



Sustaining an  
incredible future

# 2022 | ASUS TCFD REPORT

# ASUS TCFD REPORT 2022

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# Message from the Chairman

In recent years, external environmental factors have significantly impacted the global economy, causing numerous challenges to both the internal and external operations of enterprises around the world. ASUS has adapted in response to these challenges by examining internal operations and confronting industry adversity, viewing this process as an opportunity for the company to truly embrace reality and achieve evolution. In response to the diversification of global risk trends, ASUS has established the Business Continuity Management (BCM) Committee to promote risk management in a structured and comprehensive manner, which includes creating a risk decision-making process, identifying possible future risks, and enacting good prevention mechanisms to respond to potential risks in advance, thus laying a foundation for corporate resilience. The BCM Committee also focuses on sustainability with a task force that covers climate and carbon-related management risks, and regular reports on management indicators and implementation progress.

ASUS adheres to a strategy of using digitized data and scientific management practices along with pursuing a three-staged implementation approach of enhancing energy efficiency, expanding the use of renewable energy, and reducing carbon emissions by investing in innovative technologies to achieve our vision of net-zero emissions. In 2022, ASUS prioritized the introduction of renewable energy certificates in overseas operations, and achieved RE15 in global operations. Furthermore, ASUS consistently promoted carbon-reduction projects for our supply chain, including low-carbon manufacturing processes, energy efficiency improvements, and the use of renewable energy, which enabled us to achieve a 24% improvement in carbon reduction compared to the baseline year of 2020.

Meanwhile, ASUS upholds our approach of focusing on fundamentals and results, and we devote ourselves to the research and development of low-carbon products. Starting from the product design stage, ASUS has made every effort to reduce carbon emissions by introducing low-carbon manufacturing processes, improving energy efficiency, and selecting eco-friendly materials to implement high-standard carbon reduction plans. ASUS has also achieved carbon neutrality with high-quality, nature-based carbon credits for our products, which is a brand-new milestone in the company's sustainability journey. In 2022, ASUS completed the product carbon footprint verification for the first commercial laptop and, in 2023, we launched commercial and consumer laptops that achieved carbon neutral verification. Additionally, the launch of the ASUS Carbon Partner Service this year is expected to further expand our influence on net-zero sustainability through a one-stop, flexible and highly credible carbon neutral service.

ASUS has been awarded numerous international awards for our sustainable management practices and has continued to adapt and evolve in the spirit of our "In Search of Incredible" brand promise. ASUS also was named by Fortune magazine as one of the World's Most Admired Companies for the eighth time, standing out in areas such as innovation, social responsibility, and product service quality. Furthermore, ASUS was named one of the Clean 200 companies by Corporate Knights in 2023 and was recognized as one of the Asia-Pacific Climate Leaders for two consecutive years. As a leading technology brand, ASUS has pledged to meet the SBTi Criteria for Near-term Targets in 2022. In 2023, ASUS will continue towards the vision of net-zero emissions by 2050 and pursue the SBTi Net Zero Commitment even more aggressively by following the 1.5° C reduction path and leading subsidiaries and the entire value chain towards net-zero emissions.

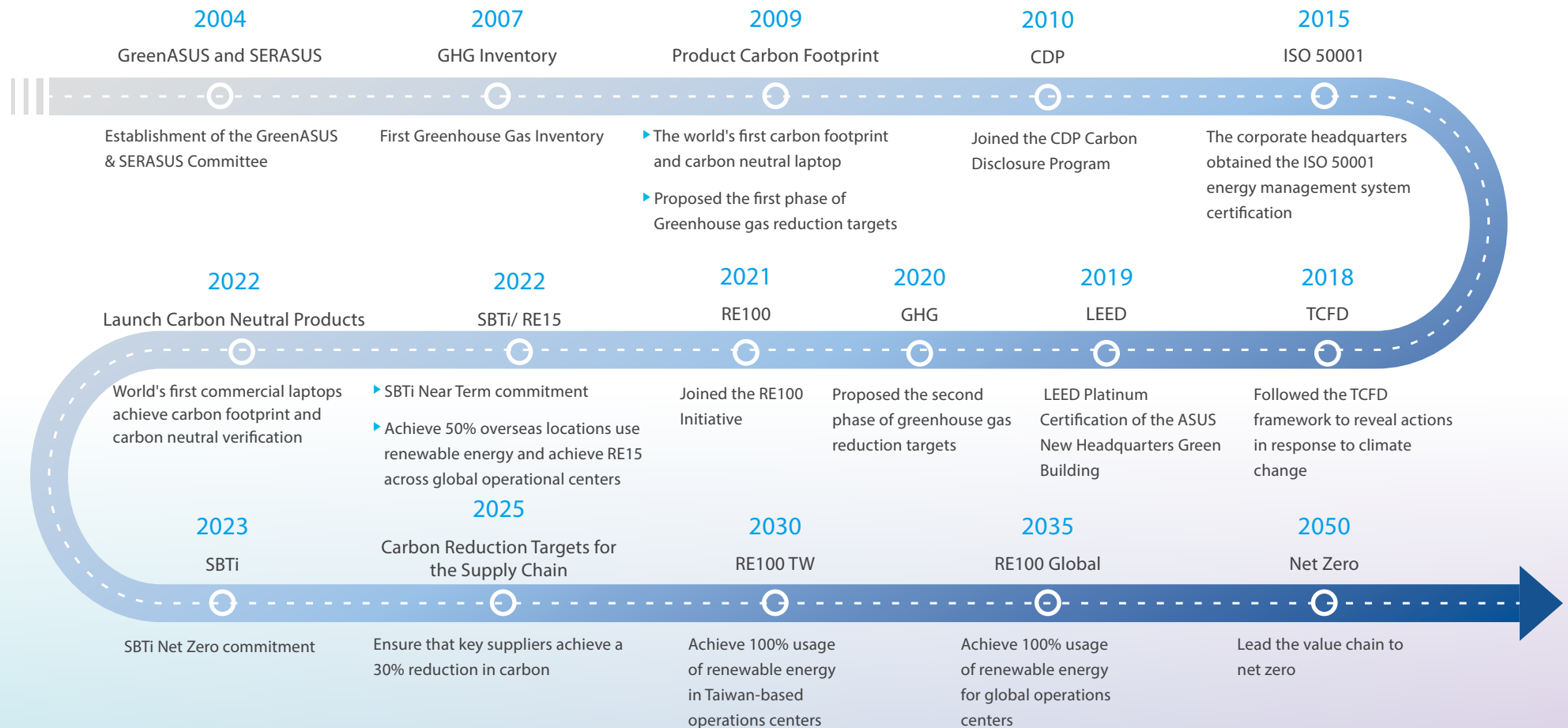
Jonney Shih ASUS Chairman



# Milestones for Climate Action

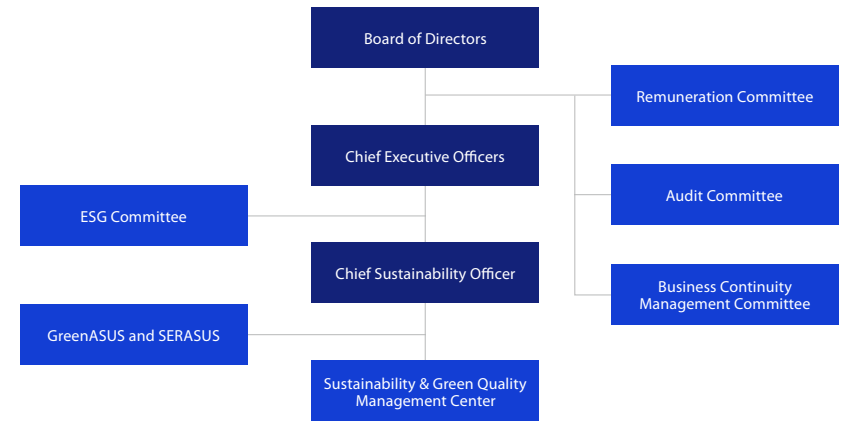
According to the McKinsey's 2020 report, 83% of corporate executives and investors deemed that environmental, social and governance programs would create higher value for shareholders.

In 2000, ASUS established a dedicated sustainability unit, which regards sustainability as a part of operational decisions. By examining the management structure of governance, environment and society, ASUS adopts sustainability strategies to promote innovation and and strives to a better corporation. To achieve the vision of “to become the world’s most admired innovative leading technology enterprise”, ASUS follows the business philosophy of “strive to be among the world-class green high-tech leaders and to provide valuable contributions to humanity”. Additionally, ASUS believes that it has to transform traditional moral and emotional demands into objective strategic indicators and adopts the sustainable strategy of "using digitized data and scientific management practices to support sustainable value creation through core competencies" to incorporate environmental and social factors in every decision-making process and build sustainable competitive advantages, thus achieving sustainability.



## Board of Directors

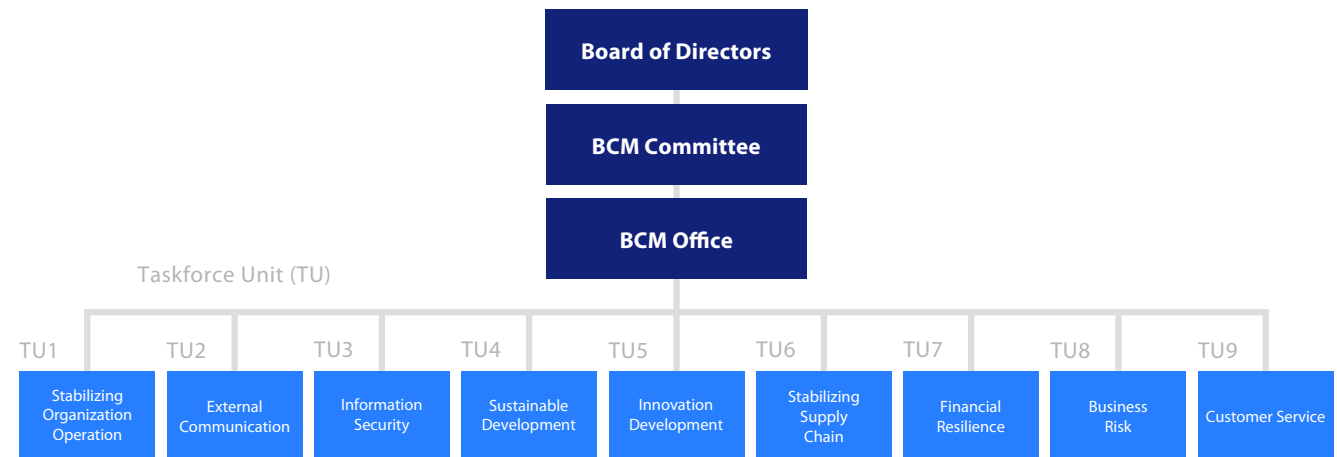
The sustainable governance of ASUS is overseen directly by the Board of Directors, with the Chairman designating the CEO as the highest-ranking executive responsible for sustainability management. ASUS' sustainability policy and climate change response strategies have to be approved by the Chairman. Every year, reports are provided to the Board of Directors on a regular basis to promote climate action issues and target management. Since 2022, the reporting frequency has increased to quarterly basis.



## Business Continuity Management(BCM)

Business Continuity Management Committee (BCM) is designed to identify and manage the various risks that we may encounter and could lead to business interruption. BCM consists of the Board of Directors, the BCM Committee, the BCM Office, and various Taskforce Units to ensure the establishment of protective mechanisms during daily operations.

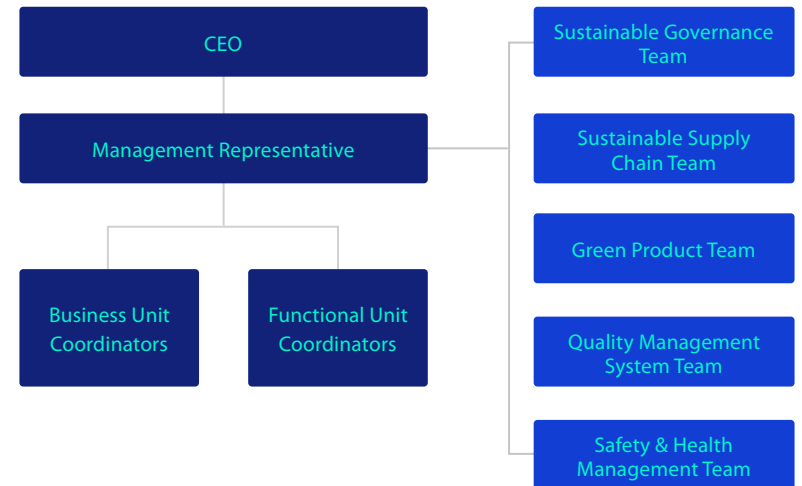
Sustainable Development is included as Taskforce Units(TU) in the BCM committee. The Sustainable Development TU is responsible for assessing climate related risks which are focused on evaluating the impact of carbon management on operations and green products. Each task unit reports quarterly to the CEO and COO and annually to the BCM Committee on the progress of risk management execution, and at least once a year, the BCM Committee reports to the Board of Directors on the status of risk management review.



## GreenASUS & SERASUS Steering Committee

In order to communicate across the units on key issues such as products, supply chain and organization operations that are highly influential to corporate sustainable operation, ASUS establishes the "GreenASUS & SERASUS Steering Committee" with Chief Sustainability Officer (CSO) as the management representative is authorized by the CEO. For the purpose of integrating sustainable strategies into product development, operations, and value chain management.

To strengthen horizontal cross-unit communication within the company, ESG Committee was established in 2022. Committee members were from each business unit as well as the design center, certification, marketing, sales and other support units. With regular communication mechanism, we can effectively focus on the overall product, marketing and design sustainability issues of the company.

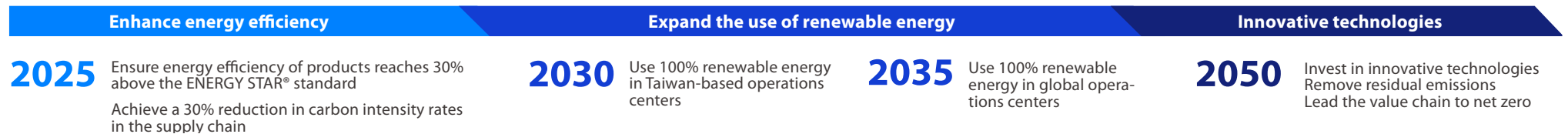


## Sustainability and Green Quality Management Center (SGQM)

ASUS Sustainability and Green Quality Management Center(SGQM) functions as a dedicated division led by Chief Sustainability Officer and is responsible for analyzing global sustainability trends and executing sustainability projects.

The Sustainability and Green Quality Management Center is responsible for driving strategic sustainability through "Using Digitized Data and Scientific Management Practices." Leveraging ASUS's core capabilities, our sustainability action focus on: Climate Action, Circular Economy, Responsible Manufacturing, and Value Creation. We establish sustainable medium to long-term vision, strategy, and goals and integrates various action plans into the company's operations. Climate action focuses on planning group's carbon reduction pathway, aiming to enhance energy efficiency, expand the use of renewable energy, invest in innovative technologies, drive the entire value chain towards net-zero and sets forth ASUS RE100 path.

### ASUS 2050 Net Zero Vision



### Map of the ASUS Global RE100 Path



Since 2007, ASUS has begun to conduct annual greenhouse gas inventory for all global operations centers<sup>1</sup> and complete third-party verification in accordance with ISO 14064-1. In 2022, ASUS demonstrated its commitment to carbon reduction by expanding the scope of its consolidated financial statements to include group companies<sup>2</sup> and the entire value chain. ASUS commit to align with the Science Based Targets initiative (SBTi) and set reduction targets based on scientific foundations to ensure global warming remains below 1.5°C. We reviewed overall carbon emissions and developed a decarbonization roadmap and strategy to achieve these targets.

# 02 Greenhouse Gas Inventory

## 2.1 Methodology

In practice, the methods for greenhouse gas inventory can be classified into two approaches: ISO 14064-1 and GHG Protocol. ISO 14064-1 emphasizes the disclosure of greenhouse gas inventory information, It is suggested that corporate should identify the emission sources which is material to operation and conduct GHG inventory focusing on these categories. While GHG Protocol focuses on the comprehensiveness of the greenhouse gas inventory calculation scope. These two approaches are complementary in terms of calculating and disclosing greenhouse gas inventory for businesses. SBTi's GHG inventory methodology is based on the GHG Protocol.

ISO 14064-1 directly or indirectly requires ASUS and our value chain to establish and concretely implement carbon reduction commitments, manage and track reduction performance, and enable stakeholders to review carbon reduction achievements through transparent disclosures.

While the purpose of adopting the SBTi methodology is to comprehensively assess ASUS Group and our value chain's total environmental impact related to carbon emissions. Following the SBTi guidelines, the company sets Group' phased carbon reduction targets, develop feasible carbon reduction actions and provide regular updates on the progress of carbon reduction to SBTi. For ASUS, the GHG Protocol serves as the standard for calculating greenhouse gas emissions, while ISO 14064-1 and SBTi are greenhouse gas disclosure frameworks, each carrying different implications for environmental, social, and governance (ESG) management.

Purpose	ISO14064	SBTi	Meaning for ESG Management
Define the Organization Boundary for Reduction Targets	ASUS and Supply chain	ASUS Group and Supply chain	Based on the definition of the inventory scope, We establish reduction targets for the company and the Group.
Formulate Reduction Pathway and Actions	<ul style="list-style-type: none"> <li>ASUS: implement reduction actions for significant emissions</li> <li>ASUS's value chain: take precedence reduction planning for the supply chain</li> </ul>	ASUS Group and value chain : Set reduction targets and actions in accordance with SBT	Based on the company's main sources of emissions, we establish carbon reduction actions, such as supply chain carbon reduction or energy efficiency improvements. However, according to the results of the group-wide greenhouse gas inventory, we set phased carbon reduction targets and devise feasible carbon reduction actions.
Public Reporting	Voluntary	Mandatory	In addition to disclosing emission data in the Sustainability report and website, we regularly report emission amount and reduction achievements as required by SBTi.
Ensure Data Quality	Require third-party verification	Not required third-party verification	ASUS obtainstthird-party verification statements to ensure the accuracy and reliability of the greenhouse gas

<sup>1</sup> According to the parent and subsidiary companies listed in the consolidated financial statements of the current year in relation to the global operations of ASUS products, and adopt the operational control method to subsidiaries we don't have controlling rights.

<sup>2</sup> Group companies within ASUS' consolidated financial statements in 2022 include: ASUS GROUP(ASUS global operations centers), ASUSCLOUD GROUP, AAEON GROUP, AAEON GROUP, ONYX GROUP, HMI GROUP, SWI GROUP

<sup>3</sup> The company's carbon management approach towards suppliers includes direct measures such as conducting ESG audits on suppliers, requesting them to fill out GHG data and reduction performance verified by third parties on management platforms. The suppliers' carbon reduction performance will be used as a basis for increasing or decreasing orders. Indirect measures involve inviting external partners to conduct online net-zero policy advocacy conferences, and so on.

## 2.2 ISO14064-1 Organization-level GHG Inventory

### Organizational Boundary-operational Control

ASUS adopts the operational control approach as outlined in ISO14064-1:2018 and considers its specific operational circumstances to meticulously establish the organizational boundaries for conducting a comprehensive greenhouse gas inventory. According to the parent and subsidiary companies listed in the consolidated financial statements of the current year in relation to the global operations of ASUS products, and adopt the operational control method to subsidiaries we don't have controlling rights.

### Reporting Boundary-significance Criterion

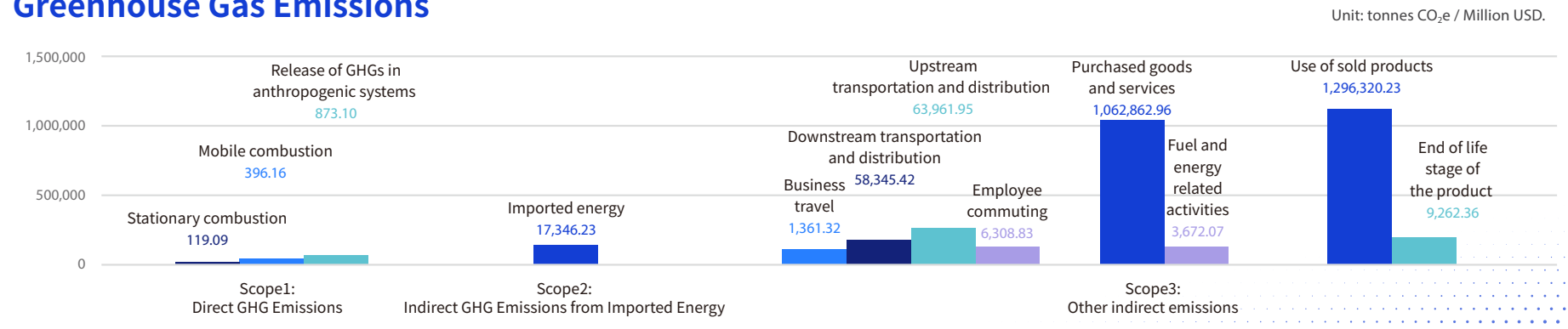
In order to keep up to date with the carbon emissions situation at ASUS, we will redefine and identify emissions that may impact ASUS operations, and expand the scope of emission inventory as a key focus of the revision in 2022. To identify operational materiality indicators, ASUS adopts the indicators recommended by the GHG Protocol establish criteria for operational relevance, quantification methods, carbon emission coefficients, data quality, carbon reduction potential, and stakeholders. We will also identify the emissions that is of most materiality to ASUS operations according to the score of the emission.

Based on the above identification criteria and scoring results, ASUS's significant operational emission sources in 2022 include:

- **Scope1: Direct GHG emissions**
- **Scope2: Indirect GHG emissions from imported energy**
- **Scope3: Other indirect emissions, includes emission from purchased goods and services, fuel- and energyrelated activities, upstream transportation and distribution, business travel, employee commuting, downstream transportation and distribution, use of sold products, end-of-life treatment of sold products.**

Compared to 2021, new inventory items such as emissions from "emissions from upstream transportation and distribution for goods", "emissions from employee commuting includes emissions", "fuel and energy related activities", and "emissions from end of life stage of the product" are added this year. In 2022, the total carbon emissions at ASUS global operating locations were 2,520,829.72 tonnes CO<sub>2</sub>e, with an emission intensity of 1.39 tonnes CO<sub>2</sub>e / Million USD.

### Greenhouse Gas Emissions



<sup>4</sup> The indicators recommended by the GHG Protocol include emission size, carbon reduction potential, operational risk, stakeholders, outsourcing, sector guidance, and others.



**• Scope 1: Direct GHG Emissions**

ASUS's direct greenhouse gas emissions sources include emissions generated from the use of backup generators, official vehicles, chiller plants, and other equipment fuels and refrigerants.

Category	Type of Energy	Activity Data	Carbon Emission (tonnes CO <sub>2</sub> e)	Total Carbon Emission (tonnes CO <sub>2</sub> e)
Direct emissions from stationary combustion	(Emergency generator) Diesel	2,186.28 L	5.85	1,388.35
	(Boiler) Natural gas	16,121 M <sup>3</sup>	34.82	
	(Heating) Natural gas	37,395.69 M <sup>3</sup>	78.42	
Direct emissions from mobile combustion	(Office vehicle) Diesel	105,340.22 L	278.75	1,388.35
	(Office vehicle) Gasoline	44,424.50 L	117.41	
Direct fugitive emissions arise from the release of GHGs in anthropogenic systems	Including refrigerant equipment	9,447.2 KG	873.10	

**• Scope 2: Indirect GHG Emissions from Imported Energy**

ASUS purchases electricity as its main source of energy, so the information on electricity usage and carbon emissions at its Global Operating locations is as follows:

Category	Taiwan	China	Overseas	Total
Electricity Usage (MWh)	28,773	7,497	4,972	41,242
Location-based Carbon Emission (tonnes CO <sub>2</sub> e)	14,645.30	4,282.87	2,052.48	20,980.65
Market-based Carbon Emission (tonnes CO <sub>2</sub> e)	14,645.30	862.87	1,838.06	17,346.23

**• Scope 3: Indirect GHG Emissions in Value Chain**

**• Purchasing Products and Services:**The total carbon emissions of key suppliers<sup>5</sup> amount to 1,062,862.96 metric tons of carbon dioxide equivalent, with an emission intensity of 88.34 metric tonnes of carbon dioxide equivalent per million US dollars. Compared to the previous year, there has been a reduction of approximately 30% in emission intensity.

**• Fuel and energy related activities:**The total carbon emissions from upstream fuel and electricity procurement are 3,672.07 tonnes CO<sub>2</sub>e.

**• Emissions from upstream product transportation and distribution:** The carbon emissions from laptops, desktop computers, all-in-one computers, and monitors product lines from the parts factory to the HUB, and finally to the OEM factory, are 63,961.95 tonnes CO<sub>2</sub>e.

**• Business travels:**In 2022, the total carbon emissions from business travels<sup>6</sup> of employees at ASUS Taiwan were 1,361.32 tonnes CO<sub>2</sub>e.

**• Emissions from employee commuting includes emissions:**In 2022, the carbon emissions generated by commuting of employees at ASUS Taiwan were 6,308.83 tonnes CO<sub>2</sub>e.

**• Downstream Transportation and Distribution<sup>7</sup>:**Downstream transportation and distribution refer to the carbon emissions generated during the shipment of laptops, desktops, all-in-one computers, and monitors from contract manufacturing facilities to various global destinations. The total carbon emissions for these product lines amount to 58,345.42 tonnes CO<sub>2</sub>e .

**• Emissions from the use stage of the product:**ASUS has expanded its recognition of carbon emissions during the usage stage, with a total carbon emission of 1,296,320.23 tonnes CO<sub>2</sub>e and an emission intensity of 97.03 tonnes CO<sub>2</sub>e / Million USD (a one-year emission intensity of 23.83 tonnes CO<sub>2</sub>e / Million USD), based on the 4-year service life of the products sold. This represents a decrease of approximately 12.64% in emission intensity compared to last year.

**• Emissions from end-of-life stage of the product:**The final disposal of products sold globally includes the transportation stage from recycling stations to treatment plants, as well as the disposal stage. Total carbon emissions are 9,262.36 tonnes of carbon dioxide equivalent

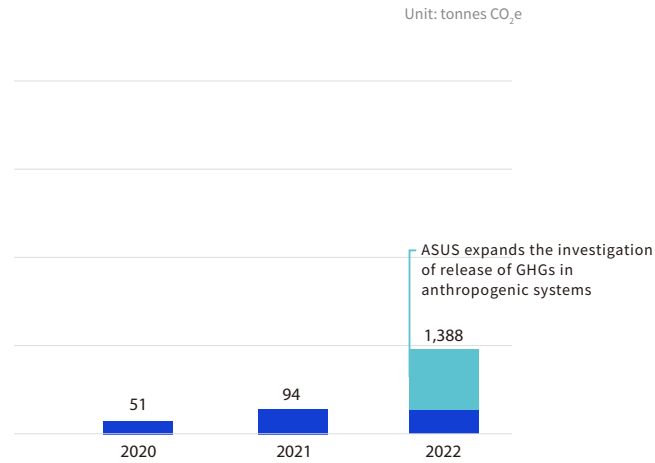
<sup>5</sup> Key suppliers are makers of ICs, PCBs, mechanical components, cables, panels, HDDs, adapters, batteries, keyboards or assembly plants.

<sup>6</sup> Domestic business travel and foreign business travel on land are not included in the calculation due to low significance on results.

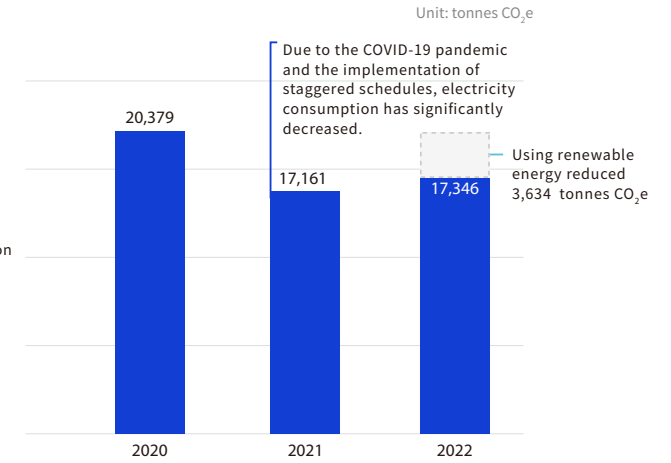
<sup>7</sup> As per the EPEAT-CCM-2023\_4.1.3 Optional-Product transport carbon footprint and goal methodology and verified by ISO14064-1, ASUS applies emission factors based on the well-to-wheel approach for each transportation mode. Then, the carbon footprint of product transportation is calculated by considering the weight of the transported products and the distance traveled.

## Trend of Carbon Emission over the Years

### • Scope 1

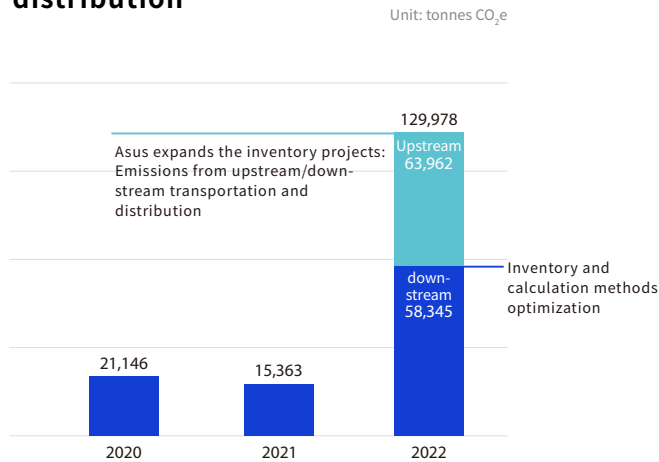


### • Scope 2

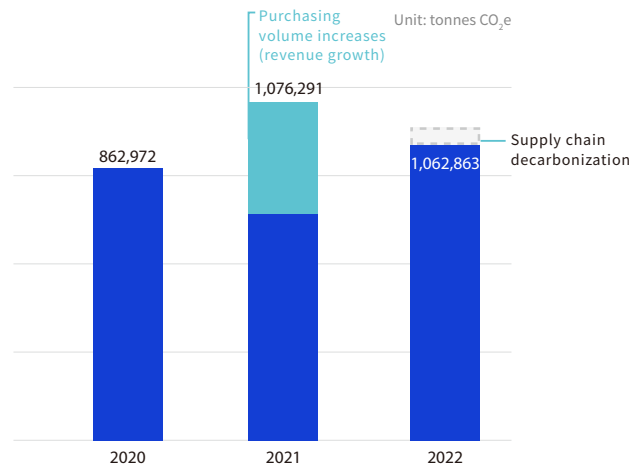


### • Scope 3

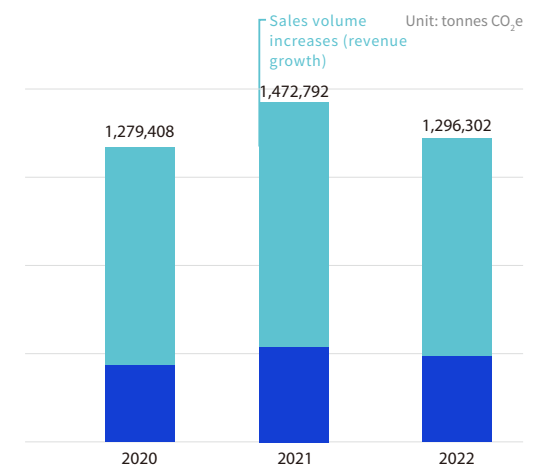
#### Emissions from upstream/downstream transportation and distribution



#### Emissions from purchased goods and services



#### Emissions from use of sold products



Use of sold products: we extend the scope of calculation to lifespan of sold products to 4 years to calculate carbon emissions

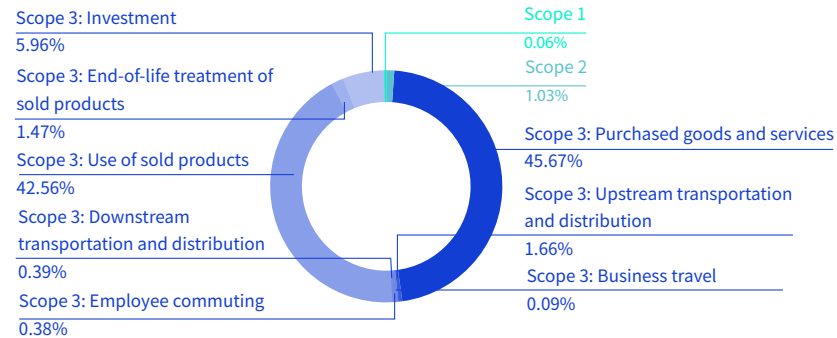
## 2.3 SBTi - Group's GHG Inventory

Since 2022, ASUS has committed to comply with the SBTi within the scope of consolidated financial reports of subsidiaries. Apart from the global operating bases, ASUS has added Askey, AAEON Technology, ONYX Healthcare, Sino Speed Holdings, and Shinewave to conduct greenhouse gas (GHG) inventory with reference to the framework and calculation principles of the GHG Protocol. By taking 2021 as the base year, we conducted greenhouse gas inventory and utilized third-party verified data to establish Group's compliance with Near-Term Science-Based Targets (SBT). In 2023, we will further align with our 2050 net-zero vision, introducing SBTi net-zero commitments to promote carbon management and reduction across the entire Group.

### The carbon emissions of the ASUS Group in 2021 (baseline year)

Scope	Carbon emissions (tonnes CO <sub>2</sub> e)
Scope 1	3,292.21
Scope 2	54,890.08
Scope 3	5,263,675.17
<b>Total carbon emissions</b>	<b>5,321,857.00</b>

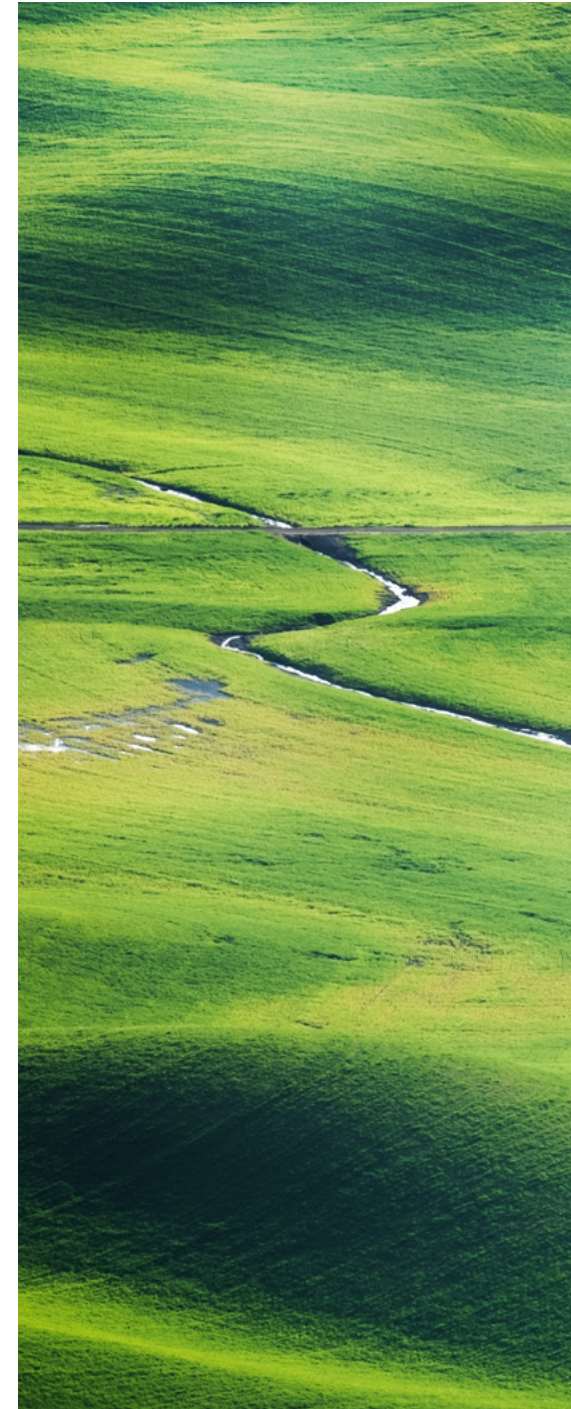
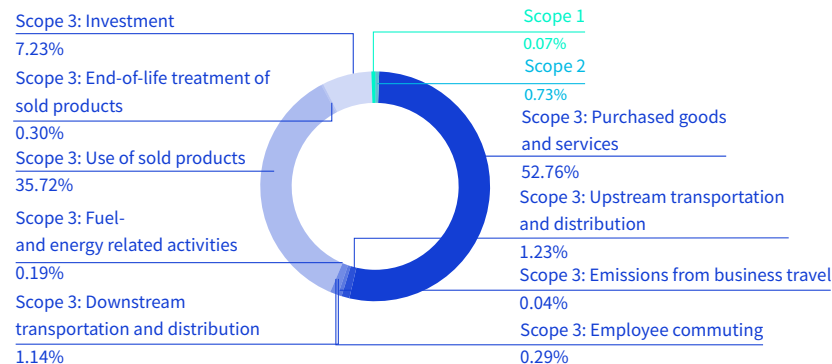
In 2021, ASUS' total carbon emissions was 5,321,857.46 tonnes CO<sub>2</sub>e



### The carbon emissions of the ASUS Group in 2022

Scope	Carbon emissions (tonnes CO <sub>2</sub> e)
Scope 1	3,631.89
Scope 2	40,297.83
Scope 3	5,483,173.62
<b>Total carbon emissions</b>	<b>5,527,103.34</b>

In 2022, ASUS' total carbon emissions was 5,527,103.34 tonnes CO<sub>2</sub>e



The World Meteorological Organization (WMO) stated that continuing climate change, an increasing occurrence and intensification of extreme events, and severe losses and damage, affect economy, society, and the environment. On the other hand, after the Paris Agreement came into effect, the world has accelerated its pace towards a low-carbon economy with a common goal of limiting earth's warming to 2 °C above the pre-industrial levels by the end of the century, and striving not to exceed 1.5 °C. This means that global businesses will jointly bear the potential impact of climate change risks on their operations. To mitigate the impact of climate change, they also provide innovative low-carbon products or services to create momentum for business growth.

# 03 Risk Assessment and Management

## 3.1 Structure of Risk Management

To enhance the supervision of the Board of Directors on the risk management of ASUS and enable the risk management to be more "comprehensive" and "regular", ASUS established the Business Continuity Management (BCM) Committee to constantly monitor and manage climate risks and demonstrate organizational resilience by integrating operational practices.

ASUS has incorporated climate action into the BCM Sustainable Development Task Unit, which is liable for risk monitoring and prevention management. Through continuous review of business continuity management, ASUS dynamically adjusts major issues of concern and effectively integrates internal and external resources, to better predict, prepare, respond to and adapt to the continuous changes in the environment, thereby minimizing the relevant impacts and interruption periods.



## 3.2 Climate Risk and Opportunity Identification

Based on the TCFD framework, ASUS identifies climate risks and opportunities, chooses those that have high impacts on our operations, and evaluates their values by defining how different levels of impact and different stages of occurrence will affect us.

- Transition risks:** In order to respond to the complexity and impact of the market caused by climate change, we must adjust the supply and demand with various methods, including policy, law, technology, and market changes to mitigate and adapt to the needs of climate change prevention.
- Physical risks:** The actual risks caused by long-term climate change and immediate extreme weather disasters would have a direct impact on the industry and supply chain disruptions.

<sup>8</sup> <https://public.wmo.int/en/media/press-release/climate-change-indicators-and-impacts-worsened-2020>

	Risk classification	Risk description	Stages of Occurrence <sup>9</sup>	Scope of influence			Impact on ASUS
				Upstream in the value chain	Operations of ASUS	Downstream in the value chain	
<b>Transition risks</b>	Policies and regulations	Carbon tax	Near-term, carbon tax system will be implemented within 3 years	Increase in production costs	Increase in procurement costs	Affect product prices	High, directly affect ASUS's operational costs and product prices
	Policies and regulations	Carbon Border Adjustment Mechanism (CBAM)	Long-term, the carbon tax system will be implemented within 10 years.	Increase in production costs	Increase in product tax costs	Affect product prices	High, directly affect ASUS's operational costs and product prices
	Policies and regulations	Regulations require transparent disclosure of information on emissions	Near-term, the disclosure regulations on carbon emissions will be implemented in the next 5 years (Taiwan 2027)	-	Annual supervision and control is required	-	Low, ASUS has conducted the annual carbon inventory, which is verified by a third party
	Policies and regulations	Regulations on large electricity users	Medium-term, the regulations on large electricity users will be implemented within five years	-	Energy conservation and use of renewable energy	-	Low, ASUS headquarters has implemented ISO 50001 and signed CPPA
	Market	Enhancement of high-efficiency products	Near-term, within 3 years, EPEAT will initiate new regulations (in 2024) and the US ENERGY STAR® standards will be stricter	-	Products do not obtain EPEAT and ENERGY STAR® certifications cannot participate in government tenders	Products do not obtain EPEAT and ENERGY STAR® certifications cannot participate in government tenders	High, necessary conditions for participating in government procurement
	Goodwill	Changes in customer behavior	Medium-term, small difference in market share of competitive products within 5 years	-	If it fails to meet customer needs, its sales may be affected	If it fails to meet customer needs, its sales may be affected	Medium, product diversification and constant introduction of new products
<b>Physical risks</b>	Immediate	Extreme climate impacts	Near-term, the shift was suspended in the past 3 years	The assembly plant was shut down because of a power outage caused by the rainstorm	The shift was suspended due to the rainstorm	Interruption of land transportation due to the rainstorm	High, a continuous shutdown for 15 days occurred in Chongqing, China
	Long-term	Sea level rise	Long-term, sea level rise will occur within 10 years.	Supply chains in coastal cities may be forced to relocate	The operation headquarters may be flooded and the surrounding roads may be interrupted.	Disruption of land transportation affects product distribution	Medium, expected to affect ASUS headquarters' operational processes.
	Long-term	Rise in temperature	Long-term, a rise in temperature may occur within 10 years	Heat waves cause shutdown	Increase in operating electricity consumption	Heat waves cause shutdown	Low, increasing the electricity cost for the headquarters
	Opportunity Classification	Opportunity description	Stages of Occurrence	Scope of influence			Impact on ASUS
				Upstream in the value chain	Operations of ASUS	Downstream in the value chain	
<b>Opportunity</b>	Product and service	Launch low-carbon products	Near term, competitors will launch eco-friendly products within three years	Increase in Supply chain low-carbon transition costs	Increase in sales revenue	-	High, satisfy customer demand for low-carbon products to increase revenue
	Product and service	Provide carbon neutral service	Near term, there will be increasing demand for carbon reduction services from customers. within three years	-	Increase revenue by entering new markets	-	High, satisfy customer demand for low-carbon products to increase revenue

<sup>9</sup> Stages of occurrence: 1-3 years for the near term, 3-5 years for the medium term, 5-10 years for the long term

## Climate Risk and Opportunity Matrix



ASUS fully understands that transformation risks and physical risks will have varying degrees of impact on sustainable operations. The World Energy Outlook (WEO) released by the International Energy Agency (IEA) in 2022 has scenarios such as “Stated Policies Scenario” (STEPS), “Announced Pledges Scenario” (APS), and “Net Zero Emissions by 2050 Scenario (NZE) for the global carbon reduction pathway. ASUS believes that countries around the world will shift from stated policies scenarios to net zero emission scenarios on the pathway of net zero carbon reduction. Therefore, we adopt the stated policies scenario as the BAU scenario and the net zero emission scenario as the NZE scenario for our transformation risks.

In addition to taking a TCFD recommendation to simulate scenarios of the IEA and joining the SBTi commitment in 2023, we will also set our 2050 carbon reduction target and initiatively add a SBTi pathway to evaluate the financial impact from our transformation risks.

Simulation scenarios	Sources of Scenario	Scenario Description	Simulation Scenario Corresponding to ASUS Transition Risk
Compliance	IEA, Stated Policies Scenario (STEPS)	It includes the specific contents of policies that have been announced so far and is intended to highlight the impact of the announced policies on future energy systems. The temperature might increase by about 3° C	BAU Scenario
	IEA, Announced Pledges Scenario (APS)	Refer to the latest global commitments to the climate, including nationally determined contributions and long-term net zero targets, and pledge to implement carbon reduction according to the planned timeline. The temperature might increase by about 1.8° C	-
	IEA, Net Zero Emissions by 2050 Scenario, NZE	The scenario of achieving net zero emissions by 2050. The temperature might increase by about 1.5° C	NZE Scenario
Voluntary	SBTi reduction commitment	Meet the 2030 Near Term and 2050 Long Term reduction targets defined by SBT	SBT scenario

ASUS referenced the methodology in the sixth Assessment Report (AR6) published by the Intergovernmental Panel on Climate Change (IPCC) in August 2021 to evaluate physical risks ASUS may encounter<sup>10</sup>. AR6 provided the "Shared Socioeconomic Pathways" (SSPs) evaluation method and established an integrated model based on currently quantifiable and measurable data. It uses different descriptive scenarios to simulate future social and economic conditions. In addition to the SSP Scenario, AR6 also included radiative forcing in Representative Concentration Pathways (RCP)<sup>11</sup> Scenario from AR5 to evaluate future climate trends<sup>12</sup>.

Scenario SSPx-y <sup>13</sup>	SSP Description	RCP Description	Short Term (2021-2040)	Medium Term (2041-2060)	Long Term (2081-2100)	Simulation Scenario Corresponding to ASUS Physical Risk
SSP1-1.9	Sustainability	Global warming slowing down	1.5	1.6	1.4	—
SSP1-2.6			1.5	1.7	1.8	—
SSP2-4.5	Middle of the road	Global warming accelerating	1.5	2.0	2.7	—
SSP3-7.0	Regional rivalry		1.6	2.1	3.6	—
SSP5-8.5	Fossil-Fueled Development		1.6	2.4	4.4	The most serious impact on operations

## Opportunity

Considering that TCFD has not yet provided a suggested methodology for scenario simulation to address the opportunities brought about by climate change, ASUS refer to the IPCC's definition of reduction and adaptation to identify potential sources of opportunities that climate change may bring to ASUS.

Our carbon reduction opportunities mainly come from reducing the carbon footprint of our products and providing low-carbon products to customers. Our climate adaptation opportunities are from ASUS carbon neutral services that not only can help our customers reach their net zero goals, but also indirectly protect forests and slow down global climate change with our high-quality carbon credits.

Opportunities under climate change	IPCC definition
Risk reduction opportunities	Reducing the sources of greenhouse gases (GHGs) through human efforts
Risk adaptation opportunities	Propose ways to avoid climate impacts and create opportunities to improve climate change when adapting to actual or expected weather condition and its impacts

<sup>10</sup> The World Climate Research Programme of the WMO activated the Coupled Model Intercomparison Project (CMIP) in 1995 to integrate the climate simulation capacity of major meteorological research centers across the world. They followed internationally recognized modeling protocols to systematically conduct climate change simulations and projections using their own developed climate models. These results were the primary scientific basis for writing the IPCC's climate change assessment reports. AR6 used data from the CMIP. Source: <https://newsletter.sinica.edu.tw/1468/>

<sup>11</sup> RCP measures the degree to which the energy balance of the Earth-atmosphere system is affected by changes in the factors that affect climate. Source: [https://www.cwb.gov.tw/V8/C/K/Qa/qa\\_2\\_1.html](https://www.cwb.gov.tw/V8/C/K/Qa/qa_2_1.html)

<sup>12</sup> Source: Framework and summary of the Taiwan Climate Change Projection Information and Adaptation Knowledge Platform (TCCIP) and IPCC assessment report, [https://tccip.ncdr.nat.gov.tw/upload/activity\\_agenda/20211118205605.pdf](https://tccip.ncdr.nat.gov.tw/upload/activity_agenda/20211118205605.pdf)

<sup>13</sup> The "x" in SSPx-y stands for the socioeconomic pathway and the "y" stands for the approximate level of radiative forcing. Source: The Sixth Assessment Report (AR6) Working Group I (WGI) summary, published by the Intergovernmental Panel on Climate Change (IPCC) Source: <https://eicca.itri.org.tw/ePaperDownload/48744886-082a-49bc-bed5-1bf2fb8ea21f>

## 3.3 Sources of Risk and Opportunity and Scenario Simulation Results

Based on the risks and opportunities identified above, the assumptions and evaluation results of the simulation scenarios are described as follows :

### Increase in operation costs caused by carbon tax

#### Scenario assumptions

- Governments use policy tools such as carbon tax to reduce domestic carbon emissions in order to comply with the Paris Agreement or achieve nationally determined contributions (NDCs). China has promised that its NDCs, based on 2005, will achieve "peak carbon dioxide emissions" by 2030 and "carbon neutrality" by 2060. Therefore, we assume that China will begin to implement its carbon tax system in 2030.
- The sources of growth for carbon emissions in ASUS supply chain are based on reasonable estimation of ASUS global sales growth rate and with reference to global growth rate of electronic equipment. The amount of carbon tax in 2030 is estimated based on the national carbon market transaction prices in China, with an estimated carbon price of \$18.67/tonne in 2030 and \$200/tonne in 2050 (IEA, 2022).

#### Financial Impact Assessment on ASUS

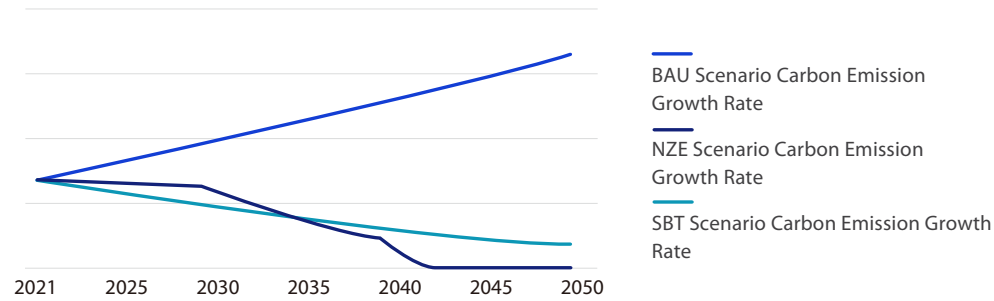
If ASUS adopts BAU scenario, the discounted value of carbon taxes due to supply chain carbon emissions estimated for the year 2030 is projected to account for approximately 0.1% to 0.14% of ASUS's consolidated revenue in 2022. Compared to the BAU scenario, the NZE and Science- SBT scenarios can reduce the discounted values by 34% and 51%, respectively.

#### ASUS's Actions and Cost-Benefit Analysis in Response to Carbon Reduction Scenarios

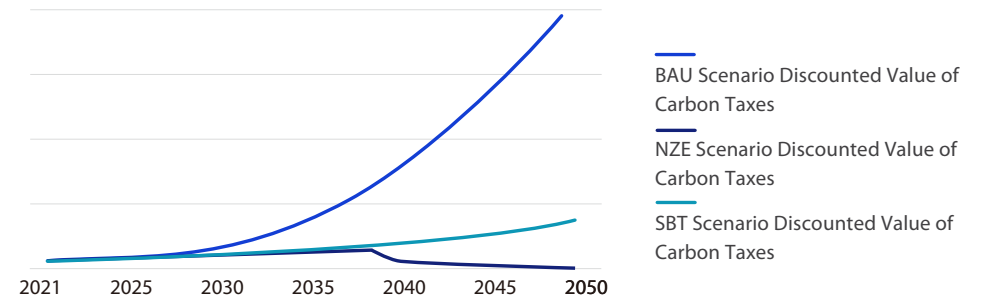
The NZE scenario's reduction pathway follows a gradual-to-rapid approach, while the SBT scenario adopts a step-like reduction approach. These two scenarios have different implications for ASUS's carbon reduction planning. The NZE scenario focuses more on investing in future innovative technologies to achieve significant reduction effects, particularly concentrating on carbon reduction technologies after 2030. On the other hand, SBT emphasizes achieving fixed proportional reductions compared to the baseline year, emphasizing immediate and feasible carbon reduction strategies that should be continuously implemented to reach the net-zero target.

Based on the simulation results of the SBT scenario assessment, it shows that the financial impact of carbon taxation is relatively minor compared to the BAU and NZE scenarios. This scenario aligns with the carbon reduction pathway that ASUS is currently promoting. To achieve the SBT pathway, ASUS can undertake supply chain collaborative actions, such as requesting suppliers to reduce the use of fluorinated greenhouse gases, expanding the use of renewable energy, implementing ISO 50001 energy efficiency management, joining SBTi (Science-Based Targets initiative), or proposing a scientifically based reduction pathway. Promoting SBT-driven carbon reduction benefits can help mitigate the cost transfer caused by carbon taxation on ASUS. However, the costs involved are related to the technology investments required for supply chain carbon reduction. The net benefit amounts to approximately 0.04% of the consolidated revenue, indicating that adopting the SBT reduction pathway provides a financial incentive for ASUS to avoid the cost transfer resulting from carbon taxation.

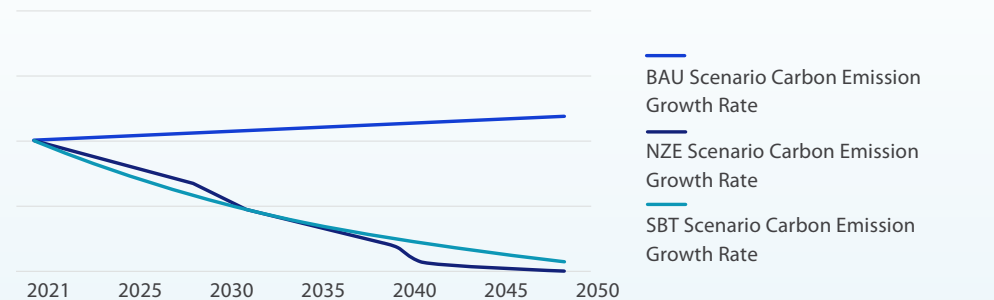




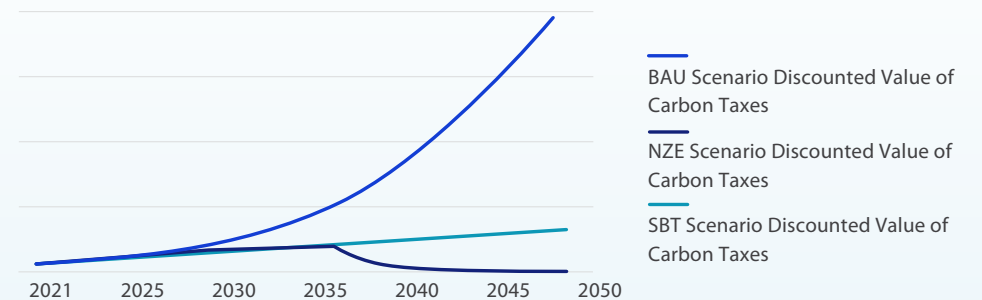
● Growth rate of carbon emissions under various scenarios from 2021 to 2050 - An estimation based on ASUS' global sales growth rate



● Discounted Value of carbon tax under various scenarios from 2021 to 2050 - An estimation based on ASUS' global sales growth rate



● Growth rate of carbon emissions under various scenarios from 2021 to 2050 - An estimation based on the growth rate of computer equipment



● Discounted Value of carbon tax under various scenarios from 2021 to 2050 - An estimation based on the growth rate of computer equipment

## Carbon Border Adjustment Mechanism (CBAM) of the European Union

### Scenario assumptions

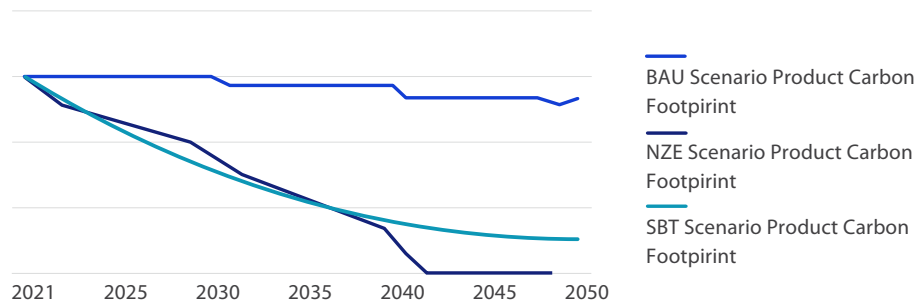
- The European Commission announced the “Fit for 55” climate change plan on July 14, 2021, requiring the 27 EU countries to achieve a collective goal of reducing net greenhouse gas emissions by 55% by 2030 compared to the 1990 levels. In order to achieve the above goals and maintain the international competitiveness of its domestic enterprises, the European Union announced the Carbon Border Adjustment Mechanism (CBAM) with the aim of requiring all trading partners to bear the same carbon costs as the businesses within the EU. The bill will be piloted in October 2023 and officially come into effect in 2026.
- According to the CBAM bill, some imported products have been included in the regulatory scope for indirect emissions. Before the bill comes into effect, consideration will be given to expanding the scope of the industries to be regulated. It is expected that electronic products may be included in the subsequent regulatory list. Therefore, ASUS has evaluated in advance the potential impact of the implementing CBAM on product exports to the European Union.
- In recent years, the carbon footprint of ASUS laptop products has averaged about 0.3 tonnes per unit. The CBAM carbon price is estimated based on the transaction price of the European Union Emission Trading Scheme (EU ETS).

### Financial Impact Assessment on ASUS

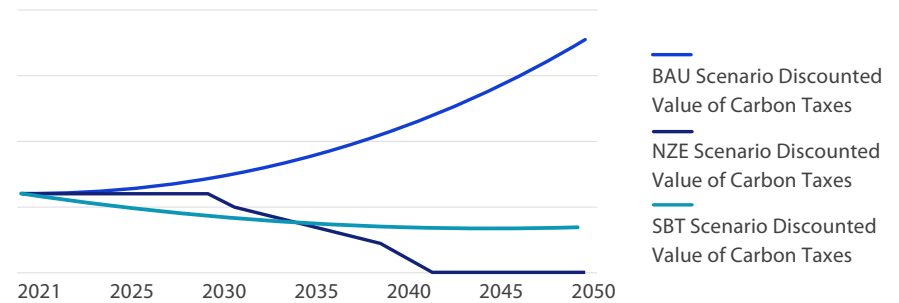
If ASUS adopts the BAU scenario, the estimated discounted value of carbon taxes due to CBAM for the year 2030 is projected to account for 5% of ASUS's laptop product revenue in 2022. Compared to the BAU scenario, the NZE and SBT scenarios can reduce the discounted values by 24% and 30%, respectively.

### ASUS's Actions and Cost-Benefit Analysis in Response to Carbon Reduction Scenarios

Based on the assessment and simulation results in the SBT, the financial impact of CBAM is relatively minor compared to the BAU and NZE scenarios. This scenario aligns with ASUS's current carbon reduction pathway. To achieve the SBT scenario's goals, ASUS can take actions to reduce its carbon footprint, such as implementing supplier carbon reduction and promoting circular economy practices for raw materials. Promoting SBT-driven carbon reduction benefits helps in reducing the tax burden caused by CBAM on ASUS. However, the costs arise from the technological investments required for supply chain carbon deduction and expanding the circularity of product materials. The net benefit, accounting for approximately 3.5% of laptop revenue, indicates that adopting the SBT reduction pathway provides a financial incentive for ASUS to mitigate the tax burden generated by CBAM.



- Reduction rate of product carbon footprint under various scenarios from 2021 to 2050



- Discounted Value of carbon tax (CBAM) under various scenarios from 2021 to 2050

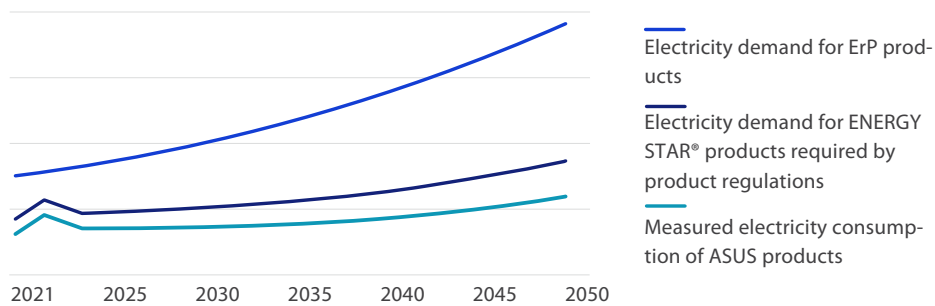
# Efficient product improvement and customer behavior change

## Scenario assumptions

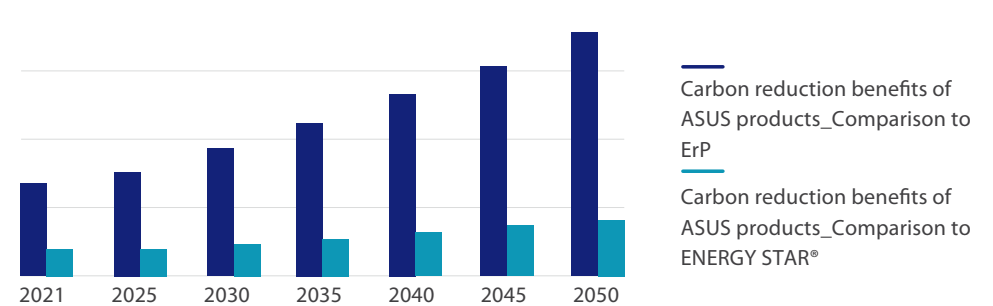
According to a survey on consumer purchase intentions conducted by First Insight and Wharton Business School, consumers are paying more and more for sustainable products every year. In addition, a survey on oversea consumer trends conducted by Simon Kucher&Partners reveals a significant increase in the willingness of the new generation to purchase sustainable products.

## Financial Impact Assessment on ASUS

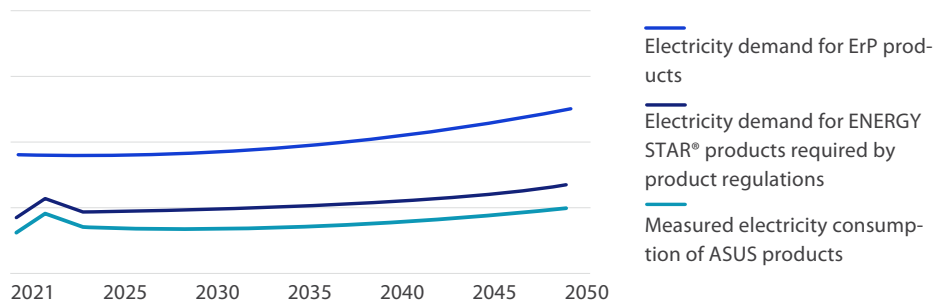
ASUS main products have met ENERGY STAR® requirements since 2013. Even though ENERGY STAR® has made numerous revisions with increasingly stringent requirements, ASUS products are always meeting the standards due to our superior energy-saving design with an average of 30% above the ENERGY STAR® standard and with no potential risks.



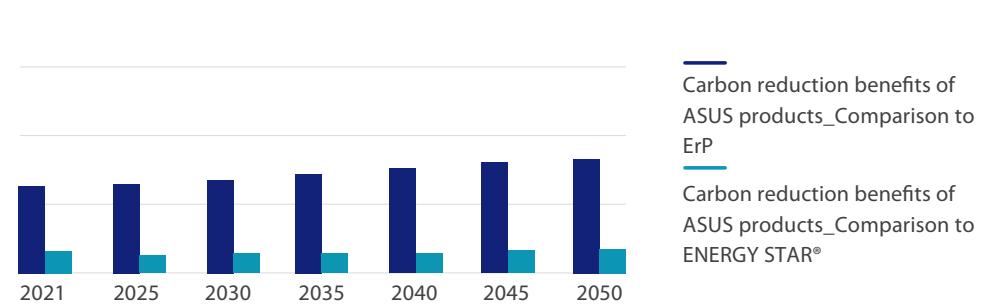
● Electricity demand of products under various scenarios from 2021 to 2050 - An estimation based on ASUS' global sales growth rate



● Carbon reduction benefits of products under various scenarios from 2021 to 2050 - An estimation based on ASUS' global sales growth rate



● Electricity demand of products under various scenarios from 2021 to 2050 - An estimation based on the growth rate of computer equipment



● Carbon reduction benefits of products under various scenarios from 2021 to 2050 - An estimation based on the growth rate of computer equipment

## Extreme weather events- assembly plant shutdown due to power outage

### Scenario assumptions

- Extreme weather events impact people and industries in environmentally fragile areas and have a negative impact on ASUS supply chain. The occurrence of heavy rainfall and drought often cause uneven rainfall distribution, which has a significant impact on hydroelectric power generation and leads to unstable power supply and power outages. These would in turn affect suppliers' normal operations and deliveries, and pose risks to ASUS operations and reputation that cannot be ignored.
- ASUS main revenue product assembly plant is located in Chongqing, China. According to China's "2050 High Renewable Energy Penetration Scenario and Roadmap Study", power generated by renewable energy will reach 86% with 14% hydropower. This shows that hydropower will become one of the key sources of power supply in Chongqing in the future.
- The area where the ASUS product assembly plant is located is powered by the Ertan Power Plant. Shutdown of the assembly plant due to unstable power supply caused by extreme weather events may carry a financial impact.

### Financial Impact Assessment on ASUS

According to Zhao et al. (2022) and the CIMP6 model, ASUS estimates that under the SP5-8.5 scenario, the annual power reduction in Chongqing in 2050 will result in power outages, and the amount of downtime losses calculated based on the number of days with power outages will account for 0.22% of our laptop products revenue in 2022.

## Extreme weather events- land transportation disruption

### Scenario assumptions

- Extreme weather events such as heavy rainfall often result in road flooding or waterlogging, making it difficult for vehicles to pass through, so that our delivery will be delayed and our reputation will be damaged.
- ASUS main revenue product assembly plant is located in Chongqing, China. As it is a place full of multi-river confluence terrains, the main reason for the 2020 flooding was because rivers overflowed in the upstream due to heavy showers, resulting in flooding in many parts of the city.
- According to Wang et al. (2022), under the SSP5-8.5 scenario, the rainfall in the main upstream river basins of Chongqing will increase by 5.3% by 2050, and the probability of flooding in Chongqing for 3, 7, and 15 consecutive days will be 3.88%, 3.42%, and 3.12% respectively.

### Financial Impact Assessment on ASUS

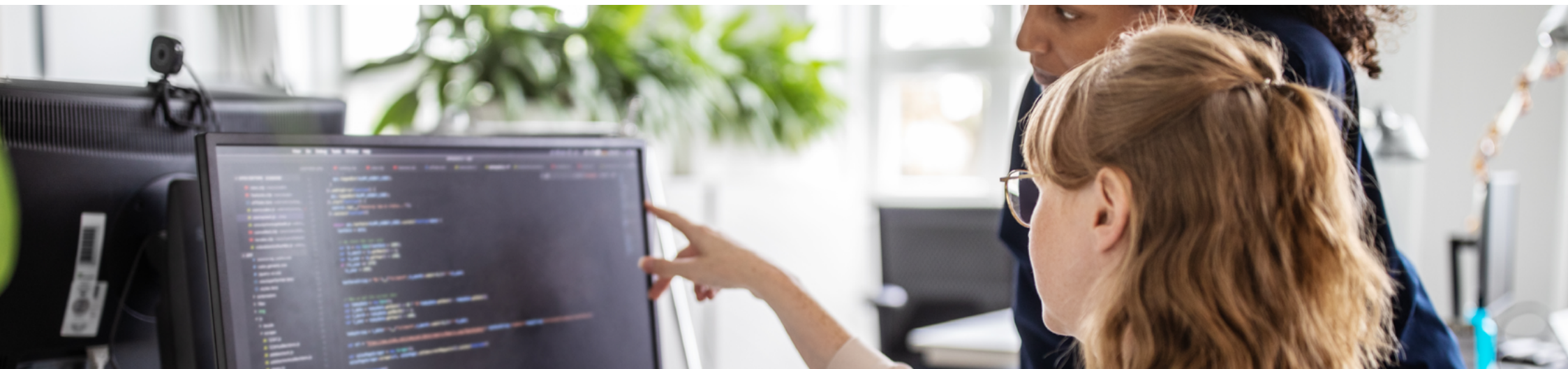
According to the research by Wang et al. (2022), we estimate the amount of downtime losses caused by rainstorm flooding in Chongqing in 2050 will account for 0.03~0.12% of our laptop products revenue in 2022.

## Risk mitigation opportunities - by increasing green product revenue

The carbon footprint is calculated by summing the emissions resulting from every stage of a product's lifetime, including product component mining and manufacturing, assembly, customer use and product recycling, among which the stages of product component mining and manufacturing, and customer use generate the most carbon emissions. In view of this, to reduce the carbon footprint of products, ASUS mainly uses low-carbon materials, and constantly improves product energy efficiency and lowers power consumption, to satisfy customer expectations for green products and meet green procurement specifications. By doing this, ASUS increases the revenue from green products, which is expected to reach 50% of its total revenue by 2030.

## Risk adaptation opportunities - by providing carbon neutrality services

In 2023, ASUS launched carbon neutrality services, with commercial customers under pressure to reduce carbon as the first batch of service targets to assist them in purchasing carbon-neutral products. In ASUS's prioritized carbon-neutral products, beyond compliance with international environmental standards, the carbon credits used to offset the remaining carbon emissions of products are also high-quality and nature-based carbon credits. ASUS holds that carbon neutrality services can not only help its clients achieve the net-zero target, but also generate green service revenue. It is estimated that the revenue arisen from carbon neutrality in 2030 will account for 0.02-0.15% of ASUS' green product revenue in 2022.



## 4.1 Strategies for Addressing Climate Issues

Climate change is a contemporary global issue that poses significant and far-reaching impacts and challenges to mankind, ecology, and the global environment. The Global Risks Report published by the World Economic Forum over the past decade reveals that extreme climate change has become the primary threat faced by the world today, both in terms of the likelihood of risks occurring and the magnitude of the impacts they may have. According to a study conducted by Stanford University, failing to meet the climate change mitigation goals promised by the United Nations' Paris Agreement will cost the global economy tens of trillions of dollars over the next century.

ASUS is aware of the impact of environmental changes triggered by climate change on the global economy and the Group's operations. Therefore, ASUS is promoting a strategy of "digitize data and adopt scientific management practices" for sustainability to identify major climate risks and simulate possible future scenarios of climate financial impacts. The plans are forward-looking and involve proactive climate measures. This includes improving R&D capabilities in software and hardware to improve product energy efficiency, driving the supply chain toward lowcarbon manufacturing, expanding the use of renewable energy, and developing innovative technologies to reduce the carbon footprint of corporate operations, manufacturing, and products, as well as gradually pushing the entire value chain toward net zero .

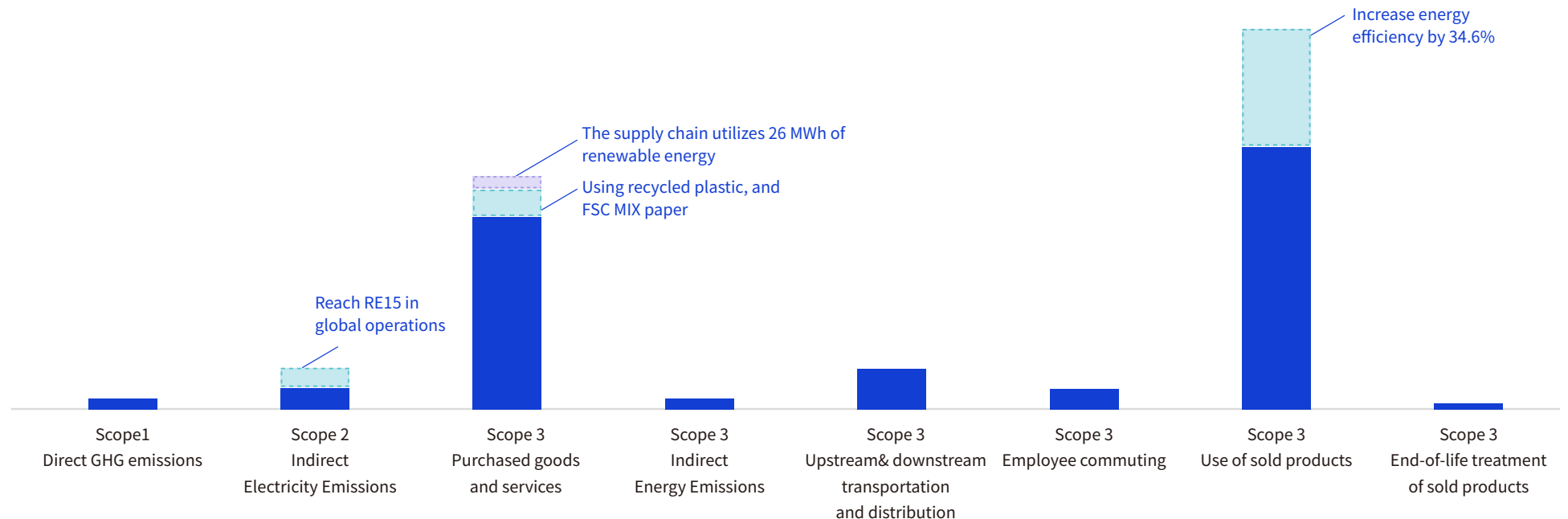
	Risk Disclosure	Response Strategy	Financial impact of expenditure cost	2022 Achievement
<b>Transition Risks</b>	Increase in Operation Costs Caused by Carbon Taxes	Eco Design	In 2022, the cost of introducing eco-friendly materials accounted for approximately 0.011% of the revenue.	Carbon reduction effect of ASUS' products using eco-friendly materials compared with that of raw materials in 2022: <ul style="list-style-type: none"> <li>● PCR: 1,042,179 kg - CO<sub>2</sub>e</li> <li>● PIR: 14,229 kg - CO<sub>2</sub>e</li> <li>● FSC: 22,446 kg - CO<sub>2</sub>e</li> </ul>
		Supply Chain Decarbonization	In 2022, expenses related to the supply chain assistance plan accounted for approximately 0.012% of the revenue.	Achievements of ASUS Supply Chain Assistance Program in 2022: <ul style="list-style-type: none"> <li>● Suppliers increased their share of solar power generation by 8% compared to 2021</li> <li>● The target of GHG reduction was 8% higher compared to 2021</li> <li>● 33% of suppliers obtained the third-party verification of GHG emissions based on ISO14064</li> <li>● 29% of our suppliers were certified by ISO 50001</li> </ul>
	Carbon Border Adjustment Mechanism (CBAM)	Expanding the Use of Renewable Energy	Renewable energy related expenses accounted for approximately 0.0002% of the revenue in 2022.	Achievements of ASUS' renewable energy performance in 2022: <ul style="list-style-type: none"> <li>● Achieve 50% overseas locations use renewable energy and achieve RE15 across global operational centers</li> <li>● Established an optimal procurement plan for wind, solar, and water in accordance with the RE100</li> <li>● Established ASUS Taiwan and Global Operation RE100 Pathway by 2035</li> </ul>
		Enhancing High-Efficiency Products Improving Product Changes in Consumer Behavior	Energy Efficiency	In 2022, ASUS spent approximately 0.49% of revenue on low-carbon laptops.
<b>Physical Risk</b>	Impact of Extreme Weather - Assembly Plant Shutdown Due to Power Outage	Stable Supply Chain	In 2022, expenses related to the annual audit of suppliers accounted for approximately 0.0006% of the revenue.	Stable supply chain in 2022: <ul style="list-style-type: none"> <li>● 100% completion of ESG audit for high-risk suppliers</li> <li>● Diversified manufacturing network and decentralized manufacturing bases</li> </ul>
				Impact of Extreme Weather - Interruption of Land Transportation

## 4.2 Avoid Emissions in ASUS' s Value Chain

According to the WBCSD (World Business Council for Sustainable Development) Guidance On Avoided Emissions released in 2023, the disclosure of avoided emissions can accurately reflect a company's investment in carbon reduction strategies and its carbon reduction performance in products, showcasing the added value of the products. For internal decision-makers in the company, evaluating avoided emissions can help understand the effectiveness of carbon reduction strategies, prioritize carbon reduction initiatives with higher potential and impact, or serve as reference indicators for adjusting carbon reduction strategies. For investors, this information can be used as a basis for assessing companies or making decisions on investing in carbon reduction projects, thereby increasing their confidence in the company's ability to manage carbon risks.

Therefore, ASUS follows this methodology to target carbon emissions along the value chain and defines the baseline as emissions that would occur without implementing carbon reduction strategies so as to analyzes the performance of avoided emissions resulting from the implementation of carbon reduction strategies. In 2022, ASUS achieved a total of 455,648 tonnes CO<sub>2</sub>e in avoided emissions.

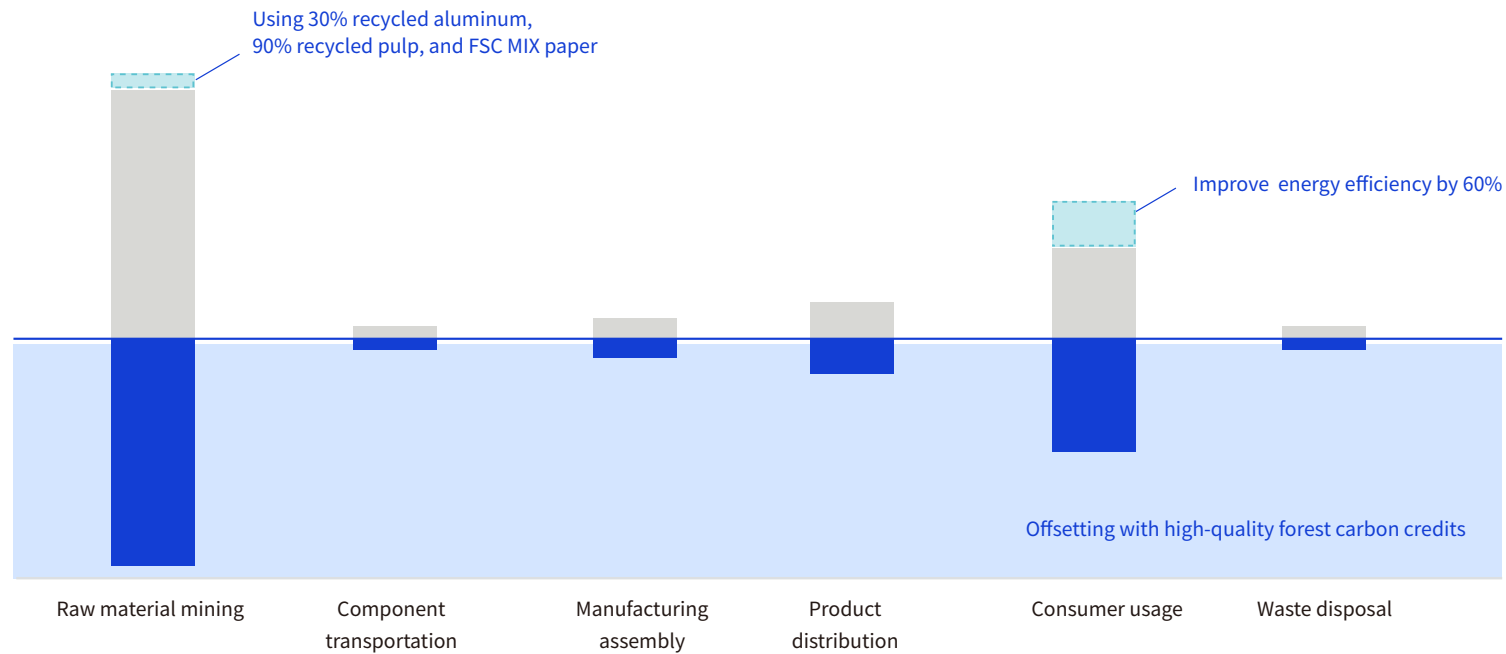
### In 2022, ASUS avoided emissions of 455,648 tonnes CO<sub>2</sub>e



In 2022, ASUS made significant efforts to reduce carbon emissions in its business operations and value chain. We adopted a more diverse range of environmentally friendly materials, such as using 30% post-industrial recycled metal in the case of the ExpertBook B9, a commercial laptop with a primary focus on lightweight design. Additionally, the consumer laptop UX5304 incorporated sea waste plastic, and accessories like the ROG gaming mouse featured a full case made from biological base resin made from castor oil, all contributing to ASUS products becoming more environmentally friendly and low-carbon.

ASUS ExpertBook B9 (B9400CB) is the world's first commercial notebook computer certified with ISO 14067: 2018 . Its product carbon footprint was avoided emissions by 21%. We made every effort to utilize currently available low-carbon materials and technologies to lower product carbon footprints. The carbon emissions from a part of the product that could not be reduced with feasible technology was offset with an internationally credible source of carbon credits<sup>14</sup> to make the product carbon neutral.

## In 2022, ASUS' s product footprint avoided emissions by 21% (Take B9400CE as example)



<sup>14</sup> ASUS selects carbon credits from nature-based forest carbon sinks, which are clean carbon credits that maintain biodiversity, soil and water conservation, and increase local employment opportunities.



## 5.1 Net Zero Vision and Science-Based Targets (SBT)

### ASUS Net Zero Vision

As the threat of climate change intensifies, "net zero emissions by 2050" has become the consensus in global climate actions. Nearly 140 countries across the world that produce 88% of global carbon emissions have pledged to achieve net zero emissions by 2050, which demonstrates that the world is moving towards net zero emissions. According to the "Net Zero Economy Index 2021" published by PwC in 2021, achieving net zero emissions by 2050 will be difficult. Halving carbon emissions by 2030 and achieving net zero emissions by 2050 will require a five-fold increase in the rate of global decarbonization. This means that every industry across the world must accelerate their transformation to attain net zero emissions. ASUS has set science-based targets with a three-staged implementation approach of enhancing energy efficiency, expanding the use of renewable energy, and removing residual emissions with innovative technologies to lead the value chain to net zero.

Enhance energy efficiency	Expand the use of renewable energy	Innovative technologies
<p><b>2025</b> Ensure energy efficiency of products reaches 30% above the ENERGY STAR® standard</p> <p>Achieve a 30% reduction in carbon intensity rates in the supply chain</p>	<p><b>2030</b> Use 100% renewable energy in Taiwan-based operations centers</p> <p><b>2035</b> Use 100% renewable energy in global operations centers</p>	<p><b>2050</b> Invest in innovative technologies</p> <p>Remove residual emissions</p> <p>Lead the value chain to net zero</p>

### Science-Based Targets (SBT)

The Science Based Targets initiative (SBTi), launched by the United Nations Global Compact (UNGC) and the Carbon Disclosure Project (CDP), provides scientific approaches that can be certified by a third party to limit global temperature rise to below 1.5° within the carbon budget<sup>15</sup>. Under this scenario, companies set reasonable carbon reduction targets. SBT can accommodate future business growth, save money, provide resilience against regulation, enhance investor confidence, and spur innovation and competitiveness

In 2022, ASUS promised to comply with SBTi, actively followed the SBT to formulate pathways and targets for emission reduction, and promoted the entire group to conform to the 1.5° C pathway, to cope with the risks brought by global climate change. In 2022, ASUS completed the group-wide inventory of GHG in terms of Scopes 1, 2 and 3, and developed a group-wide compliance with the SBT. It is expected to obtain the SBT certification in 2023. The main carbon reduction actions are to introduce renewable energy, reduce carbon in the supply chain, develop low-carbon products and improve the energy efficiency of products. Lead the subsidiaries and the overall value chain towards ASUS 2050 Net Zero vision.

- 2030: Reduce absolute scope 1 and scope 2 GHG emissions 50% by 2030 from a 2021 base year.
- 2030: Reduce absolute scope 3 GHG emissions from purchased goods and services and use of sold products 30% by 2030 from a 2021 base year.

<sup>15</sup> By utilizing the critical warming threshold as a benchmark to evaluate the remaining global carbon emissions quota. This assessment allows for the observation of the carbon emission trend.

## Improving Energy Efficiency

### • Low Carbon Products

ASUS quantifies the potential environmental impacts it may cause in accordance with ISO 14040 and 14044 Life Cycle Assessment (LCA) standards. In order to reduce the carbon footprint generated by our products in their lifecycle, we apply a circular economy mindset into our product design and services, use eco-friendly materials, improve energy efficiency, and extend usage cycles in our transition to low-carbon product development.

The amount of plastic used in ASUS products accounts for over 30% of the overall weight of the mainstream products, making it the most commonly used material. Therefore, we work with our major raw material suppliers to explore ways to increase the use of Post Consumer Recycled Plastic (PCR) as much as possible without compromising high quality and durability of ASUS products. Since 2017, more than 1,689 tonnes of recycled plastic have been used in our major products, resulting in a cumulative reduction of approximately 11,607 tonnes CO<sub>2</sub>e of carbon emissions.

The ENERGY STAR® Program is the strictest energy efficiency program in the world. Continuously reduce carbon emissions during product use by making our software and hardware more energy efficient. The energy efficiency design of our main products is above the ENERGY STAR® standards. Our external power supplies use the highest energy efficiency level in the market, Level VI, to overcome sales obstacles caused by global energy efficiency laws and create competitiveness in the green product market. ASUS newly launched commercial and consumer laptops in 2022 outperform ENERGY STAR® standards by an average of 34.6%.

### • Supply Chain Carbon Reduction

The supply chain is the main source of greenhouse gas emissions for ASUS. We have analyzed over 100,000 data from environmental footprint surveys over the years and identified key suppliers with emissions exceeding 90%, including makers of panels, motherboards, ICs, wires, power supplies, mechanical components, keyboards, batteries, hard drives, and assembly plants. We also work with them on carbon reduction engagement and communication programs.

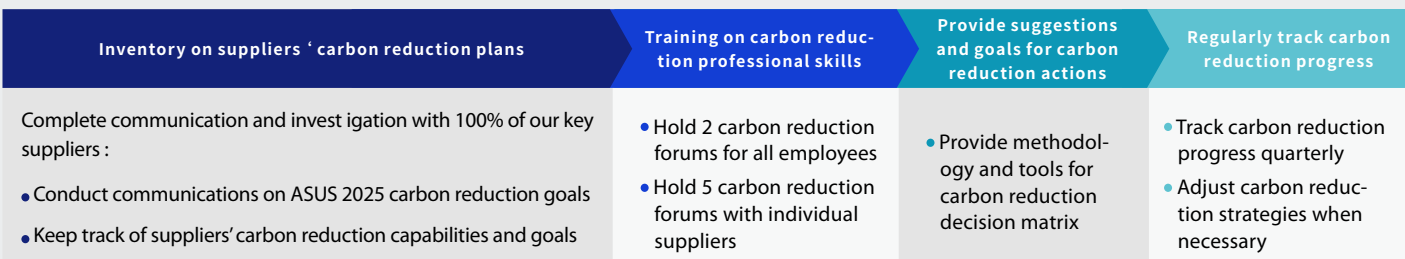
The ASUS Carbon Reduction Engagement and Communication Program aims to encourage our suppliers to continuously expand their use of renewable energy, actively request them to improve energy efficiency, and assist them in setting their greenhouse gas reduction targets and SBT reduction targets. In 2022, the proportion of our suppliers in solar power generation increased by 8% compared to 2021, while the proportion in setting greenhouse gas reduction targets was up by 8% compared to 2021. 33% of our suppliers obtained ISO 14064 third-party verification, while 29% of them obtained ISO 50001 certification.



### ASUS Key Supplier Carbon Reduction Engagement and Counseling Program

To lead our key suppliers to take proactive carbon reduction actions and achieve the sustainable goal of reducing greenhouse gas emissions intensity by 30% by 2025. The Key Supplier Carbon Reduction Engagement and Counseling Program was initiated in 2021. The ASUS Sustainability Team will discuss with our suppliers to develop carbon reduction actions and targets that align with the commercial nature of the supply chain, and conduct quarterly surveys on greenhouse gas emissions data to review the progress of carbon reduction. We also work on this project with the Sustainable Technology Management Research Office of National Taipei University of Technology to regularly share international trends in carbon reduction with our suppliers and assist them in using decision matrix tools to develop their carbon reduction strategies.

#### Engagement and counseling process



#### Key Supplier Carbon Reduction Pathway :

2022 : Map manufacturing processes for key components and identify emission hotspots such as equipment with high energy consumption and processes with high carbon emissions.

2023 : Map carbon reduction paths for key components based on emission hotspots and suppliers' capacity of reducing carbon emissions.

2024-2025 : Work with our suppliers on the project to promote carbon reduction technologies in low-carbon materials, process optimization, equipment energy efficiency improvement, and renewable energy.

## Expand the Use of Renewable Energy

### • Operation Headquarters Have Received the LEED Platinum Certification:

ASUS' carbon emissions came from the use of electricity for office operations. Since 2015, we have built up the ISO 50001 Energy management system to identify hot spots of high energy consumption and improve energy efficiency. Both of our operation headquarters have received the LEED Platinum certification, the top certification for green buildings. We aim to reduce electricity consumption by 1% each year and we have achieved the marginal benefits for improving energy efficiency. The development of renewable energy will become a necessary measure. ASUS signed the memorandum of understanding with renewable energy companies. We map out the short, medium, and long-term renewable energy pathways by analyzing the most appropriate scenarios for using renewable energy in global operations and gradually increase the utilization rate.

### • Case of energy saving transformation – Transformation of heating equipment in Swiss office:

In Europe and America, indoor heating is a necessary household appliance that uses fuel and gas as its main source of energy. This is one of the factors contributing to global warming. In response to ASUS net zero carbon reduction goal, our Swiss office took the lead in replacing high carbon emission fuel heating equipment with electric heating equipment, which is more compact and safer compared to traditional models. ASUS also signed a renewable energy supply contract with a Zurich power Company, EWZ, to ensure that 100% of the electricity source for heating equipment comes from clean energy, and to demonstrate our commitment to net zero carbon reduction.

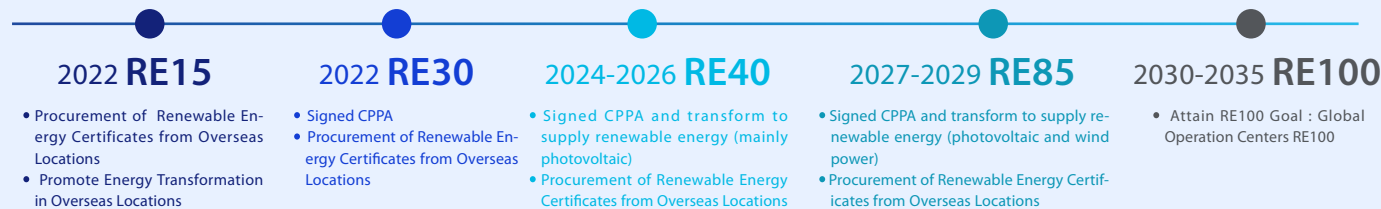
### • Case of accelerating energy transformation – Use of renewable energy in Dutch office:

The Dutch government is promoting innovation in renewable energy by encouraging the power industry to accelerate the development of clean energy sources such as wind, hydropower, and photovoltaics, with the commitment to reduce greenhouse gas emissions by 49% by 2030. To comply with government policies, ASUS is taking energy-saving measures in our Dutch office and signed a renewable energy supply contract with Eneco. Our Dutch office uses 81.5% renewable power sources, which is an increase of 2.1% compared to last year.

### • Pathway of introducing renewable energy:

ASUS adheres to the RE100 organization's recognition of renewable energy by purchasing renewable energy technologies that are beneficial for improving the environment and reducing carbon emissions, such as wind energy, photovoltaic energy, geothermal energy, and hydropower. We are also in line with the renewable energy supply and matching system to achieve our RE100 target. In our strategies of purchasing renewable energy, ASUS will also take into consideration our global presence and the current situation of the renewable energy market before planning a phased renewable energy procurement goal, and working closely with the renewable energy industry. In 2022, ASUS expanded the use of renewable energy to our main overseas operating sites to achieve 50% of our overseas offices using renewable energy, and achieve RE15 for our global operating locations. To keep up with the development trend of renewable energy technology, we will adjust our procurement ratio of renewable energy in a rolling manner and take into consideration the level of commercialization of new renewable energy technology, gradually incorporating it into the ASUS RE100 energy portfolio to balance the company's profit momentum and carbon reduction obligations to move towards RE100.

### Map of the ASUS Global RE100 Path



2022 Achievement
<ul style="list-style-type: none"> <li>50% of our overseas locations used renewable energy and our global operating locations achieved RE15.</li> <li>Established a regular review mechanism for the renewable energy market and compliance policies.</li> <li>Established an optimal procurement plan for wind, solar, and water in accordance with the RE100 definition.</li> <li>Established ASUS Taiwan and Global Operation RE100 Path by 2035.</li> </ul>

## Innovative Technologies

The technologies needed to achieve the net zero goal by 2050 according to the IEA net zero report, except for wind power generation, solar photovoltaic and electric vehicles which are mature commercial technologies, are mostly prototype carbon reduction technologies, which still requires technological breakthroughs and market testing. That is why we are striving to keep up with the technological development trends and innovation feasibility.

In 2022, we used the vertical accelerator platform of ASUS and Taitah Entrepreneurship Center to seek external innovative technologies, such as carbon capture and storage, carbon rights trading platforms, and waste plastic recycling. We have also evaluated the connection with and the need for innovative technologies, and provided a proof of concept (POC) field for new startups. We hope to accelerate the commercialization of forward-looking technologies and contribute to the global net zero target through multiple resource investments. ASUS will choose technologies with high carbon reduction potential and commercial feasibility to actively participate in the international carbon market, so that we can not only achieve our net zero target, but also create momentum for new profits.

## Appendix I: TCFD Index

Core Elements	TCFD Recommended Disclosures	Corresponding chapters in this report	Page
Governance	Describe the board's oversight of climate-related risks and opportunities.	1. Governance	5
	Describe management's role in assessing and managing climate-related risks and opportunities.	1. Governance	5-6
Strategy	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	3.2 Climate risk and opportunity identification 4.1 Strategies for Addressing Climate Issues	12-15 22
	Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	3.3 Sources of Risk and Opportunity and Scenario Simulation Results.	16-21
	Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2° C or lower scenario.	3.2 Climate risk and opportunity identification	12-15
Risk Management	Describe the organization's processes for identifying and assessing climate-related risks.	3.1 Structure of Risk Management 3.2 Climate risk and opportunity identification	12 12-15
	Describe the organization's processes for managing climate-related risks.	3.1 Structure of Risk Management	12
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	3.1 Structure of Risk Management	12
Metrics and Targets	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	3.3 Sources of Risk and Opportunity and Scenario Simulation Results.	16-21
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	2. Greenhouse Gas Inventory 3.2 Climate risk and opportunity identification	8-9 12-15
	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	5. Climate Actions and Goals	5

## Appendix II: Group's GHG Inventory

### SBT: Group's total carbon emissions In 2021

#### Scope 1:

Category	Carbon Emission (tonnes CO <sub>2</sub> e)	Total Carbon Emissions (tonnes CO <sub>2</sub> e)
Direct emissions from stationary combustion	353.47	3,292.21
Direct emissions from mobile combustion	197.95	
Direct fugitive emissions arise from the release of GHGs in anthropogenic systems	2740.79	

#### Scope 2:

Category	Carbon Emission (tonnes CO <sub>2</sub> e)
Electricity Usage (MWh)	91,609.44
Location-based Carbon Emission (tonnes CO <sub>2</sub> e)	54,860.08
Market-based Carbon Emission (tonnes CO <sub>2</sub> e)	54,860.08

#### Scope 3:

Category	Carbon Emission (tonnes CO <sub>2</sub> e)
Purchased Goods and Services	2,430,482.28
Capital Goods	20,758.01
Fuel- and Energy-Related Activities Not Included in Scope 1 or Scope 2	11,801.06
Upstream Transportation and Distribution	88,104.01
Waste Generated in Operations	845.46
Business Travel	4,836.00
Employee Commuting	20,400.00
Upstream Leased Assets	2,089.19
Downstream Transportation and Distribution	20,767.97
Processing of Sold Products	-
Use of Sold Products	2,264,811.26
End-of-Life Treatment of Sold Products	78,491.82
Downstream Leased Assets	2,997.82
Franchises	-
Investments	317,286.55

## SBT: Group's total carbon emissions In 2022

### Scope 1:

Category	Carbon Emission (tonnes CO <sub>2</sub> e)	Total Carbon Emissions (tonnes CO <sub>2</sub> e)
Direct emissions from stationary combustion	368.74	3,631.89
Direct emissions from mobile combustion	461.11	
Direct fugitive emissions arise from the release of GHGs in anthropogenic systems	2802.05	

### Scope 2:

Category	Carbon Emission (tonnes CO <sub>2</sub> e)
Electricity Usage (MWh)	87,768.64
Location-based Carbon Emission (tonnes CO <sub>2</sub> e)	45,859.95
Market-based Carbon Emission (tonnes CO <sub>2</sub> e)	40,297.83

### Scope 3:

Category	Carbon Emission (tonnes CO <sub>2</sub> e)
Purchased Goods and Services	2,915,901.21
Capital Goods	11,797.27
Fuel- and Energy-Related Activities Not Included in Scope 1 or Scope 2	10,534.56
Upstream Transportation and Distribution	67,850.35
Waste Generated in Operations	742.76
Business Travel	2,047.11
Employee Commuting	16,163.11
Upstream Leased Assets	2,089.19
Downstream Transportation and Distribution	62,847.01
Processing of Sold Products	-
Use of Sold Products	1,974,040.79
End-of-Life Treatment of Sold Products	16,388.83
Downstream Leased Assets	2,997.81
Franchises	-
Investments	399,773.62



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