giheung, Hwaseong, and Pyeongtaek business sites were additionally certified. These certified items are no longer categorized as waste and are directly supplied to recycling companies. This contributed to reducing the amount of generated waste by 1,903 tonnes per year.

### Waste Reduced through Recycled Resource Quality Marker Certification

(Unit: tonnes)

2020 Approximately

**1,213**

(eight-inch wafer box and IC tray)

2021 Approximately

**1,903**

(three nonferrous metals)

**CASE****All Semiconductor Business Sites Attaining Zero-Waste to Landfill Certification**

As of 2021, our semiconductor business sites at eight locations<sup>1)</sup> have attained Zero Waste to Landfill certification<sup>2)</sup> from Underwriters Laboratories (UL). The Giheung, Hwaseong, and Pyeongtaek sites in Korea and Xian and Suzhou sites in China received the highest rating of Platinum, while the Onyang and Cheonan sites in Korea and Austin site in the US were rated Gold. The Giheung, Hwaseong, Pyeongtaek, and Suzhou sites were upgraded to Platinum in 2021 after having been rated Gold in 2020. In order to exceed the 99% resource recycling rate mark for the Platinum rating, we developed new technology to recycle EMC and CV dust that had previously been buried.

1) Five in Korea (Giheung, Hwaseong, Pyeongtaek, Onyang, and Cheonan), one in the US (Austin), and two in China (Xian and Suzhou)

2) An index designed to assess the resource circulation efforts of corporations and provide four ratings in accordance with the rate of manufacturing waste recycled as resources



- Gold (Resource recycling rate 95~99%)
- Platinum (Resource recycling rate 100%)

**Practicing Resource Circularity**

**Refraining from the Use of Disposable Products** To minimize the use of disposable products at all of our semiconductor business sites, we distributed reusable bags to all employees and promote the use of reusable cups and spoon set. This has contributed to reducing the waste of 65,000 disposable plastic bags and 52,000 disposable cups and plates, thereby decreasing the total amount of waste by 230 tonnes.

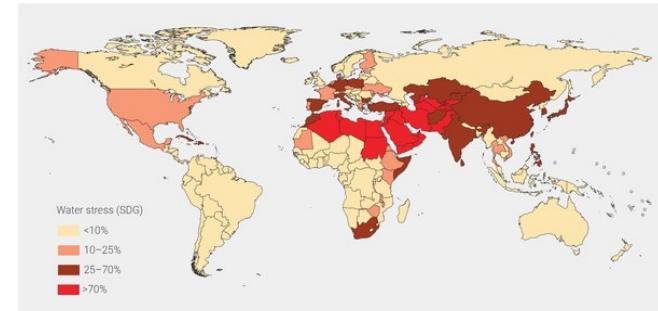
**Reinforcing Recyclable Waste Separation** We reinforced our recyclable waste separation system to more effectively recycle the waste from daily activities at work and expanded the separation categories from six to ten in 2021. We conducted the Eco-Office Campaign to ensure that our employees remove the labels and lids of all recyclable containers before recycling them. We promoted the campaign through training and an introductory webtoon. We also distributed toilet paper made from milk cartons and blankets made with fabric recycled from plastic bottles to the underprivileged in the local communities we serve. We will continue to focus on practicing resource circulation to preserve the planet.

**Water Resource Management**

Water resources are indispensable for product manufacturing and business site operations. They are also affected by natural disaster risks such as floods and droughts, and their use and disposal have a critical impact on biodiversity in the communities where we operate. Therefore, it is imperative to closely communicate and work with local communities. We regularly discuss relevant issues through the EHS Council of each business site and submit them to the Sustainability Council and the Board of Directors if deemed necessary.

**Water Resource Policy** **Water Risk Assessment**

We assess each year whether any business sites are located in regions affected by water stress or water scarcity and develop countermeasures for different risks. We employ the water management tool developed by the Food and Agricultural Organization to identify regions facing water stress or water risks, while also utilizing the tools developed by the World Business Council for Sustainable Development, World Wildlife Fund for Nature, and World Resources Institute to assess the water stress and ten-year water risks of the water basins near our business sites. We also use CDP's water security guidance to establish response measures for water risks.

**Strategy to Tackle Water-Risk by Region** **CDP Water Report** **Water Stress Map****Status of Business Sites with Water Risks (as of the end of 2021)**

Category	Number of business sites	Water intake (1,000 tonnes)	Outflow (1,000 tonnes)
Total	34	163,660	130,955
In regions with water risks	13 <sup>1)</sup>	121,807	98,018

1) 10 in Korea, 1 in India, 1 in Poland, and 1 in Egypt

**CASE****Response to Water Stress Affecting Our Semiconductor Sites**

For the semiconductor sites that require large amounts of water for manufacturing, we analyze their region-specific water stress and offer optimized management.

The Xi'an site<sup>1)</sup>, China is located in a region with extremely-high water stress (80% or higher). We classify wastewater into acidic wastewater, alkaline wastewater, and fluoric wastewater and properly treat each for reuse. We also employ a range of treatment technologies including activated carbon filtering, acid-base neutralization, coagulating sedimentation, and reverse osmosis, to purify wastewater and use it for cooling towers, gas treatment facilities, and landscaping. To reduce water consumption, we also use recycled water as a coolant for all devices.

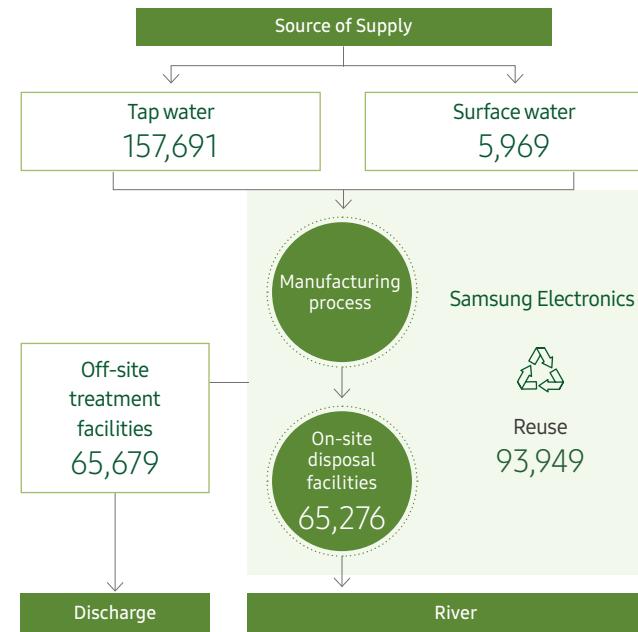
The semiconductor sites in Korea are located in regions with medium-high water stress (20-40%). We classify used water into six types based on our internal standards, and use purification techniques specialized for each type.

Contaminants are removed through biological treatment, chemical treatment, and filtering step by step, and the purified water is collected in a tank for discharge. The quality of water to be discharged is assessed in real time and reported to the government prior to discharge.

1) China's Xi'an site was classified as low water stress according to our company's management standards, but according to WRI water stress analysis, it was classified as extremely high.

**Water Management Process**

We minimize water consumption and purify used water for reuse to ensure water use efficiency. To increase water reuse in the manufacturing process, we classify water resources into the four categories of sewage, wastewater, industrial water, and ultra-pure water and ensure that individual sites track the reuse amount for each category on a monthly basis and enter the data into the G-EHS System. We prevent underground water pollution through advanced facilities installed at our business sites and thoroughly process wastewater through off-site and on-site treatment facilities before discharge. We apply our internal regulations that are more stringent than the legal requirements to wastewater directly discharged into rivers through on-site treatment facilities.

**Water Resource Flow Chart for 2021 (unit: 1,000 tonnes)****Amount of Water Reused (unit: 1,000 tonnes)**

**93,949** in 2021

**CASE****World Water Day**

Every year our manufacturing sites around the world carry out river and marine ecosystem conservation campaigns together with local governments, civil organizations, nearby schools, and partner companies in celebration of World Water Day. Our activities in 2021 were focused on environmental cleanup in areas near our business sites and contact-free programs due to the COVID-19 pandemic. Over 20 sites participated in water resource-related exhibitions, idea contests, and environmental protection training.

## Preserving the Health of Freshwater Ecosystems

Our domestic business sites periodically measure the water quality of rivers into which used water is discharged based on preset indicators (chemical oxygen demand, biochemical oxygen demand, acidity, etc.) and monitor their impact on the neighboring ecosystems. They also monitor fish diversity and bird diversity in the surrounding areas and make improvements accordingly.

**Freshwater Ecosystem Monitoring and Improvement** In order to protect the biodiversity of rivers near our business sites, we monitor the latest developments in their ecosystems, toxicity, weather conditions, and precipitation on a regular basis pursuant to the Guidelines on Freshwater Ecosystem Status Research and Quality Control<sup>1)</sup>. We also monitor the fish and birds inhabiting nearby areas to make improvements.

1) National Institute of Environmental Research Regulations 775 (enacted on October 24, 2019)

### Woncheon-ri Stream in Hwaseong

- Measured and monitored by Kyung Hee University
- Fish population of 2,390 of 20 species observed (crucian 19%, carp 12%, and false minnow 6%)
- Benthic invertebrates observed
- Effluent water found to have no ecotoxicity on the ecosystem

### Osan Stream in Gicheung

- Measured and monitored by Korea Ecology & Environment Institute
- Fish population of 1,665 of 20 species observed (crucian 27%, carp 22%, and minnow 17%)
- Benthic invertebrates observed (population of 512 of 34 species)
- Effluent water found to have no ecotoxicity on the ecosystem

### Seojeong-ri Stream in Pyeongtaek

- Measured and monitored by Pyeongtaek University
- Fish population of 183 of 13 species (tolerant species of carp and crucian 77% and intermediate species observed of false minnow and dark sleeper 23%)
- Benthic invertebrates observed (population of 728 of 27 species)
- Effluent water found to have no ecotoxicity on the ecosystem

## CASE

### Osan Stream Biodiversity Conservation Activities

We discharge 45,000 tonnes of purified effluent water per day into Osan Stream, which has contributed to improving the local ecosystem. As evidence of these improvements, wildlife, including otters, now inhabit the area. We conducted campaigns to plant irises known for their water-purifying capacity, supply effective microorganisms to remove pollutants, and release indigenous fish species. We also funded a project to create the Osan Stream Butterfly Path aimed at protecting the endangered dragon swallowtail.

### Wildlife near Osan Stream Wastewater Outlet



Otter



Wildcat



Elk

## Water Pollution Control

We ensure that all chemicals and water polluting substances used at our business sites are thoroughly filtered from wastewater before they are discharged into rivers and strive to minimize adverse impacts on freshwater ecosystems. Our internal regulations related to pollutant concentration, water temperatures, toxicity, and other hazards are far more stringent than the legal requirements.

**Minimizing Pollutant Discharge** In pursuit of minimizing pollutant discharge from all of our semiconductor sites, we have reduced the use of chemicals, developed alternatives for harmful substances, and enhanced wastewater disposal efficiency. In addition, we are effectively reducing the use of sulfuric acid, chlorine, and fluorine through chemical filter development, process innovation, and crystallization technology development.

**Multi-Faceted Defense against Water Pollution** We are taking active measures to reduce the discharge of pollutants and remain prepared for possible accidents at our wastewater disposal facilities at the same time. We installed triple-tier interlocks across the three stages of infiltration, processing, and discharge at our wastewater disposal facilities. Each interlock measures pollutants in real time, and, if pollutant concentrations surpass the preset level, emergency action is taken to remove the pollutants.

## Feature Story

### The development of a microplastics-reducing washing machine

Ocean-bound microplastics have emerged as a critical environmental issue. It is estimated that tiny plastic particles shed from clothes and textiles during the washing cycle account for 35% of micropollution in the oceans.

To address this issue, we have launched a project to develop a washer that reduces microplastics in wastewater.

Microplastics reach the oceans.

Plankton eat the plastic particles.

Fish eat the plankton.

People eat the fish.

\* Microplastics polluting the oceans ultimately reach people through the food chain.

This project is being developed in collaboration with Patagonia, a global outdoor clothing brand.

"Microplastics generated during laundry are tiny plastic fragments shed by synthetic textiles. These microfibers eventually reach the oceans via wastewater. The key to reducing these microplastics is to prevent microfiber shedding due to agitation in the washer. We are seeking ways to reduce microfiber pollution while also ensuring high-quality cleaning."

—Bang Eun-sook (Researcher for washer development)—

"As a washer developer, I have studied how microplastics enter our oceans through wastewater from washers. We are striving to develop technology to filter microplastics from the wastewater after each wash and enable users to easily remove or discard the microplastics collected in the filter. I believe it is both imperative and worthwhile to design a washer that helps consumers reduce microplastics generated in the laundry cycle."

—Suh Dong-pil (Researcher for washer development)—

## Chemical Management

We strive to minimize the negative impacts of hazardous substances that may enter our products, as well as chemicals used in the front-lines of manufacturing on the health of our customers and employees. Our internal regulations are established and stringently managed based on global standards, including the EU's Restriction of Hazardous Substances (RoHS) Directive and the Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH).

Standards for the Control of Substances Used in Products

REACH Declaration for Substances of Very High Concern (SVHC)

### Strictly Managing Harmful Substances in our Products

We are equipped with a rigorous pre-inspection and follow-up management system for parts and raw materials to prevent hazardous substances from entering our products. We set the Standards for the Control of Substances Used in Products based on global standards and voluntarily establish reduction plans for the use of potentially hazardous substances, such as polyvinyl chloride (PVC), brominated flame retardants (BFRs), beryllium, and antimony, as well as legally regulated substances.

**Managing Hazardous Substances in the Supply Chain** Our supply chain review and management systems are designed to help our suppliers actively engage in eco-conscious management practices. All of our product and parts suppliers are subject to Eco-Partner Certification evaluations. Each supplier is required to submit data obtained from its raw material providers and production environment reports that guarantee the credibility of hazardous substance information. We provide certifications to those companies evaluated to have complied with the Standards for the Control of Substances Used in Products. We also provide certifications to companies equipped with an advanced environment and quality management system. Only companies with these certifications are included in our supply chain.

**Eco-Life Lab for the Analysis related Health and Hygiene** We opened the Environmental Analysis Lab in 2004, which initially monitored the six substances regulated by the EU's RoHS. We have continued to expand potentially hazardous substances subject to monitoring each year to prevent hazardous substances from entering our products. The Environmental Analysis Lab was expanded to the Eco-Life Lab in 2020, and additional test chambers and advanced equipment for microorganisms were introduced. We also expanded the scope of research to identify fundamental causes of odors and appropriate solutions. The Eco-Life Lab's expertise and credibility have been recognized by attaining certifications from Korea Laboratory Accreditation Scheme (KOLAS) and TÜV Rheinland, Germany's renowned testing service provider.

Samsung Electronics' Chemical Substances Management History

### Chemicals Used for Manufacturing

The chemicals used at all of our business sites are stringently controlled pursuant to country-specific laws and our internal List of Regulated Substances for Manufacturing. To ensure that our partner companies use chemicals under the safest possible conditions, we perform regular on-site audits and support work environment improvements. We conduct regular training for staff members handling chemicals and inspections of relevant facilities, while also establishing safety measures for relevant facilities based on the assessments of EHS experts. Additionally, we operate a three-tier chemical reduction program (alternative development, concentration reduction, and prohibition of use).

List of Regulated Substances for Manufacturing

**Chemical Management Process** To ensure safety, we systematically monitor and manage the entire chemical-related process, from purchase to disposal. Staff members handling chemicals at business sites request the expert group to perform evaluations of all chemicals prior to purchasing and purchase only those chemicals evaluated to be appropriate for use. In 2021, 7,563 prior evaluations were performed in Korea and abroad. Once the purchased chemicals are delivered to each site, the inventory is thoroughly monitored until they are safely discarded through a separate process.

Management Process for Chemicals Used in Manufacturing

**Reinforcing Chemical Control at Semiconductor Sites** To minimize damage from potential accidents, all facilities and buildings on the premises of our semiconductor sites have been reinforced. We implemented physical measures, such as the installation of an automated chemical injection system, disaster prevention and firefighting equipment, and discharge wall, while also upgrading the overall process from facility-specific inspections to the early detection of leakage. In addition, we installed a system to detect and respond to leakage at different points including building interiors and exteriors, rainwater drainage pipes, and outer fences around the business sites. We improved our research on chemical compound risks to prevent related accidents, established a system to prevent chemical mixing, and continue to update relevant construction and job regulations.

**Improving Preparedness for Overseas Chemical Regulations** As chemical regulations and standards vary by country and continue to be updated, we are required to take a more systematic approach to effectively manage chemicals. We review the relevant laws of the 15 countries in which we have business sites, including China, Vietnam, and India, and reflect the findings in our chemical management standards and database to minimize risks.

# EMPOWERING COMMUNITIES

We remain committed to fulfilling our corporate social responsibility to create a better world for all. Based on Samsung's core values of 'People First' and 'Co-prosperity', our CSR activities aim to help individuals reach their full potential.

Corporate Citizenship	42
SME-Startup Support	46
Future Technology Cultivation Initiative	48



Total employee volunteer hours

9,903,186

\* Cumulative sum, 2012-2021

Number of beneficiaries of our CSR activities

22,150,865

\* Cumulative sum, 2012-2021

Number of beneficiaries of the Smart Factory Support Program

2,812

\* Cumulative sum, 2015-2021

# Corporate Citizenship

## Our CSR Activities

We have re-established our CSR vision and theme in line with Samsung's business philosophy and core values. We have focused our capabilities and resources on various CSR activities aimed at tackling societal issues such as youth unemployment and social inequality. A new program focusing on the environment, which allows our employees to lead the entire process from idea generation to development, is also in development.

- CSR vision: "Together for Tomorrow! Enabling People!"
- Theme: Education for Future Generations

### Major programs

- Global: Samsung Solve for Tomorrow, Samsung Innovation Campus
- Korea: Samsung Junior SW Academy, Samsung Smart School, Samsung SW Academy for Youth, Samsung Dream Class, Stepping Stone of Hope (support program for self-reliance of youth no longer eligible for facility protection), Blue Elephant (cyber-violence prevention program for youth), and a new environmental program under development

\*Samsung Smart School is operated in Korea and India.

## Enhancing Creative Problem-Solving

### Samsung Solve for Tomorrow

Samsung Solve for Tomorrow is a contest for youth designed to advance their STEM understanding and creative problem-solving skills required to thrive in the Fourth Industrial Revolution. Teachers and Samsung employee mentors help students identify the root causes of problems in their local communities and work towards optimal solutions. In 2021, despite the prevalence of COVID-19, as many as 160,150 students and 38,615 teachers from over 33 countries participated in the program.



### CASE

#### Addressing anxiety and depression triggered by the pandemic among the elderly (US)

Students at Porter High School in Texas sought ways to help senior citizens stay connected to the outside world and overcome loneliness and depression due to the prolonged pandemic and social distancing. They developed the Gen-Bridge app for tablets and created a companion website. The app offers video call and game services easily accessible by the elderly.

### INTERVIEW

#### Interview with the Program Manager

"We wanted to provide the best education to both students and teachers from the very beginning. We prioritized what they need and want. We aim to help youth proactively pursue intellectual growth and set their own goals, while also focusing on offering unprecedented educational experiences through this program. It is always thrilling and motivating to watch youth transform and take action to bring positive change to both their personal lives and communities. The smallest change in how people think can lead to innovations and the improvement of inconveniences in everyday life."

- Helvio Kanamaru  
(CSR Manager, Samsung Electronics Latin America Office) -

### Samsung Junior SW Academy

Samsung Junior SW Academy trains teachers who provide software education at elementary and junior high schools. The program was first launched in 2013 by signing an MOU with the Korea's Ministry of Education to expand the horizons of software education. In 2021, the curriculum was redesigned to an AI-focused course. Teachers are trained using AI-related content developed in association with experts in the field, and students are provided with programs and kits for hands-on training.

### INTERVIEW

#### "We must help children prepare themselves for the future amid this whirlwind of changes."

Thanks to the media's continued coverage of AI and related technologies, children today are well aware of the importance of developing their capabilities to solve problems based on data, regardless of their field of interest and expertise. Kim Seong-yeong, who has been engaged in information education over the past 14 years, emphasizes that Samsung Junior SW Academy's systematic curriculum significantly contributes to the growth of children's understanding.

- Kim Seong-yeong, Samsung Junior SW Academy participant -

Since 2015, we have organized the Samsung Junior SW Cup. The goal of the program is to cultivate future software experts and enable them to develop ideas and solutions that benefit society based on their software knowledge. Participation in the 2021 event alone reached 3,490 contestants (1,584 teams). In total, 34,457 contestants (12,938 teams) have participated since the contest was launched.

### CASE

Developed by students Lee Ji-hyeon, Yun Ye-yeong, and Jeong Heon-jae, the Da-tective app helps to prevent accidental exposure of personal data online.

This app enables automatic image masking of photos using AI technology before they are uploaded online. This prevents damage from the leakage of personal information included in photos.



## Developing Youth Skills for the Future

### Samsung Innovation Campus

We began offering technological training programs for adolescents and unemployed youth in 2013. Relaunched as Samsung Innovation Campus in 2019, the program is based on our experience and knowledge accumulated from the previous programs, as well as the latest industry trends.

Samsung Innovation Campus operates a range of curricula, from programming to AI, in different countries. In cooperation with the local ministry of education, schools, and NGOs, we work to adapt the program to the local educational environment and conditions. The program contributes to nurturing workplace capabilities in youth by offering theoretical and hands-on IT training for programming, AI, IoT, and big data. It also offers training for soft skills such as creativity, communication, and empathy to help youth develop well-rounded skills. A total of 39,182 students in 28 countries received technological training in 2021. In Turkey, in particular, 86% of Samsung Innovation Campus graduates succeeded in being recruited, and some started their own businesses.

### Technological Capabilities



\* We plan to introduce Cloud and mobile platform training courses in the future.

### CASE

#### Program Participant

Batuhan Abay who graduated from Istanbul Technical University in Turkey in 2019, applied to Samsung Innovation Campus under the aim of cultivating his IT competence and working as an IT specialist. Once in the program, he received consulting and training from frontline experts as well as valuable advice on his projects and career path through mentoring. After completing the course at Samsung Innovation Campus in 2020, he was recruited as a software developer by a global IT service operator.



### INTERVIEW

#### Interview with the Program Manager

"Samsung Innovation Campus focuses on not only delivering knowledge but also offering guidance for youth on how to grow and achieve their aspirations and dreams. It is always a great joy to witness youth being inspired by state-of-the-art technologies such as AI and IoT. Their thirst for learning and enthusiasm to contribute to making a better world are always inspiring. I strongly believe that youth education is the best possible investment to realize a sustainable future. Young people have unlimited potential to reinvent the world, and every little step they take has the power to shape our future."

- Anastasia Buda (CSR Manager, Samsung Electronics Italia) -

### Samsung SW Academy for Youth

Since 2018, we have operated Samsung SW Academy for Youth ("SSAFY") in Korea in association with the Ministry of Employment and Labor. The program offers a year of theoretical and practical training to help youth foster their capabilities and competitiveness as professional software developers. Trainees are exposed to algorithms, coding, web technology, and more, in the introductory course. This is followed by an advanced course focused on cultivating competencies to effectively harness Fourth Industrial Revolution technologies including AI and IoT. A total of 2,785 trainees from the first through fifth entrance classes have graduated from SSAFY. Among them, 2,326 have succeeded in landing jobs in diverse fields including IT and finance, recording an employment rate of 84% as of April 2022. In 2022, about 1,700 trainees of the sixth and seventh entrance classes are being trained at SSAFY.



### INTERVIEW

#### Samsung SW Academy for Youth Graduate, Non-IT major

I majored in business administration at college and am now responsible for software development at Kakao. I applied for SSAFY knowing that I needed to take action to achieve my dream of becoming a software developer before it was too late. SSAFY's unique curriculum, including courses centered on hands-on training, projects simulating real-world tasks, and mentoring from frontline developers, provided a valuable opportunity for growth. Its employment consulting and job fair program also helped me significantly in preparing for interviews and my CV.

**INTERVIEW****Personnel Manager at a Software Development Company**

Our new recruits from SSAFY have all shown performance far beyond our expectations and outstanding capabilities in programming language and algorithms, presumably thanks to the superior training offered by SSAFY. Their teamwork skills reinforced through the group studies and team projects required by SSAFY are also an asset to our company. We always welcome applicants from SSAFY, as their completion of its courses proves their excellence.

**Lecturer at Samsung SW Academy for Youth**

I joined SSAFY with the aim of contributing to fostering youth into developers, as I had also served as a developer for a long time. Companies need talented people who are equipped with expertise and collaboration skills that can be readily deployed to business frontiers. SSAFY provides robust theoretical and hands-on training through projects that simulate real-world tasks to cater to this need.

**Samsung SW Academy for Youth Program Manager**

"Youth unemployment was a major social issue in 2018. Another challenge was the critical shortage of quality developers needed in the era of the Fourth Industrial Revolution. SSAFY was established to train both IT majors and non-IT majors into convergent talents and provide optimal solutions for the problems facing the industry. It has been five years since SSAFY was launched, and many of the programs developed as graduation projects have been praised by the judges for exceeding expectations and being ready to be deployed to business frontiers immediately. In recognition of our efforts to equip our trainees with the capabilities required on the front lines of the industry, over 100 companies are giving preference to SSAFY's graduates in recruitment, and more and more companies are proposing to hold recruitment presentations. I hope that the SSAFY's graduates will continue to strengthen their presence as competent troubleshooters in different corners of the communities we serve."

- Kang Dae-beom (CSR Manager, Samsung SW Academy for Youth) -

**Tailored Education for the Next Generation****Samsung Smart School**

Samsung Smart School was established to help narrow academic achievement gaps and foster essential capabilities for youths by providing our cutting-edge smart devices, training solutions, learning content, and facility remodeling services to schools with inadequate conditions or in underserved areas. We have reached out to 193 classrooms at 98 schools in Korea since 2012. In 2021, we selected ten excellent Smart Schools in Korea and India respectively, and offered remodeling services of two classrooms per school. Each Smart School classroom was given three Samsung Flip products, one tablet for each student, and one Samsung Chromebook for every two students. Additionally, they were provided with online class equipment, printers, and tablet charging stations. We provide regular teacher training and expert consulting to Smart Schools to help improve teachers' capacity to utilize smart devices in the classroom. We also support Smart School operations through free repair services for up to two years and online counseling for smart devices at all times.

**CASE****Korea**

Sangsuri Elementary School in Gyeonggi-do has six classes, one for each grade. It was included as a Smart School in 2016 and supported with diverse resources to offer coding and project classes. Students were able to cultivate their coding skills to a middle-school level with training for both text coding and simple block coding. As a result, it was selected as an outstanding Smart School in 2021. The program's excellence led to a continued increase in the total number of students, more than doubling to 95 in 2021 from 45 in 2016.

**India**

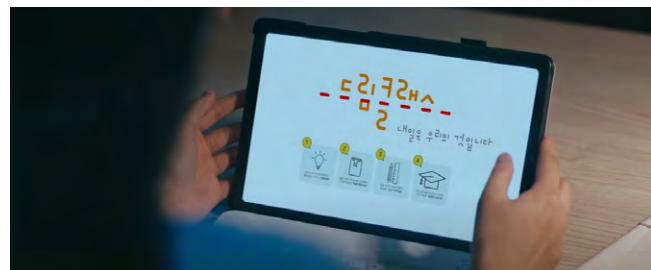
Anita Gupta is a computer science teacher at Jawahar Navodaya Vidyalaya School in Faridabad, India. When she first came to the school, no more than five or six computers were available for students to use. Additionally, teachers were unaware of non-traditional, digital teaching methods. Powered by the Smart School program in 2014, she was able to significantly increase the attendance rate and academic performance of her students. Moreover, thanks to the smart devices provided, in 2021 she was able to successfully make the transition to online classes and still keep students interested during the COVID-19 pandemic. "All the teachers and students have been familiarized with the Smart School program. Without it, we would be forced to return to the past," she said. "I am glad that Samsung Smart School is helping us keep evolving."



## Samsung Dream Class

Samsung Dream Class, which originally started as a combination of after-school classes and a vacation camp, was revamped into Samsung Dream Class 2.0 in 2021. Samsung Dream Class 2.0 provides three types of training based on digital technologies: career-path guidance to help youth discover and pursue their aptitudes and dreams; training in communication, coding, mathematical, and reasoning skills required to thrive in the future global arena; and assistance with school curriculum. It also offers practical mentoring by our employees and frontline experts.

\* A total of 5,000 middle school students and 500 college students participated in Samsung Dream Class in 2021.



### CASE

Jeong Eun-jin (Employee at Samsung Electronics, Modem Solution Team, System LSI) attended Samsung Dream Class and received tutoring from a college student mentor in 2012 when she was in her third year of middle school. After entering college, she participated in the program as a mentor herself and helped middle school students with their studies. She then joined Samsung Electronics in 2019. In 2021, she again participated in Samsung Dream Class, this time as an employee mentor to give back to the program that had helped her. "Back in middle school, through Samsung Dream Class, I met a mentor who had graduated from a science high school. Thanks to her guidance, I was able to enter a science high school as well," she said. "I hope more young students will be able to take bold steps towards their dreams through this program."

## Stepping Stone of Hope

Stepping Stone of Hope is a program that came to life from internal idea contest and donations of our employees celebrating the 20th anniversary of the New Management Declaration of Samsung. Adolescents who were protected by state care have to stand on their own feet when they turn 18. Stepping Stone of Hope provides both shelter and tailored education for these young people as they make transition to self-reliance. In collaboration with local governments and NGOs, Stepping Stone of Hope provides one living space to each beneficiary for up to two years as well as education and career programs for their personal development. A total of eight centers are in operation, including ones in Busan, Daegu, Gangwon, Gwangju, Gyeonggi, Gyeongnam, and Chungbuk. Two more centers are slated to open in Gyeongbuk and Jeonnam by 2022.



### INTERVIEW

*"I was not afraid of going out into the world as I had the Center as my stepping stone to self-reliance."*

Kim So-yeon (pseudonym), who now works as a social worker after leaving Stepping Stone of Hope Center, says the Center is indispensable to those who have to stand alone without any family. Kim gained courage from the fact that she had someone to open her heart to and overcame her fear of going out into the world alone.

*- Kim So-yeon (pseudonym),  
a social worker who benefited from Stepping Stone of Hope Center -*

## Blue Elephant

Blue Elephant is a cyberviolence prevention program for youth operated in association with the Blue Tree Foundation to resolve drastically increasing cyberviolence among youth. Counselors visit schools to help students develop prosocial behaviors and skills and offer on-site cyberviolence prevention training.

\* A total of 259,339 sessions were held for youth, parents, teachers, and lecturers in 2021.

Beyond mere punishment and preaching, the program takes a more forward-looking approach that includes cyberviolence prevention training to induce fundamental change from within; professional psychological counseling to help victims heal based on the network of individuals, families, schools, and local communities; and idea contests and campaigns targeting youth to build stronger social ties and eradicate cyberviolence. It also strives to lay the systematic and legal foundation for cyberviolence prevention and response through academic research on its root causes and current status.



### INTERVIEW

*"I'm working to shed light on the diversifying forms of violence continually committed in the increasingly complex cyberworld and encouraging people to find solutions together."*

Seo In-yeong, a college student who is operating a student club promoting cyberviolence eradication, experienced cyberbullying when he was in the fifth grade. However, he did not realize it was a form of serious violence until recently. He believes he would have strived to resolve the problem at the time if he was able to recognize that it was violence. This is why he engages in activities to urge people to take interest in the issue and find ways to eradicate cyberviolence.

*- Seo In-yeong, college student operating a student club supported by the Blue Elephant -*

## SMEs·Startups Support

We have shared our innovative manufacturing technologies and expertise with SMEs through Smart Factory Support since 2015. Since 2018, we have supported the technological innovation and productivity enhancement of SMEs in collaboration with the Ministry of SMEs and Startups and the Korea Federation of SMEs.

### Smart Factory System Establishment

We have dispatched 200 experts across a variety of fields (quality, logistics, mold, etc.) to SMEs to support the establishment of production system, automation solutions and the innovation of manufacturing sites. We supported a total of 2,812 SMEs and established companies from 2015 to 2021.

#### Areas of Smart Factory Support



##### Factory Operation System

MES (factory operation), ERP (enterprise-wide resource planning), SCM (supply chain management), PLM (product lifecycle management)



##### Manufacturing Automation

Introduction of ICT-connected manufacturing robots, unmanned transport vehicles, etc.



##### Process Simulation

Factory layout simulation and data analysis



##### Ultra-precision Processing

Provision of metal material design and processing solutions

#### Achieving On-site Innovations



Stationed a team of three innovation experts at each SME for 8-10 weeks to transfer knowledge and help streamline and automate the manufacturing process (Low-Cost Intelligent Automation or LCIA).

### Support for Competitiveness Reinforcement

We help SMEs reinforce their competitiveness through a variety of methods including achieving on-site innovations, pioneering new marketing channels, developing talent, and transferring technological expertise.

#### Areas of Competitive Reinforcement Support

##### Pioneering new marketing channels



Support for discovering new buyers in connection with Smart-Biz Expo and Arirang TV and pioneering new marketing channels through participation in our company's in-house holiday fairs, etc.

##### Developing talent



Starting in 2016, we have helped develop 19,359 specialists through diverse training programs such as job-specific training and smart factory specialist cultivation. In 2020, we expanded with untact programs due to the pandemic.

##### Transferring technological expertise



Transfer of expertise (molding, automation, etc.) and support for technology

##### Offering support for partner companies



Support for both target companies and their parts suppliers.

##### Operating Smart 365 Center



Assistance for consistent maintenance and smart factory advancement.

#### CASE

##### Smart Factory Support

Ace Life, a bidet manufacturer headquartered in Asan, a city in the middle western region of Korea, experienced a dramatic surge in orders due to the pandemic-induced shortage of toilet paper in the US and Europe. Ace Life's monthly production capacity stood at 20,000 units, which fell far short of the 32,000 units being ordered each month. We provided our manufacturing expertise to improve Ace Life's process balance, achieve testing automation, and establish an optimal layout. We also created a pleasant and inspiring work environment for employees by building a new on-site lounge. As a result, production capacity increased by 110% (42,000 units per month), and the company's annual sales recorded growth of KRW 7.5 billion. In addition, as many as 16 jobs were created. These innovative improvements to achieve a smart factory system were introduced to overseas buyers and led to the company's advancement into the Japanese market. Ace Life also received a request to develop a new product from a European partner based on its future growth potential.



## Startups Support: C-Lab (Creative Lab)

We operate C-Lab to develop innovative ideas into business opportunities and contribute to vitalizing the Korean startup ecosystem.

### C-Lab Spin-off

C-Lab Spin-off is designed to select projects with greater growth potential among those cultivated through C-Lab Inside, our in-house venture program, and support them to be fully-fledged startups.

The spin-off startups are provided with seed funding, foundation aid, company building programs and business strategy mentoring in order to help the project stabilize and take firm root at an early stage. They are also provided opportunities to join the list of vendors featured on our online shopping mall for employees and Samsung.com Korea. We allow employees of these spin-off startups to re-enter our company within a preset period of time to help them take on new challenges without fear of failure.

A total of 59 startups have been founded and about 500 jobs have been created through this program since 2015. These startups have been recognized for their value externally and attracted a total of KRW 120 billion in investments. The entire corporate value came to close KRW 560 billion as of April 2022.

### INTERVIEW

"Evar is the product of imagination brought to life through close cooperation with my C-Lab colleagues. Many difficulties await startups in different stages. The label that Evar was spun off from Samsung Electronics helped Evar find great business opportunities in the market."

-Lee Hoon, CEO of Evar (C-Lab Spin-off Startup No. 35) -



\* Evar : A start-up delivering the mobile charging solution of electric vehicles

### C-Lab Outside

C-Lab Outside is a startup acceleration program launched in 2018 to share our experience and knowhow accumulated through C-Lab Inside and bolster Korean startup ecosystem. C-Lab Outside comprises two programs: one directly operated by our company and the other operated in collaboration with Daegu and Gyeongbuk Center for Creative Economy and Innovation.

We provide business grants of up to KRW 100 million to those startups selected to join the program directly operated by our company without equity acquisition, while also offering office spaces, opportunities to participate in global IT exhibitions, and tailored business and marketing development programs for a year.

The program operated in collaboration with the Daegu and Gyeongbuk Center for Creative Economy and Innovation was first launched in 2015 and incorporated into C-Lab Outside for expanded support. Samsung funds KRW 4 billion won each year and dispatches mentors and support staffs from Samsung Electronics to help foster promising startups in non-metropolitan areas.

### Detailed C-Lab Outside Support



#### Business Grant

Providing financial aid of up to KRW 100million



#### Infrastructure

Offering office spaces within Samsung's campus, meals, and commuter shuttles



#### Mentoring and Consulting

Providing tailored program to individual needs (finance, market validation, marketing, publicity, etc.)



#### Business Growth

Offering opportunities to join domestic and international IT exhibitions (eg. CES) and Demo Day



#### Collaboration Opportunities

Arranging business collaboration and co-promotion with Samsung Electronics



C-Lab Startup Demo Day

In 2022, a total of nine C-Lab Outside startups participated in CES, the world's largest tech event. It was a valuable chance for them to network with investors, buyers, and industry specialists from around the globe. They were also recognized for their technological prowess and competitiveness by winning 14 awards at the CES 2022 Innovation Awards.

In November 2021, we staged C-Lab Startup Demo Day both online and offline to allow startups to widely promote their performance over the past year and discuss business and technological cooperation with other companies and investors. We fostered about 400 competitive startups in total since 2015 under C-Lab Outside.

### INTERVIEW

"It takes an enormous amount of time and effort for a small startup to develop AR emojis. We were able to drastically reduce the development time and raise the quality of our service using Samsung Electronics' AR emoji technology."

-Cho Hyun-geun, CEO of Smoothy (C-Lab Outside Batch #2) -



\* Smoothy : A start-up developed a Video Call Application 'Smoothy'

# Future Technology Cultivation Initiative

In 2013, Samsung Electronics launched KRW 1.5 trillion grant program to support creative and innovative R&Ds in areas of basic science, novel materials and information and communication technology (ICT) in Korea.

This initiative aims to contribute to catalyzing creative and challenging R&Ds and building a foundation for technological innovation for the advancement of humanity. To ensure that the program truly cultivates high risk, high impact projects and technologies, we do not hold participants responsible for undesired results.

As of April 2022, our investment stands at KRW 973.8 billion for 735 research projects (251 in basic sciences, 240 in materials, and 244 in ICT). Over 14,600 specialists from 77 universities (Seoul National University, KAIST, POSTECH, etc.) and research institutes (KIST, KIAS, etc.) have participated in the projects, and 1,161 patents have been filed.

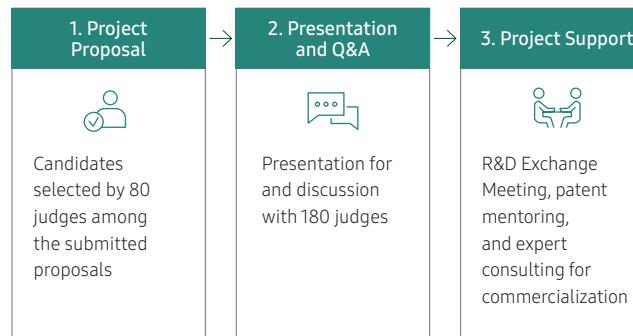
We offer a variety of specialized programs such as the R&D Exchange Meeting for grantees to share information with relevant experts and promote the commercialization of project results, mentoring for patent applications, and expert consulting for business foundation and commercialization.

## CASE

Supported by the Future Technology Cultivation Initiative, the team led by professors at POSTECH have succeeded in using light to control and measure the properties of solid materials. The team's achievements were published in *Nature*.

A team led by Professors Lee Gil-ho and Cho Gil-young of the Department of Physics at POSTECH succeeded in developing a platform that uses light to control and measure the properties of solid materials. The findings were published in *Nature*, the world's leading multidisciplinary science journal, on March 16, 2022. The team's research was first selected as a project of our Future Technology Cultivation Initiative in June 2017, and has received support over the past five years.

## Project Operating Process



## Major Tasks

	Tracking and restructuring memory, defining mathematical principles of machine learning acceleration techniques, etc.
	Developing treatment options for hereditary brain-nerve system diseases, resolving heat generation in electronic devices, etc.
	Addressing biases in AI, verifying errors in third-generation software, etc.

## Operation of the Future Technology Cultivation Initiative

The Future Technology Cultivation Initiative is evaluated to have contributed to expanding the horizons of Korea's R&D and developing future technologies. As many as 2,000 entries are submitted to the biannual free contest and 200 entries to the themed contest on average.

### First, we ensure expertise, fairness, and objectivity in the project selection stage.

Each researcher contestant is required to draw up and submit a two-page research proposal without specifying his or her name and position to ensure impartiality, and the judges then select the most innovative and inspiring proposals through collective discussions over the course of two days. The panel of judges, comprising experts in different fields, comprehensively evaluates whether the selected project proposals fulfill our innovation standards and whether the contestants are equipped with the capacity to execute the projects through a one-hour interview.

\*Panel of judges consisting of 2,200 from Korea and 1,300 from overseas

### Second, we encourage researchers to take on new challenges and pursue innovation by allowing them to take the lead in decision-making and freely make and learn from mistakes.

Researchers are allowed to propose the project theme, objective, budget, and period as they see fit. The objective should not include quantitative targets such as the number of publications and patents. All intellectual property rights resulting from research belong to the respective university or research institute in charge. The employees and researchers involved are not held responsible for undesired results, and cases of failure are collected and treated as our knowledge assets.

### Third, we provide multi-faceted support, including funding, to help bring research to fruition.

We help researchers set the overall project direction through the R&D Exchange Meeting and offer high-quality patent application services through intellectual property mentoring. By holding the Annual Forum, we provide a platform for researchers to share their difficulties and guide them to seek solutions through collective intelligence with judges, consultants, and invited experts.

### Fourth, we hold the Global Research Symposium to allow contestants to share and review their findings and outcomes with prominent scholars from around the globe.

The Global Research Symposium has been held seven times to date, with leading scholars and researchers in geometry, immunology, meta materials, etc., invited to share their insights.

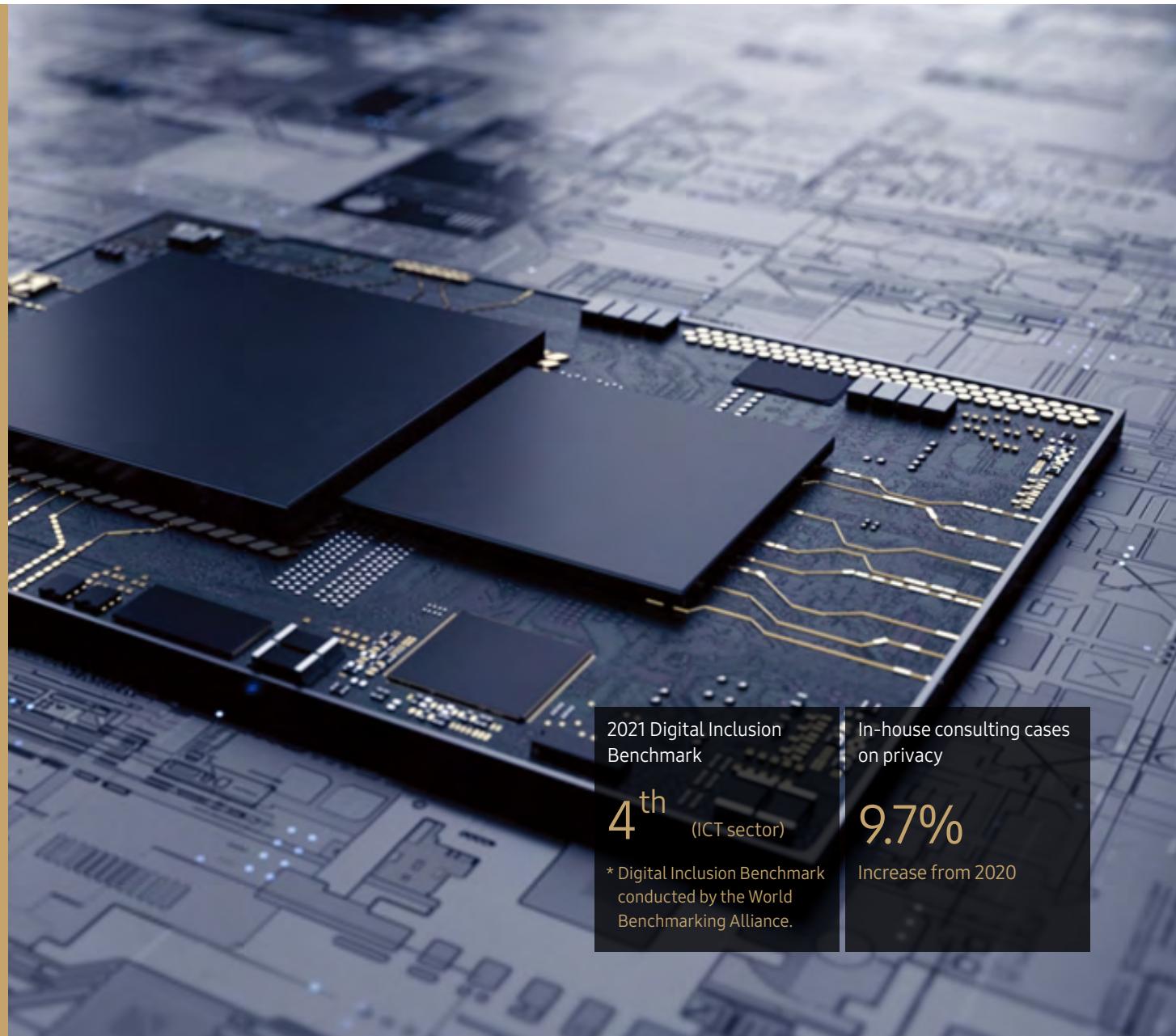
# DIGITAL RESPONSIBILITY

The COVID-19 pandemic has accelerated the pursuit of digital transformation. As the impact of digital technology on our lives continues to expand, it is imperative to deliver products and services in a more responsible manner.

Our efforts to protect users' privacy and maintain the highest level of product security are embedded in every aspect of our operations from planning to design, testing, release, and post-release.

We strive to fulfill our corporate, social, and ethical responsibilities in relation to our expansion in the field of AI, while also seeking ways to reinforce the accessibility of our products and services. Additionally, we focus on moving the balanced use of digital devices for consumers.

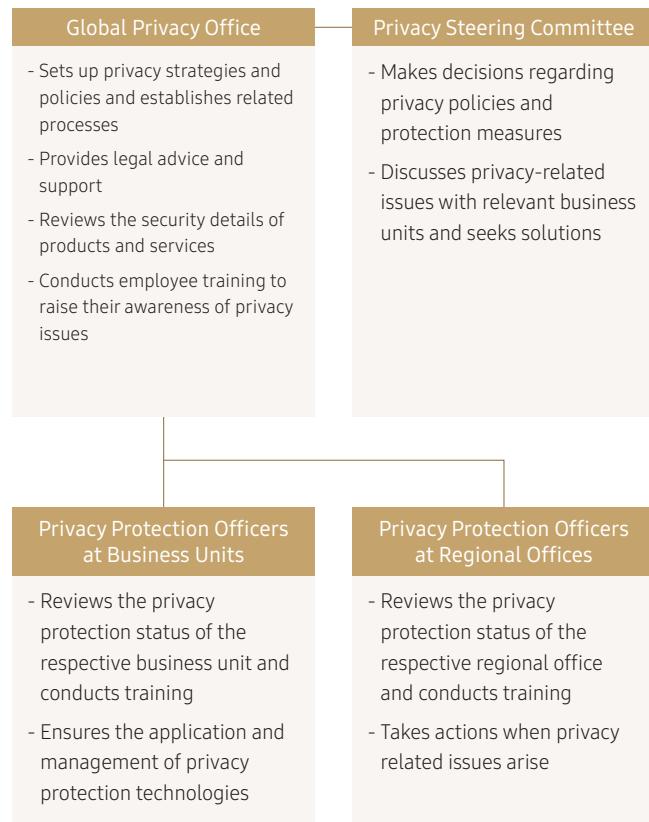
Privacy	50
Cyber Security	52
AI Ethics	55
Accessibility	57
Digital Wellbeing	58



# Privacy

We have been consistently seeking ways to provide industry-leading privacy protection solutions and enhance customer convenience based on data. We work hard to act preemptively against risk factors using advanced security technologies that are engineered to provide customers with full control over personal information.

## Organizational Units



## Privacy Protection Principles

We strive to earn customer trust by ensuring privacy protection and transparently sharing our practices for the collection and use of personal information. To this end, all of our products and services are delivered in compliance with the Privacy Protection Principles.

### Principles

#### Transparency



We transparently share the details on our collection and use of personal information.

#### Security



All our products are designed to provide optimal services and securely protect users' personal information.

#### Choice



We enable users to choose the type and extent of personal information to be collected, accessed, and shared.

## Privacy Protection Management

We are operating a country-specific Global Privacy Policy, which reflects the respective country's laws and regulations, to safeguard the privacy of global consumers in an optimal manner.

We take preemptive actions to protect privacy, such as acquiring the industry's first ISO/IEC 27001 certification (information security management), and ISO/IEC 27701 certification (privacy information management system) for our digital signage business in 2021.

Privacy Protection Guidelines for Employees and Guidelines on Third-Party Personal Information Processing are provided to our employees. Also, we offer trainings to improve their awareness and understanding of such guidelines.

### Management Process



#### 01 Sensing

Monitoring the enactment and amendment status of related laws and joining relevant organizations



#### 02 Establishing Policies and Conducting Trainings

Establishing relevant policies, guidelines, and response measures and conducting employee trainings



#### 03 Operating Privacy Protection Programs

Operating business unit-specific and region-specific privacy protection programs

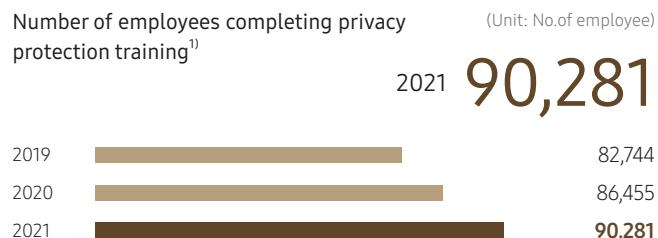


#### 04 Auditing and Making Improvements

Monitoring the implementation of relevant policies and guidelines and taking corrective measures if necessary

## Privacy Protection Training

All employees in Korea, including top management, are required to complete privacy protection training every year. Additionally, those whose work involve the handling of personal information receive more specialized, position-specific training on a yearly basis. In 2020, we began using in privacy protection trainings a video guide on precautions for each stage of work (data collection-use-discard) based on the Global Privacy Policy.



1) Employees in Korea

## Case Study

### Reinforcing privacy protection for mobile devices

One UI 4.0, our mobile user interface upgrade introduced in November 2021, boasts a range of reinforced privacy protection features.

The “Privacy” menu enables users to easily monitor and manage diverse privacy protection settings. The “Permissions usage” menu displays the permission status for device sensors such as (eg., camera sensor, location) and apps permitted to access user information such as (eg., location, contact information, photos) at a glance. From here, users can adjust the status of each permission. These features help ensure the transparency and facilitate the management of personal information use.

## Privacy Legal Management System

Privacy Legal Management System (PLMS) is designed to ensure compliance with privacy-related laws and regulations. This system is connected to product R&D and the Product Life-Cycle Management System to monitor privacy-related matters from product planning, development, operation, and discontinuation, and thereby prevent risks. It also offers news and other materials on privacy protection to keep our employees up to date at all times.

\* Name of the system may differ by region

## Samsung Privacy Site

The Samsung Privacy Site provides users with comprehensive information on how their personal information is managed. Users can access and delete data being processed in their Samsung products and services connected to their Samsung Account. Through the website, they can also revoke consent to receive marketing news, check the latest Privacy Policy updates, and more.

The screenshot shows the 'Samsung Privacy' website with the 'Request data deletion' section. It lists various Samsung services and apps with checkboxes for selecting data to delete. Services include Samsung Health, Samsung Account, Samsung Social, Bixby Voice, Galaxy Store, Samsung Pay, Samsung Members, Samsung Cloud, Find My Mobile, Galaxy Wearable, Customization Service, and Samsung Global. Each service has a brief description of the data it handles.

Samsung Privacy Site

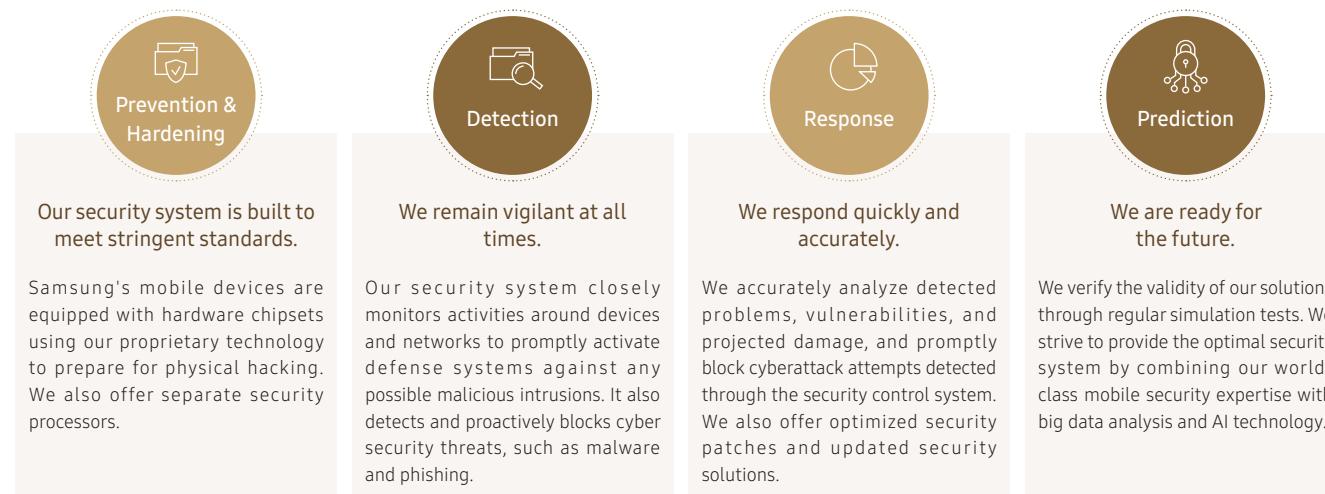
The screenshots show the 'Permission usage', 'Privacy', and 'Usage history' sections of the One UI 4.0 privacy settings. The 'Permission usage' section shows a list of permissions with their usage statistics. The 'Privacy' section shows a summary of permissions used in the last 24 hours. The 'Usage history' section shows a history of permission usage for specific apps like Camera, Contacts, and Messages.

\* We are continually updating our UI to provide the most innovative mobile experiences to as many Galaxy series users as possible. The latest UI version as of today may differ from the one described above.

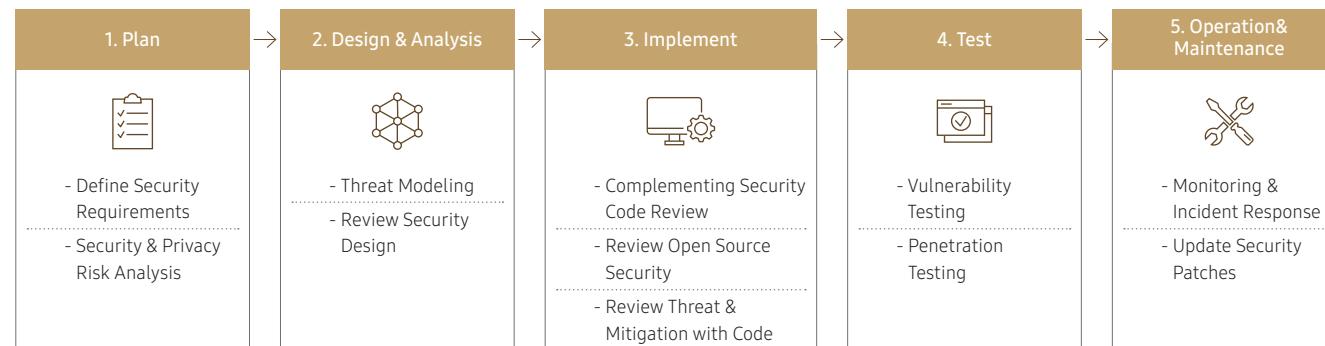
# Cyber Security

Recently, there is growing interest and concern in cyber security as cyberattacks of diverse forms and damage from information leakage are increasing. We are doing our best to promptly and flexibly respond to this change and provide advanced security solutions.

## Four Pillars of Our Cyber Security Control



## Security Building Process



## Monitoring Security Vulnerabilities

We actively communicate with external developers to develop an optimal security system. We receive reports about security vulnerabilities through diverse channels, including our security reporting website and email. When vulnerabilities are detected, we promptly verify and correct them. The Mobile eXperience and Visual Display Businesses operate the Bug Bounty Program, which offers rewards to those who report security vulnerabilities in our products and softwares.

\* Rewards are provided when the reported vulnerability meets the criteria specified in the programs.

[Samsung Security Reporting](#) [Mobile Security Reporting](#)

[TV Security Reporting](#)

## Cyber Security and Data Protection Training

We operate a range of programs and provide company-wide online Data Protection Training to raise our employees' awareness of the importance of cyber security and data protection. We also conduct security trainings for engineers and other employees in charge of privacy-related tasks in individual business unit.

## Samsung Knox

Samsung Knox is securely built to protect the chipset, OS, and app against hacking attempts and unauthorized access. Saved user data are protected in real time while the devices are booted and used.

In response to the rising demand for reinforced security, we developed and pre-installed Knox Vault in the Galaxy S21 series. It is equipped with the industry's best security chipset (embedded Secure Element or eSE), a Secure Processor that prevents hardware-level attacks, and tamper-resistant security memory, offering airtight protection for passwords and biometric information.

It provides global customers with advanced, targeted security solutions that are accredited by different governments and meet the strict requirements of corporations around the world. Beyond smartphones, tablets, and smart TVs, Samsung Knox continues to expand its integrations with smart home appliances, IoT, and 5G devices.

## Continually Updating Mobile Security

We continually update our security systems in a prompt and timely manner. In close cooperation with over 200 telecommunications operators around the world, in addition to our OS and chipset partners, we provide security patch updates for billions of Galaxy devices when any security vulnerabilities are detected. We cooperated with more than 1,000 partners to establish security standards for all Android devices, while also collaborating with diverse security research communities to ensure more secure mobile experience for all users.

In February 2022, We announced to provide up to five years of security updates for Galaxy devices. Models eligible for the updates include our flagship mobile devices and tablets released from 2021 onwards, as well as some models of the Galaxy A-series to be released in the near future. These models will also be able to receive up to four OS updates. The changes are expected to help users more safely experience the world of Galaxy.



\* Details about mobile security patch updates are posted on the Mobile Security website.

## Basic Principles of Samsung Knox



## Certifications Obtained by Samsung Knox



## Semiconductor Technology Security

Our semiconductors are installed in diverse products and widely used by consumers around the world. Our exclusive semiconductor technologies are acknowledged as Korea's National Key Technologies<sup>1)</sup> by the Korean government. We are well aware that it is critical to keep our semiconductor technologies secure for the benefit of various stakeholders and continually reinforce our security measures for such information assets.

1) Technologies acknowledged by Korea's Minister of Trade, Industry and Energy in Korea for their significance in both domestic and global markets from an economic or scientific perspective or for their potential to positively affect relevant industries

### Information Security Management System

We conduct a regular annual audit to prevent any incidents in relation to our security systems and products. In 2021, we reinforced our security system for internal document management, network vulnerabilities, and growing cyber security threats detected through the regular audit, while also ensuring the security management of our partner companies. Through our efforts to evolve our information security we have earned third-party certifications including ISO 27001 and Common Criteria.



Common Criteria Certification



ISO 27001 Certification

### Semiconductor Security Response System

Our semiconductor technologies acknowledged as Korea's National Key Technologies are protected by the Act on Prevention of Divulgance and Protection of Industrial Technology. We have implemented security management guidelines and designated executive-level managers for individual technologies. These managers are responsible for examining technical security procedures and approving measures to protect such technologies.

These measures align with the Act on Prevention of Divulgance and Protection of Industrial Technology and are subject to regular audits by the government institution in charge. We also cooperate closely with the government whenever necessary to better respond to security issues.

### Our Semiconductor Technologies Acknowledged as National Core Technology

- 01 Technology for the design, processing, devices, and 3D stacking of DRAM of 30nm or a lower class
- 02 Technology for the design, processing, devices, and 3D stacking of NAND flash of 30nm or a lower class
- 03 Technology for the 3D assembly and testing of DRAM
- 04 Technology for the 3D assembly and testing of NAND flash
- 05 Technology for the assembly and testing of advanced system semiconductor package
- 06 Technology for the processing, devices, and 3D stacking of foundries of 30nm or a lower class
- 07 Technology for the design and processing of mobile application processor SoC
- 08 Technology for the design of LTE, LTE advanced, and 5G baseband modems
- 09 Technology for the design, processing, and devices of image sensors or 1μm or less in pixel
- 10 Technology for the design of OLED display driver IC (DDI) for display panel driving

\* Above are the translations of the National Key Technologies from Korean; they are not the official terms

### Information Security for Our Corporate Customers

We have a robust security system in place for our corporate customers. We conclude a non-disclosure agreement (NDA) with each corporate customer and allow only authorized employees to access relevant information. We also employ Compliance Guide Service, an email filtering service, to filter outbound email messages to keep our confidential information.

### Organizational Units Dedicated to Information Security

To safeguard our key technologies against the rapid changes in the IT industry and internal and external security threats, we operate the Integrated Information Security Center dedicated to information protection. We also operate an effective, specialized information security system led by the Executive Vice President-level Chief Information Security Officer.

### Information Security Activities Catering to On-Site Needs

Our frontline staff members are designated as Security Agents empowered to protect the key technologies and intellectual assets of their respective organizational units and establish a flexible security system centered on the needs of the business frontier. Our Security Agents are responsible for carrying out security training, inspections, and the identification of vulnerabilities, while raising internal awareness on the importance of information security.

# AI Ethics

We seek to contribute to a better global society by designing the superior products and services based on our talent and technologies. The development and implementation of AI technology in our products and services presents our efforts to bring positive change to society. Our vision for AI is based on the themes of "User Centric", "Always There", "Always Safe", "Always Helpful", and "Always Learning". This embodies our determination to create user-centric AI-based products and services that are easily accessible, safe, helpful, and continuously evolving through learning.

## Principles of AI Ethics

### Fairness

- We will apply the values of equality and diversity in AI throughout its entire life cycle
- We will not encourage or propagate negative or unfair bias
- We will endeavor to provide easy access to all users

### Transparency

- Users will be aware that they are interacting with AI
- AI will be explainable for users to understand its decision or recommendation to the extent technologically feasible
- The process of collecting or utilizing personal data will be transparent

### Accountability

- We will apply the principles of social and ethical responsibility to AI
- AI will be adequately protected and have security measures to prevent data breach and cyberattacks
- We will work to benefit society and promote corporate citizenship through the AI

## Principles of AI Ethics

With AI expected to bring groundbreaking changes to society, we believe it is critical to take an inclusive and ethical approach to AI technology in order to make contributions to humanity. Under the aim of ensuring compliance with related laws, and fulfilling our corporate, social, and ethical responsibilities, we have set forth the Principles of AI Ethics (fairness, transparency, and accountability) that are reflected in every aspect of our business activities.

## AI Ethics Training for Employees

We distribute our Guidelines on AI Ethics and promote compliance with them throughout the entire process of designing, developing, releasing, distributing, and operating AI-based products and services. The guidelines are aimed at helping our employees follow the Principles of AI Ethics in their everyday business activities.

In 2021, we produced new model cards and data cards, which are templates designed for entering information about AI-based models, service development, and evaluation processes as well as related data. These templates help ensure transparency and integrity in all relevant activities.

To encourage our employees' awareness of the importance of AI ethics, we conducted online training in November 2021. The training session dealt with the latest global trends concerning AI ethics, related regulations, and an overview of the Guidelines on AI Ethics for developers.

## Partnerships for AI Ethics

We closely cooperate with various stakeholders to enhance the public's understanding of the social impacts of AI and ways to utilize AI technology in a responsible manner.

We joined the Partnership on AI (PAI) in 2018, an international non-profit coalition to advance positive outcomes for people and society through AI, and we have actively participated in its discussions and activities. We are sharing in society's efforts to ensure the responsible use of AI and striving to create best practices regarding AI technology. We also take part in the Public-Private Council on the Protection of Users in Intelligent Information Society in Korea and engage in active communication with users, specialists, and related corporations to set the direction for the protection of users of intelligent information service.

## AI Ethics for Bixby

### AI Ethics for Bixby



#### Sensitive Language Policy

- Laws/regulations and norms
- Consumer sentiment and emotions



#### Sensitive Language Database

- Philosophy, religion, nation, race, gender, crime, issue, emergency situation, etc.



#### Development and Implementation

- Sensitive Recognition Engine
- Real-time database updates



#### Verification

- Sensitive language search testing



#### Operation

- Sensing and response to the issues

## Feature Story

## AI Ethics Council

The AI Ethics Council is an organization that supports and trains development process/ tools for developers aligned with the Principles of AI Ethics and guidelines for ethical AI development.

Launched in April 2021, it is comprised of experts from Samsung Research and the Compliance Team. The very first project was the creation of the model cards and data cards that contain information about our AI-based models and their data. Transparent recording of AI models is the first step toward AI ethics, and we are also adopting the form in line with global trends. Previously, such records were kept by our developers in non-standardized manner. The new templates have helped our developers archive information more systematically and with a greater focus on ethical matters.

"Our company offers a wide range of products and services. An AI-based feature developed by one team can be incorporated into a product developed by another or one AI-based feature can be applied into multiple products. In order to better realize such AI-based features in accordance with the traits and conditions of individual products and services, it is essential to facilitate the transparent sharing of AI-based model information among planners and developers."

– Lyu Dug-in (Model Card and Data Card Planner) –

The model cards and data cards have been introduced to developers through our AI ethics training program. With the continued expansion of AI-based products and services, the council identified the need for developer training on AI ethics and designed the curriculum. The training program deals with the latest global trends in AI regulation, the Principles of AI Ethics, and the Guidelines on AI Ethics, in addition to the use of the model cards and data cards.



AI Ethics training material

"As AI regulations are being reinforced around the world and issues concerning AI ethics continue to emerge, we thought AI ethics training was necessary. We focused on helping trainees more effectively incorporate AI ethics into their everyday business activities."

– Kim Hyeon-wu (Training Planner) –

"With greater AI technology comes greater responsibility. I hope this online training program will provide momentum for our AI researchers to become more aware of AI ethics issues."

– Kim Su-jin (Training Planner) –

"Although us developers are aware of AI ethics and share the latest changes among ourselves, we need more systematic exposure to such matters. This training program offers us much-anticipated opportunities to prepare ourselves for handling ethical issues."

– Lee Sang-ho (Trainee) –

The council has also worked to collect and share the opinions and ideas of both the government and industry through in-depth discussions with various government agencies and organizations. However, even in the company, AI ethics is still a concern. We face more and more challenges as AI is being implemented to a wider range of products.

"It is never easy to deal with the complexity of AI ethics in product planning and development. For example, it may be considered safer to block the recognition of children's speech for certain products and services. However, it may also be viewed as an act of discrimination. AI ethics is not mathematics, and there is no single correct answer for each issue."

– Kim Tae-hyung (Software Quality Engineering Manager, SE Team) –

Vice President Lee Ju-hyeong, who heads the council, says that we have just begun our journey to understand AI and AI ethics.

"AI is demonstrating rapid growth and increasingly far-reaching impacts, but it also poses many risks. We must remain alert and strive to find ways to prevent technological development from adversely affecting individuals and society using AI ethics as our foundation."

– Lee Ju-hyeong (Vice President and Head of the AI Ethics Council) –

The council plans to step up its efforts to further nurture a corporate culture centered on AI ethics and widely promote best practices.

# Accessibility

We strive to design our products and services with a commitment to embracing diversity and respecting differences. We pursue technological innovation as we focus on ensuring equity and convenience for all customers. We strive to ensure compliance with the Accessibility Design Principles and implement guidelines for improving accessibility throughout the entire development and design process of our products.

## Accolades



- Selected as a winner in the Accessibility category of the CES Innovation Awards five times (2015-2018, 2021)
- \* Won Best of Innovation for TV accessibility features at the CES Innovation Awards (2016, 2021)
- All TV models accredited for accessible technology<sup>1)</sup> by Organización Nacional de Ciegos Españoles (ONCE) (May 2021-May 2023)
- Received "Tried and Tested Accreditation"<sup>2)</sup> from the Royal National Institute of Blind People (RNIB) for smart TV (August 2020-August 2022)
- Nominated by the Korea Communications Commission for three consecutive years as the supplier for the TV distribution project for people with visual and hearing impairment (2020-2022)



- Selected as the winner of Best of Best (BESPOKE Jet) and Best Innovation (BESPOKE Jet Bot AI and BESPOKE Qooker) by the Ergonomics Society of Korea in 2021

1) First among TV manufacturers  
2) First among TV products

## Major Accessibility Features

### TV



Auto Caption Position

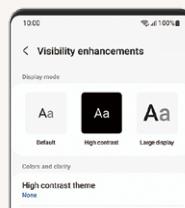
**Sign Language Guide:** An avatar explains features on the TV menu in sign language.

**Auto Caption Position:** Through video analysis, the position of subtitles is automatically readjusted to an area on the screen that does not overlap with text embedded in the video.

**Voice Guide:** Voice Guide is available in 28 languages as of May 2022, and we are working to include more languages.

**Graphic Zoom:** The screen is enlarged for users with low-vision.

### Mobile and Wearable Devices



Display Mode

**Flash Notification:** The camera light or the screen flashes when notifications are received.

**Voice Access:** Actions such as app activation, volume adjustment, and tap button control can be executed through voice command.

**Display mode:** Display mode allows users with low-vision to activate helpful accessibility features.

- Large display mode: Large display mode enlarges the screen and bolds and resizes text.
- High contrast mode: High contrast mode offers a dark theme, a high contrast text, a high contrast keyboard, and a "Remove Animations" setting.

\* The accessibility features available may vary depending on the model.

**Talkback:** Talkback is a screen reading program for users who are unable to visually recognize or understand content on the screen. It combines the strengths of Samsung Electronics' Voice Assistant and Google's Talkback.

### Home Appliances



Control Panel with Improved Visibility

**Automatic Door Opening:** The automatic door opening feature ensures easier access to home appliances for senior users and those with disabilities.

- Refrigerator: Opened when bringing a hand near the door (touch sensor) or when saying "Open the refrigerator door" out loud.
- Washer: Opened when the cycle is complete
- Dryer: Opened when switched on or when the cycle is complete.

**Braille and Tactile Points:** Braille and tactile points are applied to the major buttons to enable vision-impaired users to locate them with ease. This feature is applied to washers released from 2019 onwards, and to other home appliances from 2021 onwards.

**Talkback for Home Appliances and Services:** This feature reads home appliance and service content on SmartThings to ensure equally superior services and user experiences for users with visual impairment. It is verified and enhanced by experts with visual impairment.

**Control Panel with Improved Visibility:** The marks and indicators on the control panels of existing washers and dryers are typically printed and affixed. We adopted an LCD control panel with enlarged text to ensure visibility even in dark environments.

# Digital Wellbeing

As an increasing number of people use digital devices to access information, communicate, improve productivity, and enjoy leisure activities, the impact of digital technologies has on our everyday lives continues to grow. While these technologies have improved our lives in many ways, they have also led people to voice concerns about their growing influence. Thus, we are taking action to ensure the digital wellbeing of our users by helping them take a balanced approach to their use of digital devices.

## Four Values of Digital Wellbeing



### Digital Detox: Helping users focus in the moment

#### - Focus mode: Blocks notifications and unnecessary apps

"Focus mode" blocks notifications and apps other than ones needed at the moment. Only preset apps can be used to help users focus on the tasks at hand and improve their productivity. This mode is useful for those wishing for uninterrupted work, study, or rest.

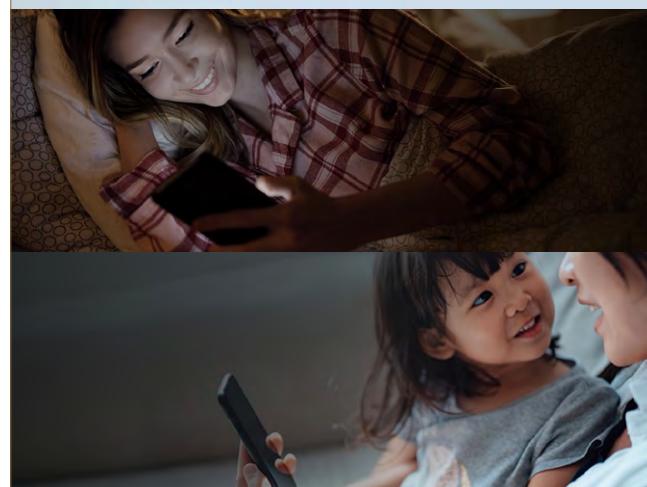


### Balance: Fostering balanced digital device habits

#### - Weekly Report: Checks app use behaviors on a weekly basis

#### - Bedtime mode: Converts the screen to grayscale and blocks all notifications to ensure uninterrupted sleep

"Weekly Report" proposes desirable digital device use habits based on app usage data accumulated over an extended period of time. "Bedtime mode" blocks all notifications and converts the screen to grayscale to ensure uninterrupted sleep and to minimize eye strain. It also encourages users to stop viewing their mobile phones when the preset hour to go to bed approaches.



### Safety: Promoting the healthy and safe use of digital devices

#### - Eye Comfort Shield: Volume Monitor: Protects vision and hearing

#### - Driving Monitor: Monitors the use of digital devices while driving

"Eye Comfort Shield" ensures minimized eye strain by reducing blue light and using warmer colors. The color temperature of the screen is adjusted automatically in optimization mode. "Volume Monitor" protects hearing by sending alerts when the volume of the device in use is raised excessively. "Driving Monitor" sends alerts about dangerous driving behaviors that users themselves may be unaware of, including the use of mobile phones while driving.

### Child Protection: Helping children learn to build a healthy digital life

#### - Samsung Kids: Ensures that children only access pre-approved content for a limited length of time

Users can activate "Samsung Kids" from the quick panel and explore a wide range of programs offered by our partners, including creativity-enhancing games and drawing. They can also limit the length of time digital devices are used and control access to individual apps through the "Child Protection" settings.

# OUR EMPLOYEES

We operate under our corporate philosophy “People First” and strive to reflect our respect for human rights, diversity, and inclusion in all of our day-to-day activities.

We take measures to eliminate the risk of potential human rights violations at our business sites and raise our employees’ awareness on the importance of human rights.

We conduct the yearly employee satisfaction survey to build a better corporate culture and help our employees achieve both personal and professional development.

We also strive to create a safety-centric workplace by assessing our safety-first initiatives, improving the working environment, and ensuring strict management of chemical substances.

Labor and Human Rights	60
Diversity and Inclusion	65
Health and Safety	69
Human Resources Development	73
Organizational Culture	74



Recognition of Our Efforts to Respect Human Rights

Ranked 1<sup>st</sup>

Among companies benchmarked by Global Child Forum<sup>1)</sup> (electronics sector)

1) An international non-profit organization established in 2009 by the Swedish royal family to share best practices and evaluation tools and encourage corporations to integrate them into their business operations

Safety and Health Certification at our production sites

100 % ISO 45001<sup>1)</sup> certified

1) International standard for occupational health and safety management systems







## Respect for and Protection of Migrant Workers' Rights

We closely monitor and manage all of our subsidiaries that employ migrant workers. In 2020, we revised our Migrant Worker Policy to better protect the rights of migrant workers and distributed internal guidelines that detail principles, case studies, and implementation steps for policy compliance to our HR employees and recruiting agency members in charge of migrant worker management. These guidelines, consisting of 14 steps<sup>1)</sup> from recruitment to employment contract termination, were created based on the widely recognized industry guidelines of the RBA, BSR, and IHRB<sup>1)</sup>.

We also ensured that COVID-19-related healthcare and financial support equivalent to that of local employees is available for migrant workers. Through this support, migrant workers who tested positive for COVID-19 are given infection control and prevention supplies regularly as well as paid leave for additional testing and quarantine. At some business sites, vaccination services are provided at individual workers' request in collaboration with respective government authorities.

<sup>1)</sup> Institute for Human Rights and Business : An international think tank on business and human rights

## Stakeholder Engagement

We remain committed to ensuring open and active communication with our stakeholders based on mutual trust. To this end, we operate a range of communication channels tailored to our employees, suppliers, customers, and investors, as well as government bodies, international organizations, and NGOs, to share our activities and collect and reflect their voices in our measures. We also actively communicate with employee representative bodies as an extension of our efforts to improve respect for human rights and working conditions.

## Stakeholder Forum

Starting from 2018, we have been staging an annual Stakeholder Forum at the Vietnam Complex to better interact with our stakeholders and seek greater synergy through cooperation. The forum has now firmly taken root as a regular event. We held our fourth Stakeholder Forum in 2021 in collaboration with the Vietnam Chamber of Commerce and Industry (VCCI) and Vietnam General Confederation of Labor (VGCL) both online and offline in consideration of the pandemic. The number of attendees increased by more than 50% compared to the previous year, with 414 representatives from government institutions, NGOs, corporations, labor organizations, and media present.

The 2021 forum, held under the theme "Cooperation to Reinforce Workers' Competence in Preparation for the Upcoming Digital Economy in Vietnam," featured research presentations by VCCI and VGCL as well as the introduction of our competence-building programs for both internal and external stakeholders including the Online Learning Platform, In-House College, and Manufacturing Technology Training for Partner Companies.

The attendees gave high evaluations for our endeavors to provide a regular platform that brings multiple NGOs together and build stronger bonds with our stakeholders. The forum also highlighted the wide range of our talent cultivation programs.

The theme for the 2022 forum will be set based on the input of our stakeholders, and the event will be designed to elevate our interaction with them to new heights.

## Communication with Global Investors

We have held a regular ESG Roadshows since 2019 to reach out to global investors and share our relevant major activities including the amendment and implementation of labor and human rights policies and human rights impact assessments.

We had a Roadshow in February 2022, and addressed inquiries about ways to respond to expanding diversity and inclusion requirements and supply chain management needs in accordance with the human-rights due diligence legislation of different countries. We will continually expand communication with our investors through new channels and actively reflect their needs in our human rights management.

## Communication with Employee Representative Bodies

**Labor Unions** We have 32 labor unions representing our business sites around the world. We negotiate employment conditions with them and conclude collective agreements accordingly pursuant to the laws of the respective countries.

**Work Councils** We operate 40 Work Councils at our business sites around the world in accordance with the respective countries' laws and individual business sites' conditions. Our employees elect their own representatives through direct and secret ballot voting.

## Grievance Resolution

A grievance is a perceived injustice evoking an individual's or a group's sense of entitlement as defined by the UNGPs. Grievances also encompass complaints, demands, and suggestions related to work environments submitted by our employees, partner companies, or external stakeholders. An overview of the grievance channels and processes is included in the annual human rights training for employees to help them more effectively and promptly respond to any incidents they may face.

## Grievance Channels and Status

We operate various grievance channels, including hotlines, online, offline, and employee representative bodies, tailored to the conditions of individual business sites.

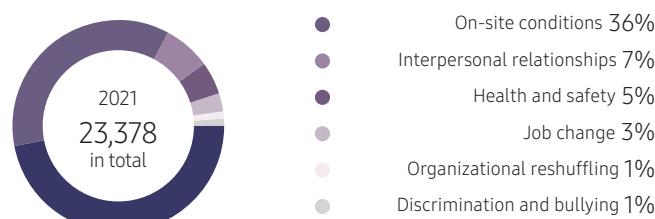
Separate channels are open for our employees with different responsibilities, from HR to labor relations, compliance, and audit, as well as our external stakeholders, including investors, customers, and partner companies, to ensure efficient grievance resolution. All of our grievance channels allow anonymous disclosure, and any retaliation against whistleblowers is explicitly prohibited by the Guidelines on the Global Code of Conduct aligned with the UNPGs. We also offer grievance-related introduction materials in different languages for migrant workers to enhance accessibility.

Filed grievances are handled promptly in accordance with the preset procedures, and follow-up actions, such as training and policy amendments, are carried out to address root causes. Based on interviews with whistleblowers and victims, we investigate if their grievances have been properly resolved in line with the eight UNGP effectiveness criteria and monitor if remedial actions have been taken. We make sure to prevent recurrence by establishing relevant preventive measures and correct business practices that may trigger potential risks.

## Grievance Report Status by Channel (Unit: %)



## Grievance Report Status by Type (Unit: %)



## CASE

## Grievance Channel Improvement at Samsung Electronics Vietnam

Samsung Electronics Vietnam joined hands with CSR Europe<sup>1)</sup> in 2020 to assess the procedures and operation of its grievance resolution channels and identified improvement areas such as its hotline infrastructure that was lacking efficiency. Based on the findings, a call center was established in 2021 to integrate the existing 34 and 14 hotlines at its two business sites and enhance accessibility for its employees. This instantly led to an increase in the number of filed grievances.

The grievance report center proved effective in helping employees conveniently file their grievances and the company readily handle them, especially in the wake of the outbreak of the pandemic. The majority of the filed grievances concerned on-site conditions (workplace infection control and quarantine requirements pertaining to the pandemic among others) and infrastructure (including dormitories, cafeterias, and commuter shuttles). All grievances were resolved in line with the internal procedures and timeline.

1) Leading European business network for corporate sustainability and responsibility

We invited labor law experts to give special lectures for our company's leadership on topics such as the changing labor-management environment and newly enacted and amended labor laws as an extension of our efforts to ensure compliance management. We also organized special lectures on ways to realize mutually beneficial labor-management relations for staff members responsible for labor-management relations affairs to achieve forward-looking relations between our employees and company.

## Communication with Labor Unions

We frequently hold meetings and communicate with employee labor unions to identify their needs, make related improvements, and thereby reinforce sound labor-management relations. We post links to different labor unions on our intranet, provide offline office spaces, and ensure access to our online bulletin and email system to support their activities.

## Latest Developments in Collective Bargaining

Through collective bargaining with the joint bargaining group formed by the labor unions, we agreed on 95 items and successfully concluded a collective agreement at our Korean business site in August 2021 without any dispute. At the collective agreement conclusion ceremony, the Joint Statement on Labor-Management Cooperation was announced to highlight our focus on building forward-looking relations.

## Protection of the Three Basic Rights of Workers in Korea

We engage in various activities to protect the three basic rights of workers<sup>1)</sup> guaranteed in the Constitution of the Republic of Korea.

1) Right to organize, right to collective bargaining, and right to collective action

## Operation of the Labor-Management Advisory Committee

We established the Labor-Management Advisory Committee under the Board of Directors in August 2020 to ensure sustainability management of the organization and build mutually beneficial labor-management relations. It is composed of four outside experts who identify and examine relevant issues through meetings with the executive management and the Compliance Committee and consult with executives in charge of personnel affairs to make mid-to-long-term recommendations.



## Women

**Fostering Female Leaders** As part of our focus on building a culture centered on diversity and inclusion, we strive to inspire excellence and help our employees reach their full potential through access to equal opportunities. We operate a range of programs and policies to ensure gender equality in recruiting new hires and to help our female employees return to work and successfully build their career after taking leave for pregnancy and childbirth.

In Korea, we were one of the earliest adopters of parental leave, fertility treatment leave, extended childcare leave, and reduced working hours for childcare. The length of each of these programs also extends beyond the legal requirements<sup>1)</sup>. In 2021, the number of our in-house daycare centers reached 15, with a total capacity of over 3,300 children. We maintained a high-quality childcare environment by regulating the ratio of daycare staff to children even more stringently than the legal requirements.

We have also mandated the installation of lounges for pregnant women and new mothers at our overseas production sites to ensure maternal and child health. Our Vietnam subsidiary operates a Mommy Room at 21 locations and has obstetrics and gynecology specialists stationed at their business sites.

We also plan to introduce a Re-boarding program in 2022, which offers training, mentoring, and remote work opportunities for employees returning to work from maternity leave to help them adjust gradually.

The DX Division has been offering leadership training and a networking program for female executives and executive candidates since 2021.

1) Legal Requirements and Our Policy in Korea

### CASE

#### Messages from the CEOs in Commemoration of International Women's Day in 2022

"We will expand mentoring and networking support for our female employees to ensure that they have access to their rightfully deserved opportunities and advance their leadership development."

- Han Jong-hee (Head of DX Division) -

"We will help our employees feel a sense of belonging and reach their full potential based on the inclusion of diversity including gender equality."

- Kyung Kye-hyun (Head of DS Division) -

## Employees with Disabilities

**Support at Work** We strive to create an environment that inspires and encourages our employees with disabilities to reach their full potential. Their preferences and competence are taken into full consideration before deciding on their position and role. Regular meetings are held to identify their challenges and needs.

In order to minimize possible inconveniences in their daily activities, we continue to improve our workplace accessibility. Since 2011, we have regularly conducted inspections on buildings and facilities at our domestic business sites to examine whether they meet the Samsung Barrier Free (SBF) standards and have introduced and expanded accessibility elevators, accessibility restrooms, low-floor buses, and other accessibility features, based on our findings.

We also value the voices of our employees with disabilities in the development of accessibility-related features. Based on their opinions and suggestions, we embedded a series of features for enhanced accessibility in our products, including the remote control with Braille buttons, Focused Zoom for enlarging the text of certain menu items (channel, volume, etc.), and Screen reader, in our TVs and other home appliances.

## Cross-Generational Communication

We operate various channels that facilitate communication between our Millennial and Gen Z employees and executive management to promote mutual understanding that better reflects the perspectives of younger generations in our business activities.

**Global Marketing Center** Through the Future Generation Lab, which is comprised of talented and passionate staff members in their 20s from around the world, we plan and launch brands and product marketing strategies that target younger generations.

**Visual Display Business** The Gen Z and Millennial Board was established to deliver the needs, perspectives, and experiences of those in their 20s and 30s directly to the head of Visual Display. Through this system, they are able to share their thoughts on our products, customer trends, and trending topics on social networking services.

**MX Business** The head of MX and executive management remain attentive to the voices of Millennial and Gen Z customers and employees, and reflect them in the actions and decisions of MX through the operation of Gen Z Lab. More than 100 Millennial and Gen Z staff members are involved in Gen Z Lab, through which they discuss the latest trends and give their suggestions on our products, services, and issues of major concern to the head of the business and executive management.

**Digital Appliances Business** Millennial and Gen Z staff members with diverse backgrounds came together and formed MZ Crew. They regularly meet to share their concerns and interests, and propose innovative ideas about our home appliances and services as well as other activities of Digital Appliances Business.

We also ensure interaction between our Millennial and Gen Z employees and executive management through regular events such as Pride in Memory in our **Memory Business** and town hall meetings in our **Foundry Business**.





# Health and Safety

## Workplace Safety

To achieve world-class safety at all our business sites, we ensure that each site is equipped with tailored health and safety management systems, and we continually identify and analyze potential hazards and risks. The head of the Global EHS Center and head of Global Manufacturing & Infra Technology serve as Chief Safety Officer (CSO) in the DX Division and DS Division, respectively, to supervise the operation of workplace safety management indicators, the implementation of safety standards assessments, the establishment of a safe work environment, and the reinforcement of safety-related practices.

## Health and Safety Management System Certification

Our business operations are centered on our stringent health and safety management system. It is mandatory for all our production sites to attain ISO 45001 which is a standard of occupational health and safety management systems. As of 2021, 100% of our production sites around the world have obtained certification.

## Creation of a Safe Workplace

**Integrated Diagnosis** We perform workplace safety reviews each year to identify risk factors for disasters and assess our compliance with relevant laws and facility management practices. In 2022, we established an integrated workplace safety diagnostic system at all of the DS Division's global business sites in partnership with outside experts.

## Incident Prevention Process

	<b>Identifying Risk Factors</b>	<ul style="list-style-type: none"> <li>Outdated equipment</li> <li>Safety regulation compliance failure</li> <li>Inadequate on-site management</li> </ul>
	<b>Establishing countermeasures</b>	<ul style="list-style-type: none"> <li>Equipment life span projection</li> <li>Safety regulation compliance measures</li> <li>On-site management system</li> </ul>
	<b>Taking remedial action</b>	<ul style="list-style-type: none"> <li>Equipment monitoring</li> <li>Safety training</li> <li>On-site investigations</li> </ul>
	<b>Monitoring</b>	<ul style="list-style-type: none"> <li>Performance management</li> <li>Process improvement</li> </ul>

## Incident Response Process

	<b>Incident Occurrence</b>	<ul style="list-style-type: none"> <li>Disseminating information about occurrence</li> <li>Identifying incident type and crisis stage</li> </ul>
	<b>Emergency Remedy</b>	<ul style="list-style-type: none"> <li>Forming crisis management committee</li> <li>Implementing emergency evacuation and emergency measures</li> </ul>
	<b>Investigation</b>	<ul style="list-style-type: none"> <li>Analyzing incident causes</li> <li>Taking action to prevent secondary incidents</li> </ul>
	<b>Restoration</b>	<ul style="list-style-type: none"> <li>Implementing restoration measures</li> <li>Implementing business continuity plan</li> </ul>
	<b>Recurrence Prevention</b>	<ul style="list-style-type: none"> <li>Establishing recurrence prevention measures</li> <li>Reviewing incident response system effectiveness</li> </ul>

**Safety Management System Upgrades** To ensure the daily safety management and work efficiency of all employees, we upgraded our safety management system in nine areas including the management of machinery with hazardous risks, lab inspections, and safety monitoring. In particular, we empowered our employees in the field by enabling those in organizational units handling machinery with hazardous risks to independently perform internal verification and user management.

**Potential Hazard Identification and Elimination** We provide full support for our employees to proactively identify and eliminate potential hazards on business sites. Best practices for the proactive elimination of serious potential hazards are rewarded and widely shared with other business sites. Our semiconductor business sites are subject to advance risk assessments prior to each and every production without exception. Based on the findings from such risk assessments, on-site safety management measures are implemented. Automated and unmanned systems have been introduced for tasks deemed particularly hazardous, such as work dealing with chemical substances or performed at heights, to prevent the risk at its source.

**Reinforced Fire and Explosion Precautions** We conducted thorough inspections and offered consulting for our business sites with greater fire and explosion risks in collaboration with expert organizations such as the Samsung Global Loss Control Center of Samsung Fire and Marine Insurance. Inspections of local ventilation performance, firefighting equipment, and high-pressure gas use were conducted at domestic business sites.

At overseas business sites, fire risks related to foam processing and high-pressure tanks as well as emergency evacuation preparedness were assessed and remedied. We also established the fire emergency monitoring system to track the firefighting status of overseas business sites in real time and take prompt actions where necessary.

## CASE

### IECEx CSF Certification

The DS Division established a safety management system to prevent explosions, which may lead to serious disasters.

We formed a dedicated organizational unit to conduct quality control and regular inspections of explosion proof facilities, while also fostering 15 explosion based on our IECEx<sup>1)</sup>CoPC<sup>2)</sup> certification. In recognition of such efforts, our Giheung and Hwaseong became our first domestic production sites to attain IECEx CSF<sup>3)</sup> certification in February 2022. This certification ensures the site meets international explosion proof and safety standards. We will continually focus on enhancing the explosion proof capacity of all relevant business sites.

- 1) International Electrotechnical commission Certification System for Explosive Atmospheres
- 2) Certificate of Personal Competency
- 3) Certified Service Facility

**Personal Protective Equipment Development and Introduction** We convene the Personal Protective Equipment Council every month to discuss protective equipment criteria and enhance the safety and convenience of such equipment. In 2021, we developed a chemical protective clothing with improved wearability, air-permeability, and performance, by upgrading the existing fabric. The flame-resistant helmets and gloves used by electricians were made more lightweight, while hearing protection equipment was improved to more effectively block hazardous noise and facilitate on-site communication.







# Human Resources Development

We provide comprehensive support for our employees to develop their skills and reach their full potential based on our corporate value of "People First."

## Competence-Building Programs

We operate programs designed to foster creativity, a healthy dissatisfaction with the status quo, leadership, and expertise in our employees. We perform systematic leadership assessments each year and provide leadership training. We also help our employees plan for the future in preparation of retirement and longer life expectancies.

## Career Development Training

All of our employees are given opportunities to design their career development path under the guidance of the heads of their respective organizational units and select corresponding career development programs. For software developers, for example, we provide training on AI/Data, algorithms, software architecture, and code review as well as lectures and training from outside experts and partners.

Sales & marketing employees undergo trainings on developing a customer-centric mindset and business acumen, digital literacy, and collaboration in addition to Samsung sales and marketing fundamentals. Samsung Marketing Academy, our global sales and marketing training channel, also offers curated learning programs encompassing a diverse range of topics (B2C sales, online sales, product marketing, Integrated marketing communication, etc.) for those who wish to develop their sales and marketing career.

## External Fostering & In-house School

We provide opportunities for our employees to participate in outside programs—including MBA programs, master's courses in personnel and finance, and academic training programs in Korea and abroad—based on their career level and needs.

The Samsung Institute of Technology (SSIT), originally launched in 1989 as an in-house semiconductor technology college to build the competence of on-site workers, was accredited as a regular university in 2001 and offers four-year bachelor's courses in equipment, infrastructure, and display. We also established the Semiconductor Display Engineering Department and DMC Engineering Department at Sungkyunkwan University as our in-house graduate school courses to nurture next-generation tech leaders. As of February 2022, 1,045 bachelor degree holders, 769 master's degree holders, and 89 doctoral degree holders have graduated from SSIT and our in-house graduate school<sup>1)</sup>.

1) Some of the figures in the 2021 Sustainability Report require correction.

As of February 2021, the number of those who have attained undergraduate, master's, and doctoral degrees at SSIT and our in-house graduate school stands at 1,020 (not 1,002), 728 (not 1,150), and 84 (not 177).

## Talent Cultivation System

		Internal Fostering	External Fostering
Operating Objective	Core Program	Leadership Program	Expertise Program
	Instilling Samsung's vision, value, and culture in employees	Foster core global leaders	Develop top experts by job category
Curriculum	Onboarding education for new hires, and annual presentation of strategic direction to all employees	Leadership based on Samsung's leadership model	Job-specific <sup>1)</sup> training provided by specialized organizational units <sup>2)</sup>

WORKPLACE LEARNING Mentoring, Coaching, and On-the-job training

L&D OPEN INNOVATION

KNOWLEDGE NETWORK (Web 3.0, SNS, and mobile-based) Samsung U Learning Portal, S/W Expert Academy, Knowledge Contents

1) R&D, marketing, sales, service, logistics, procurement, manufacturing, and management administration

2) Samsung Advanced Technology Training Institute (R&D), Samsung Marketing Academy (sales and marketing), Global CS Center (quality and service), Partners Collaboration Center (procurement), Corporate Design Center (design), and Global Technology Research (manufacturing and production engineering)

# Organizational Culture

We strive to build a sound and forward-looking organizational culture grounded in the three values of “Work Smart”, “Think Hard”, and “Build Trust”.

Our organizational culture is aimed at encouraging our employees to grow and share innovative ideas, and we reflect them extensively in our products, systems, and processes to generate the desired results.

## 01. Idea Generation

Brainstorming innovative ideas

## 02. Communication

Sharing and promoting them through active communication

## 03. Execution

Reflecting them in our products, systems, and processes

## 04. Output

Generating the desired results

To this end, we focus on creating a horizontal workplace that facilitates communication. In consideration of the ongoing pandemic, we have implemented a range of programs to ensure greater work efficiency, work-life balance, and employee satisfaction.

## Horizontal Structure

In 2017, we streamlined the previous seven career levels into four and replaced honorific titles with the honorific suffixes “nim” and “pro” (short for “professional”) in pursuit of a more flexible and inclusive organizational culture in Korea. In 2022, we made it a rule to use the honorific form of language at work at all times regardless of position, title, length of service, and age and have campaigned extensively to help implement this policy. Beginning in February 2022, we also removed positions and employee identification numbers in our internal system. This is aimed at promoting unrestricted communication among our employees that is free from a seniority-based hierarchy.

## Internal Communication

To build mutual trust between our executive management and employees, we seek and maintain diverse communication channels suited to the needs of employees of all ranks. Our town hall meetings, held regularly under the leadership of division and business heads, have received positive responses from employees. The meetings have become an effective channel to share the executive management's goals, principles, and major business issues, as well as provide prompt answers to employees' questions.

The team heads and group heads reinforce their bonds with employees through the monthly meeting and events aimed at energizing the organization. They strive to listen to their staff members' voices through one-on-one interviews and frequent conferences, and provide prompt solutions on site to help build mutual trust.

We have been operating an in-house communication platform since 2009 to create a transparent and active communication culture of our employees. In December 2020, we newly opened our bulletin ‘Samsung Electronics NOW’ with a shake-up. On our bulletin, which guarantees anonymity, an average of 300-400 messages are posted every day, testifying to its significance for internal communication.

## Programs to Ensure a Healthier Work-Life Balance

We continually evolve our work system by adopting flexible and efficient programs tailored to individual jobs. We allow our employees to customize their working hours and annual leave and have more control over their schedule to truly achieve a “Work Smart” environment.

Beginning in 2016 in Korea, we designated our monthly payday as Family Day to encourage all employees to leave work by five and spend more time with family. Some organizational units further expanded this program and allow their staff members to leave work early once a week or every other week.

To build a healthier work-life balance, we also offer remote working options. In the wake of the outbreak of the pandemic, the percentage of those working remotely has continued to increase. As of March 2022, 39% of sales and research institute employees overseas are working from home.

We have also operated the family care leave<sup>1)</sup> program since 2020 to assist our employees facing the loss of childcare options due to the pandemic. In 2021, a total of 4,322 employees benefited from this program.

1) Leave allowed for up to ten days a year (Korea) for those who need to care for family members (grandparents, parents, spouses, spouses' parents, children, and grandchildren) related to disease, injury, old age, etc.

## CASE

### DX Division

The DX Division provides a platform for interaction between the executive management and staff members through the regularly held DX Connect x CEO event. It also holds a smaller scale tea meeting, called CEO One Table, and publishes the DX Connect bulletin.

### DS Division

The DS Division organizes WeTalk, a real-time broadcast program led by the division head and executive management, and TeaTalk, a small-scale meeting of the division head and staff members, on a weekly basis. It also shares the latest developments from executive management through the release of the CEO's message.



To revitalize the overall organization during the pandemic, we held online town hall meetings, photo contests, and other contact-free events. We also organized health programs, such as the at-home training challenge and power walking competition, to improve the work-life balance of our employees as well as their workplace satisfaction.

## Welfare Benefits

We strive to ensure a better quality of life, enhance employee satisfaction, raise morale, and maximize employee engagement by operating a range of welfare programs. We help our employees remain prepared for their post-retirement life through personal pension support, while also providing educational and healthcare expenses for their family members. We also offer medical checkups and group insurance services to promote employee health and safety, as well as an array of elective welfare benefit programs that can be selected based on individual needs.

### Welfare Benefits (Korea)



#### Healthcare

Medical expenses for employees and their spouses and children / Medical checkups / Medical expenses for disabilities and critical illnesses / Operation of in-house clinics



#### Support for Congratulations and Condolences

Paid leave and financial support for related events Provision of funeral supplies and support services



#### Support for Education

Support for preschool expenses / Support for educational expenses for elementary, middle, and high school and college / Leave for training and self-development



#### Entertainment and Recharging

Company resorts / Waterparks / Fitness centers

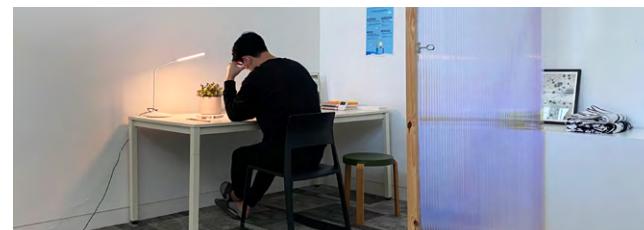


#### Others

Support for purchasing our company's products / Compensation for damage due to fire and other disasters / Elective welfare benefit programs / Leave for long-serving employees

## Work Efficiency Improvement

We strive to create a work environment that ensures greater employee engagement and generates the desired results. We revamped our offices to provide space for cooperation and engagement. We also offer single-person meeting rooms to meet the growing demand for video conferences due to the pandemic.



Immersive Space

## Samsung Culture Index Survey

We conduct the global Samsung Culture Index (SCI) survey each year to identify our strengths and points of improvement, and gauge employee satisfaction with our work environment. The survey is centered on the three key values of our corporate culture: "Work Smart", "Think Hard", and "Build Trust". In 2021, over 240,000 employees at 126 business sites around the globe participated in the survey. The comprehensive satisfaction level has continued to rise since the introduction of the survey in 2012. The SCI score for overseas employees in 2021 was 90 points, marking a one-point increase from 2019<sup>1)</sup>.

We offer organizational culture consulting for units with lower SCI scores to help identify points of improvement and discover solutions. We engage professional consultants if deemed necessary and develop and implement improvement plans in cooperation with all members of the respective unit. We also identify additional weak points through post-consulting surveys to continually reinvent the way we work.

1) The year 2020 was omitted due to the inability of some of our production sites to conduct the SCI survey that year.

## Mental Health Promotion Programs for Employees

We operate an in-house Life Coaching Center at 15 locations, and a Mental Health Clinic at 11 locations in Korea. We also promote mental health at 21 overseas subsidiaries with 20 Life Coaching Center locations and 11 overseas research institutes with Mental Health Clinic locations<sup>1)</sup>.

The Life Coaching Center is equipped with certified counseling professionals. It offers programs to reduce and control daily stress, such as tension relief, meditation, color therapy, and pain relief.

Psychiatrists are stationed at the Mental Health Clinic to provide one-on-one counseling, medication, and mental health treatment, for a diverse range of issues including workplace relationships, grievances, stress release, and family affairs. Confidentiality is guaranteed for all information obtained through counseling and physician examinations pursuant to the code of ethics for counselors and the Medical Service Act.

After the outbreak of the pandemic, we have ensured unrestricted access to psychological counseling by operating online programs and channels (video, telephone, and messenger counseling) on a permanent basis in Korea. Our production site and research institute in India operates hotlines to effectively resolve any grievances and difficulties of their staff members.

1) Those subsidiaries and research institutes without an in-house Life Coaching Center utilize an external employee assistance program.



Life Coaching Center (Korea)













































# APPENDIX

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# Independent Assurance Report

## To the management of Samsung Electronics Co., Ltd.

We have undertaken an engagement requested by Samsung Electronics (the "Company") to review the information established in Samsung Electronics Sustainability Report 2022 (the "Report Report"). It is the responsibility of the management to prepare the Report, and it is our responsibility to perform a limited assurance engagement and issue a statement based on the information collected.

## Responsibilities of the Company and Ernst & Young Han Young

The Company is responsible for collecting and presenting the data within the Report. This responsibility involves structuring, implementing, and maintaining the relevant corporate system so that there is no critical misstatement due to fraud or error. Our responsibility, in line with the contract, is to perform a 'limited level' of assurance regarding the selected quantitative and qualitative performance stated in the Report. We shall hold no responsibility whatsoever to any other purpose, individual or organization in respect to the result of the limited assurance performed. The decision made by the third party based on the Report is the sole responsibility of the third party.

## Scope and context

The limited assurance was performed based on the following information.

GRI index: p101~p103

Facts&Figures: p90~p97

## Description of procedures performed We conducted

the assurance engagement in accordance with ISAE3000<sup>1)</sup> developed by IAASB.

The following procedures were performed to reach our conclusion on the Report:

- Identified the Company's processes for stakeholder engagement
- Identified the Company's processes for determining material issues of key stakeholders
- Examined media coverage of the Company's environmental, social and governance ("ESG") issues during the reporting period
- Analyzed recently reported ESG issues of the Company's global competitors
- Conducted interviews with respective personnel regarding the Company's ESG activities and reporting Process during the reporting period
- Inspected data regarding the Company's ESG performance, supporting evidence for assertions, and intranet source data
- Identified the Company's process for collecting and consolidating ESG performance data
- Reviewed whether the financial performance data has been appropriately extracted from the Company's audited financial statements.

<sup>1)</sup> International Standard on Assurance Engagements: Assurance Engagements Other than Audits or Reviews of Historical Financial Information issued by International Federation of Accountants

## Level of assurance

We conducted our limited assurance engagement in accordance with ISAE 3000. Procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than in a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

## Conclusion on limited assurance

Based on the procedures we have performed and the evidence we have obtained, nothing has come to our attention that causes us to believe that the Report is not prepared, in all material respects, in accordance with the standard adopted by the Company.

## Independence

We comply with the Code of Ethics issued by the International Federation of Accountants.

## Our engagement team

This engagement was performed by an assurance team of extensive experience and expertise in the ESG sector.



17 June, 2022

Ernst & Young Han Young

# Verification Statement on 2021 Samsung Electronics Co.,Ltd., Greenhouse Gas Emission



## Introduction

Korean Foundation for Quality (hereinafter 'KFQ') has been engaged by Samsung Electronics Co.,Ltd (hereinafter the 'Company') to independently verify its 2021 Greenhouse Gas Emission Report of domestic corporations and 24 overseas subsidiaries. It is the responsible of the Company to compile the Greenhouse Gas Emission Report according to the 'Guidelines for GHG emission reporting and certification of GHG emission trading scheme (Notification No. 2021-278 of Ministry of Trade, Industry and Energy)', GHG Protocol Scope 2 Guidance' and 'ISO 14064-1:2006' and KFQ has responsibility to conduct verification based on 'ISO 14064-3:2006' to provide verification opinion on compliance of the Report against verification criteria.

## Verification Scope

In this verification, domestic corporations and 24 overseas subsidiaries under operational control of Samsung Electronics Co.,Ltd, and reported emission is including Scope 1 and Scope 2 emission.

## Verification Procedure

The Verification has been planned and conducted by the "Greenhouse Gas and Energy Target Management Scheme", and to reach reasonable level of assurance.

## Limitations of verification

Accuracy and completeness of emission data reported in the 'GHG Inventory' are subject to inherent limitations due to their nature and the methodology used in determining, calculating and estimating such data.

## Conclusion/Opinion

Through the verification process according to the 'ISO 14064-3:2006' KFQ could obtain reasonable basis to express following conclusion on the Greenhouse Gas Emission Report

1) 2021 Samsung Electronics Co.,Ltd., Greenhouse Gas Emission Report was prepared against 'Samsung Electronics Co.,Ltd., Greenhouse Gas Inventory Guideline' developed based on the 'Guidelines for GHG emission reporting and certification of GHG emission trading scheme', GHG Protocol Scope 2 Guidance' and 'ISO 14064-1:2006'

2) As a result of materiality assessment on 2021 domestic Greenhouse Gas Emission, material discrepancy is less than the criteria of 2.0% for the organization which emits more than 5,000,000 tCO<sub>2</sub>-eq/year in accordance with the requirements of the 'Guidelines of verification for Greenhouse gas emission trading scheme'.

3) For the 24 overseas subsidiaries, document review was conducted for entire 24 subsidiaries as well as Company self-assessment. The result of material discrepancy is less than 2.0%.

- 4) As reported Greenhouse Gas Emission purchased electricity, process emission by fluorinated gas use and LNG consumption take more than 99% of total emission. Activity data of these emission sources were checked through the objective evidence provided by supplier therefore KFQ could confirm that these activity data is valid itself.
- 5) The efficiency of process emission reduction technology that affects the calculation of greenhouse gas emissions has to reflect the values guaranteed by the government and third parties. However, the efficiency was calculated based on the Company's own methodology, and errors are not included in the verification opinion. For the overseas subsidiaries, each national net calorific value and electricity emission factor were preferentially used but net calorific value and electricity emission factor were adopted from IPCC Guidelines or Korean Energy Law Enforcement Regulation in any change of these parameters or factors. Also, in case of buying credits(ex. RECs) in the market, the offset credit is applied to evaluate the emission and record separately in market base section.
- 6) Except unconsidered emission source in the 'Samsung Electronics Co.,Ltd, Greenhouse Gas Inventory Guideline', material error, omission or insignificant issues was not found in 2021 Samsung Electronics Co.,Ltd., Greenhouse Gas Emission Report.

2021 Greenhouse Gas Emissions of Samsung Electronics CO.,Ltd., (Unit: kiloton CO<sub>2</sub> eq)

Division	Total		Domestic		Overseas	
	Location based	Market based	Location based	Market based	Location based	Market based
Direct Emission(Scope 1)	7,604	7,604	5,695	5,695	1,909	1,909
Indirect Emission(Scope 2)	12,566	9,796	8,801	8,576	3,765	1,220
Sub total	20,170	17,400	14,496	14,271	5,674	3,129

May 10<sup>th</sup>, 2022

CEO Ji-Young Song  
Korean Foundation for Quality (KFQ)

## GRI Index

GRI Standards		Status	Page	Comments
<b>GRI102 General Disclosures</b>				
Organizational Profile	102-1	Name of the organization	●	3
	102-2	Activities, brands, products, and services	●	3
	102-3	Location of headquarters	●	4
	102-4	Location of operations	●	4
	102-5	Ownership and legal form	●	X
	102-6	Markets served	●	4
	102-7	Scale of the organization	●	3-4
	102-8	Information on employees and other workers	●	91-92
	102-9	Supply chain	●	4, 77-83
	102-10	Significant changes to the organization and its supply chain	●	X
	102-11	Precautionary Principle or approach	●	7-9
	102-12	External initiatives	●	19-20, 60, 83
Strategy	102-13	Membership of associations	●	19
	102-14	Statement from senior decision-maker	●	2
	102-15	Key impacts, risks, and opportunities	●	26, 85
Ethics and Integrity	102-16	Values, principles, standards, and norms of behavior	●	X
	102-17	Mechanisms for advice and concerns about ethics	●	7-9
Governance	102-18	Governance structure	●	5-6
	102-19	Delegating authority	●	18
	102-20	Executive-level responsibility for economic, environmental, and social topics	●	18
	102-21	Consulting stakeholders on economic, environmental, and social topics	●	19
	102-22	Composition of the highest governance body and its committees	●	5-6
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	102-24	Nominating and selecting the highest governance body	●	5-6
	102-25	Conflicts of interest	●	5-6
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	102-30	Effectiveness of risk management processes	●	5-6, 18
	102-31	Review of economic, environmental, and social topics	●	18
	102-32	Highest governance body's role in sustainability reporting	●	18, 85
	102-33	Communicating critical concerns	●	5-6, 18
	102-34	Nature and total number of critical concerns	●	5-6, 85

GRI Standards		Status	Page	Comments
<b>GRI102 General Disclosures</b>				
Stakeholder engagement	102-35	Remuneration policies	●	X
	102-36	Process for determining remuneration	●	X
	102-37	Stakeholders' involvement in remuneration	○	X
	102-38	Annual total compensation ratio	○	X
	102-39	Percentage increase in annual total compensation ratio	○	X
Reporting Practice	102-40	List of stakeholder groups	●	19
	102-41	Collective bargaining agreements	●	63-64
	102-42	Identifying and selecting stakeholders	●	18-19
	102-43	Approach to stakeholder engagement	●	19
	102-44	Key topics and concerns raised	●	19
	102-45	Entities included in the consolidated financial statements	●	X
	102-46	Defining report content and topic Boundaries	●	85
	102-47	List of material topics	●	85
	102-48	Restatements of information	●	X
	102-49	Changes in reporting	●	85
	102-50	Reporting period	●	109
	102-51	Date of most recent report	●	109
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	102-54	Claims of reporting in accordance with the GRI Standards	●	109
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<b>Management Approach</b>				
	103-1	Explanation of the material topic and its Boundary	●	85
	103-2	The management approach and its components	○	X
	103-3	Evaluation of the management approach	○	X
<b>GRI 200 Economic Standard Series</b>				
Economic Performance	201	Management Approach	●	3
	201-1	Direct economic value generated and distributed	●	90
	201-2	Financial implications and other risks and opportunities due to climate change	●	26
	201-3	Defined benefit plan obligations and other retirement plans	●	X
	201-4	Financial assistance received from government	○	X
Market Presence	202	Management Approach	○	X
	202-1	Ratios of standard entry level wage by gender compared to local minimum wage	○	X
	202-2	Proportion of senior management hired from the local community	○	X

## GRI Index

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	203-2	Significant indirect economic impacts	●	42-48		
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	204-1	Proportion of spending on local suppliers	○	X		
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	205-1	Operations assessed for risks related to corruption	●	7-9		
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	205-3	Confirmed incidents of corruption and actions taken	○	X		
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	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	●	X	Refer to the business report	
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	207-1	Approach to tax	●	X	Refer to the company website	
	207-2	Tax governance, control, and risk management	●	X	Refer to the company website	
	207-3	Stakeholder engagement and management of concerns related to tax	●	X	Refer to the company website	
	207-4	Country-by-country reporting	●	90		
GRI 300 Environmental Standards Series						
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	301-2	Recycled input materials used	●	32, 94		
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GRI Standards		Status			Comments	
		304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	●	X	Refer to the company website
	304-2	Significant impacts of activities, products, and services on biodiversity	●	39		
	304-3	Habitats protected or restored	●	39		
	304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	●	X	Refer to the company website	
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Customer Health and Safety	416-1	Assessment of the health and safety impacts of product and service categories	○	X			
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Marketing and Labeling	417-1	Requirements for product and service information and labeling	●	X	Refer to the company website		
	417-2	Incidents of non-compliance concerning product and service information and labeling	○	X			
	417-3	Incidents of non-compliance concerning marketing communications	●	X	Refer to the business report		
Customer	418	Management Approach	●	50-51			
	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	○	X			
Socioeconomic Compliance	419	Management Approach	●	7-9			
	419-1	Non-compliance with laws and regulations in the social and economic area	●	X	Refer to the business report		

# TCFD Index

We disclose the following information based on the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) to share our track record of climate action with our stakeholders.

TCFD Recommendation	Related Contents	Page/ Reference
Governance	a) Describe the board's oversight of climate-related risks and opportunities.	P.23 CDP : CC1.1a, CC1.1b
	b) Describe management's role in assessing and managing climate-related risks and opportunities.	P.23 CDP : CC1.2a
Strategy	a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	P.23, P.25 CDP : CC2.2c, CC2.3a, CC2.4a, CC3.1c
	<p>Risks and opportunities incurred by climate change affect not only products and services but also manufacturing processes, supply chains, R&amp;D, and other business activities. We regularly monitor the risks facing our business sites around the world in accordance with procedures and manuals established for different areas of environment and safety, climate change and energy, and compliance.</p> <p>To identify the financial impacts of these risks, we categorize them into conversion risks and physical risks and analyze opportunity factors as well. In the short term, we view emissions permit price increases, extreme weather events, and the requirement to introduce high-efficiency technologies as potential risks and emissions permit purchasing and reduced energy costs as opportunities. We project changing consumption patterns and expanded renewable energy use as medium-term opportunities and the physical impacts of climate change (warming temperatures, etc.) as long-term risks. We establish response measures for long-term risks based on the country-specific emissions mitigation plans pursuant to the Paris Agreement, emissions scenarios of the Intergovernmental Panel on Climate Change (IPCC), and Energy Technology Perspectives of the International Energy Agency (IEA).</p> <p>For more details, refer to the section entitled "Risks and Opportunity Analysis" on page 26 herein.</p>	
	b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	P.26 CDP : CC2.5, CC2.6
Risk	c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	P.26-31 CDP : CC3.1c, CC3.1d
	<p>Climate change-related risks are anticipated to have far-reaching effects through a set of highly complex channels. We strive to identify the socioeconomic impacts of climate change on our business through various scenarios, which are classified into aggressive action scenarios that require our global stakeholders to reach more ambitious targets and passive action scenarios that focus on maintaining the status quo.</p> <p>In accordance with the aggressive action scenarios, products with low energy efficiency ratings are projected to decrease in sales in the long term, while eco-conscious, high-efficiency products are expected to record continued sales growth. To remain prepared for such scenarios, we plan to make continued investments to develop ultra-low-power semiconductors and improve the energy efficiency of the representative models of the six main product categories. We will also take active measures to ensure GHG emissions mitigation and full conversion to renewable energy, while also promoting the energy efficiency enhancement of all of our products.</p>	









## About this report

This is our 15<sup>th</sup> Sustainability Report, published in 2022 under the aim of transparently sharing our ESG performance and activities with our stakeholders.

### Reporting Standard

This report aligns with the Global Reporting Initiative (GRI) Standards: Core Option, which are global standards for sustainability reporting. This report also reflects the indicators of the Sustainable Development Goals (SDGs), Task Force on Climate-Related Financial Disclosures (TCFD), and Sustainability Accounting Standards Board (SASB).

### Covered Activities

This report covers the ESG activities of all of our business sites in Korea and abroad as well as all of our partner companies in our supply chain. Our financial performance is described based on K-IFRS, and our performance in relation to workplace environments is based on data collected from our 32 domestic and overseas production sites.

### Covered Period

This report illustrates our ESG performance and activities during the period of January 1–December 31, 2021. Information through May 2022 has also been used in some areas. Data for the last three years is provided to measure yearly changes in quantitative performance.

### Reporting Cycle

Once a year (previous period's report published in June 2021)

### Third-Party Verification

EY Hanyoung Accounting Corp., an independent verification body, conducted a third-party verification to ensure confidence in the report-making process and information posted. The verification criteria are ISAE3000.

### Related Information

- Samsung Electronics website  
<http://www.samsung.com/sec>
- Sustainability  
<http://www.samsung.com/sec/aboutsamsung/sustainability>
- IR  
<http://www.samsung.com/sec/ir>
- Samsung Newsroom  
<http://news.samsung.com/kr>  
<http://news.samsung.com/global>

### Organizational Unit in Charge

- Samsung Electronics Corporate Sustainability Center
- Address: 129 Samseong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do (16677)
- Email: [csr.partner@samsung.com](mailto:csr.partner@samsung.com)

### References

- Annual Business Report
- Corporate Governance Report
- Responsible Minerals Report
- CDP Report
- Global Code of Conduct
- Guidelines on the Global Code of Conduct

**SAMSUNG**