06 Climate Action

The 27th Conferences of the Parties of the United Nations Framework Convention on Climate Change (COP27, UNFCCC) in 2022 emphasized the need for countries around the world to accelerate carbon reduction actions and curb warming by 1.5°C. 2022 extreme weather events have ravaged the world. This is an indication that the climate crisis has become an "ongoing trend". In addition to actively reducing emissions, the world should also enhance its resilience to cope with the climate crisis. ASUS supports the goals of the Paris Agreement together with the targets and solutions drafted through scientific means. In addition to contributing to the environment and to society through innovation, we have integrated climate action into our operations policies by creating corresponding strategies set against major climate risks and opportunities. We use qualitative and quantitative methods to track progress.

Actions

Science-Based Targets(SBT)

Commit to meet SBT (science-based targets)

RE100 Pathway for Global Operations

Map RE100 Pathway for ASUS Taiwan operations locations by 2030 and global operations locations by 2035

Carbon Reduction Projects for Key Suppliers

Conduct carbon reduction projects for key suppliers

Performance

34.6%

Average energy efficiency of key products exceeded ENERGY STAR® by 34.6%

RE15

50% of our overseas locations used renewable energy and our global operating locations achieved RE15

Reduced Emission Intensity by 30%

Key suppliers have reduced emission intensity by approximately 30% compared to last year

IFRS Sustainability Disclosure Standards : Core Content

Governance

Sustainability and Green Quality Management Center :

Analyze current global sustainability trend and promote climate action projects, and report the progress and performances of the projects quarterly to the Board of Directors

Business Continuity Management Committee :

As one of the Task Units of the Operations Sustainability Management Committee, the Sustainable Development Unit quarterly reports climate change related risk management indicators

GreenASUS and SERASUS Committee :

Responsible for horizontal cross departmental coordination and cooperation to implement sustainability strategies and climate action issues in products, operations, and value chain management

* For the corporate sustainable management organization chart, please refer to CH01 Sustainability Management

Strategy

As the threat of climate change intensifies, "net zero emissions by 2050" has become a consensus in global climate actions. Nearly 140 countries across the world that produce 88% of global carbon emissions have promised to achieve net zero emissions by 2050. From here, we can see that the world is moving towards net zero emissions. ASUS has set science-based targets (SBT) for carbon emission reduction and initiated its climate actions in three stages: enhancing energy efficiency, expanding the utilization of renewable energy, and reducing emissions by means of innovative technologies to lead the value chain to net zero.

Risk Management

Risk Identification	Risk Control / Mitigation	Risk Monitoring / Reporting
• Evaluate major climate events with a risk matrix to identify the frequency and impact of risk events • Identify the financial implications of prioritized physical and transition risks	• Incorporating climate risk as a key issue in continuous management • Develop response strategies and monitoring mechanisms for climate risks	• Continuous monitoring and management of climate risks through the Business Continuity Management (BCM) committee, combined with operational practices to demonstrate organizational resilience

Risk and Opportunity Issues

Transformation risks :
- Carbon tax will increase operating costs
- Simulation of Carbon Border Adjustment Mechanism (CBAM)
- Efficient product improvement and customer behavior change

Physical risks :
- Extreme weather events - assembly plant's shutdown due to power outage
- Extreme weather events- land transportation disruption

Risk adaptation opportunities :
- Increase revenue from green products
- ASUS Carbon Partner Services

* For an explanation of risks and opportunities and financial impact assessment, please refer to Page 6-6 to 6-9 of this chapter

Metrics and Targets

Sustainability Goals

- Ensure that each year's key products demonstrate energyefficiency exceedthe ENERGY STAR® standard by 30%
- Ensure that key suppliers achieve a 30% reduction in carbon intensity by 2025
- Reduce 50% of carbon emissions from ASUS global operations location by 2030
- Use 100% renewable energy using rate in Taiwan-based operations location by 2030; and in global operations location by 2035

Please refer to CH04 2025 Sustainability Goals for the target progress.

In order for investors and stakeholders to understand our corresponding actions, we adopted the TCFD (Task Force on Climate-related Financial Disclosures) issued by FSB (Financial Stability Board) to disclose governance, strategy, risk management and metrics and targets to address climate change.

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

ASUS's TCFD Report

Climate Initiative

SBTi	RE100	Taiwan Climate Partnership
ASUS has committed to meet SBTi's scientific reduction goals and follow a reduction path of 1.5 ° C towards net zero. SBTi is a third-party certified scientific method based on the global carbon budget scenario of limiting global warming to 1.5℃. It is a method that businesses can use to develop their carbon reduction targets.	In 2021, ASUS joined RE100 and jointly announced the goal of 100% use of renewable energy with over 400 companies worldwide. ASUS has promised to use 100% renewable energy in its opeartions locations in Taiwan by 2030 and to do the same in its global operations locations by 2035.	ASUS is a founding member of the Taiwan Climate Partnership with a comittment to lead its supply chain to improve energy efficiency and promote low-carbon manufacturing to achieve carbon reduction goals. The Taiwan Climate Partnership was jointly initiated and established by eight major technology companies, with the aim of leveraging the power of partners within the alliance to assist the industy to make net zero transition.

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, demonstrating that the world is moving towards net zero emissions. ASUS set science-based targets (SBT) for carbon emission reduction and initiated our climate actions in three stages: enhance energy efficiency, expand the use of renewable energy, and remove residual emissions by innovative technology, to lead the value chain to net zero.

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

Greenhouse Gas Inventory

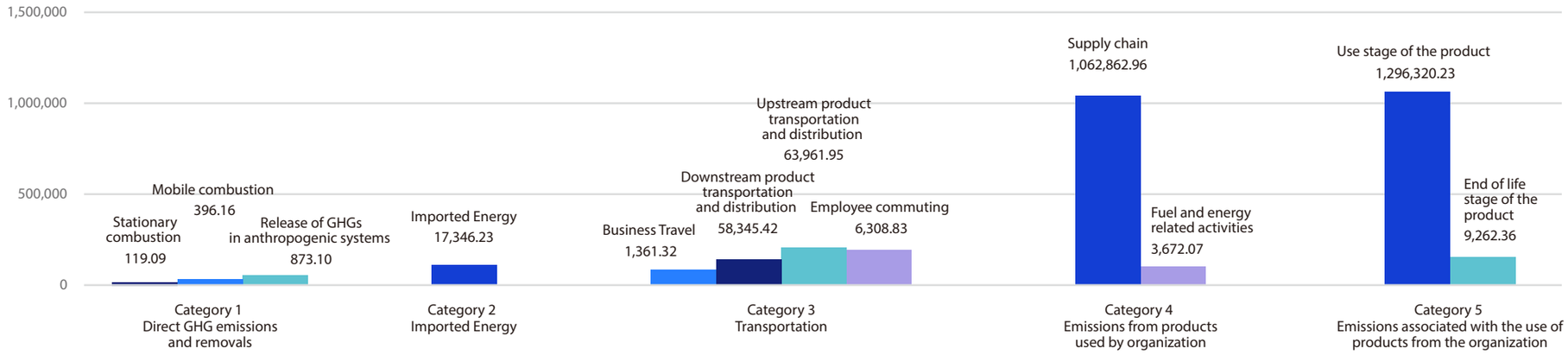
Materiality Identification

Since 2007, ASUS has begun to conduct annual greenhouse gas inventory and complete third-party verification in accordance with ISO 14064-1:2018. 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 2023. To identify operational materiality indicators, ASUS adopts the indicators recommended by the GHG Protocol[1] to 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, the operational material emissions at ASUS in 2022 are direct GHG emissions (Category 1), indirect GHG emissions from imported energy (Category 2), emissions from upstream transportation and distribution for goods, emissions from downstream product transportation and distribution for goods, emissions from employee commuting includes emissions and emissions from business travels (Category 3), emissions from raw material procurement (supply chain), fuel and energy related activities (Category 4), emissions from the use stage of the product and emissions from end of life stage of the product (Category 5). 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[2] were 2,520,829.72 tonnes CO2e tonnes, with an emission intensity of 1.39 tonnes CO2e / Million USD.

Greenhouse Gas Emissions

Unit: tonnes CO2e



[1] The indicators recommended by the GHG Protocol include emission size, carbon reduction potential, operational risk, stakeholders, outsourcing, sector guidance, and others.

[2] 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.

Category 1 : Direct GHG emissions and removals

The direct emission source of ASUS is the emissions generated by the use of fuel for fire-fighting equipment, backup generators, and company cars.

Category	Type of Energy	Activity Data	Carbon Emission (tonnes CO2e)	Total Carbon Emission (tonnes CO2e)
Direct emissions from stationary combustion	(Emergency generator) Diesel	2,186.28 L	5.85	1,388.35
	(Boiler) Natural gas	16,121 M^3	34.82	
	(Heating) Natural gas	37,395.69 M^3	78.42	
Direct emissions from mobile combustion	(Office vehicle) Diesel	105,340.22 L	278.75	
	(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	

Category 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 CO2e)	14,645.30	4,282.87	2,052.48	20,980.65
Market-based Carbon Emission (tonnes CO2e)	14,645.30	862.87	1,838.06	17,346.23

Category 3 : Indirect GHG emissions from transportation

- **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 CO2e
- **Emissions from downstream product transportation and distribution[3] :**
  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 58,345.42 tonnes CO2e
- **Emissions from employee commuting includes emissions :**
  In 2022, the carbon emissions generated by commuting of employees at ASUS Taiwan were 6,308.83 tonnes CO2e
- **Business travels :**
  In 2022[4], the total carbon emissions from business travels[5] of employees at ASUS Taiwan were 1,361.32 tonnes CO2e

Category 4 : Indirect GHG emissions from products used by organization

- **Supply chain (Purchased goods and services) :**
  The total carbon emissions from our key suppliers are 1,062,862.96 tonnes CO2e with emissions intensity of 88.34 tonnes CO2e/ Million USD which is about 30% lower than last year's emission intensity
- **Fuel and energy related activities :**
  The total carbon emissions from upstream fuel and electricity procurement are 3,672.07 tonnes CO2e

Category 5 : Indirect GHG emissions associated with the use of products from the organization

- **Emissions from the use stage of the product :**
  ASUS has expanded its recognition of carbon emissions during the usage stage, with a total carbon emissions of 1,296,320.23 tonnes CO2e and an emission intensity of 97.03 tonnes CO2e / Million USD (a one-year emission intensity of 23.83 tonnes CO2e / 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

[3] Domestic business travel and foreign business travel on land are not included in the calculation due to low significance on results.
[4] Key suppliers are makers of ICs, PCBs, mechanical components, cables, panels, HDDs, adapters, batteries, keyboards or assembly plants.
[5] ASUS calculates its carbon emissions by evaluating the weight and distance of the transported products based on the emission coefficient of each transportation method from Well to Wheel.

Risk Management

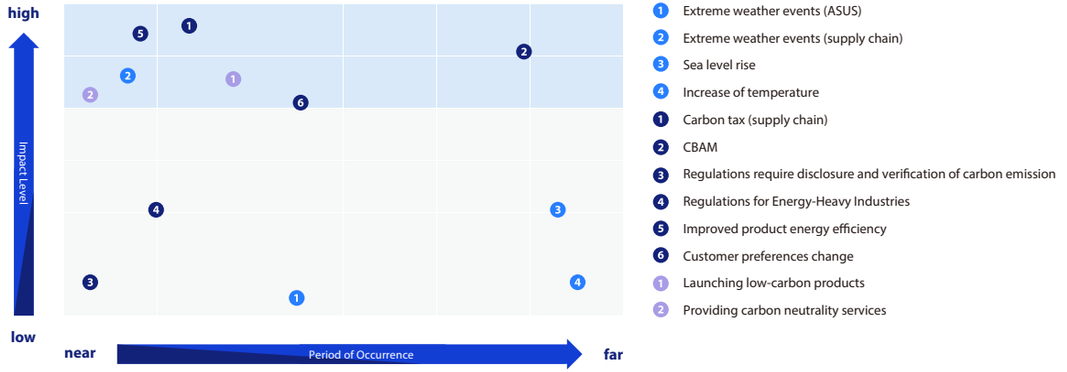
The World Meteorological Organization (WMO)[6] stated that "continuing climate change, an increasing occurrence and intensification of extreme events, and severe losses and damage, affect economy, society, and the environment. On the other hand, after the Paris Agreement came into effect, the world has accelerated its pace towards a low-carbon economy with a common goal of limiting earth's warming to 2 ℃ above the pre-industrial levels by the end of the century, and striving not to exceed 1.5 ℃ . 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.

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. ASUS identifies and measures risks and opportunities from climate change, with physical risks that include extreme weather events (supply chain), transformation risks that include carbon tax (supply chain), CBAM, Improved product energy efficiency, and customer preferences change, and opportunities that include launching low-carbon products and providing carbon neutrality services.

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 compliant BAU scenario and the net zero emission scenario as the compliant 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.



Risk

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.	Compliant 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.	Compliant NZE Scenario
Voluntary	SBTi reduction commitment	Meet the 2030 Near Term and 2050 Long Term reduction targets defined by SBT	ASUS SBT scenario

[6] https://public.wmo.int/en/media/press-release/climate-change-indicators-and-impacts-worsened-2020

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[7]. 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)[8] Scenario from AR5 to evaluate future climate trends[9].

Scenario SSPx-y[10]	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

[7] 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/

[8] 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

[9] 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

[10] 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

Risk and opportunity sources 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. Most of the suppliers in ASUS supply chain are in China. If we impose carbon tax on our suppliers, the carbon tax costs will be passed on to us, so that our product production costs will increase.
- 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

Based on the SBT carbon reduction scenario, ASUS estimates the present discounted value of carbon tax costs generated by supply chain carbon emissions in 2030 will account for about 0.06%~0.08% of our combined revenue in 2022. The discounted value in the BAU compliant scenario and the NZE compliant scenario will be 50% and 26% less respectively.

- **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

Based on the SBT carbon reduction scenario, Asus estimates the present discounted value of carbon tax costs generated by CBAM in 2027 will account for about 4.5%of our laptop products revenue in 2022. The discounted value in the BAU compliant scenario and the NZE compliant scenario will be 30% and 7% less respectively.

- **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.

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

Background and Assumptions of Risk Sources

- 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 finanical 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**

Background and Assumptions of Risk Sources

- 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**

ASUS continues to meet customer expectations for green products and meet green procurement specifications by improving product energy efficiency and using low-carbon materials to reduce product carbon footprint and increase ASUS green product revenue. We estimate that green product revenue in 2030 will achieve for 50% of our green product revenue.

- **Risk adaptation opportunities - by providing carbon neutrality services**

ASUS provides carbon neutrality services to assist our customers in purchasing carbon credit to offset their greenhouse gas emissions, and to increase our green service revenue. It is estimated that our carbon neutrality revenue in 2030 will account for 0.02-0.15% of our 2022 green product revenue.

Actions Taken

Increase 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.

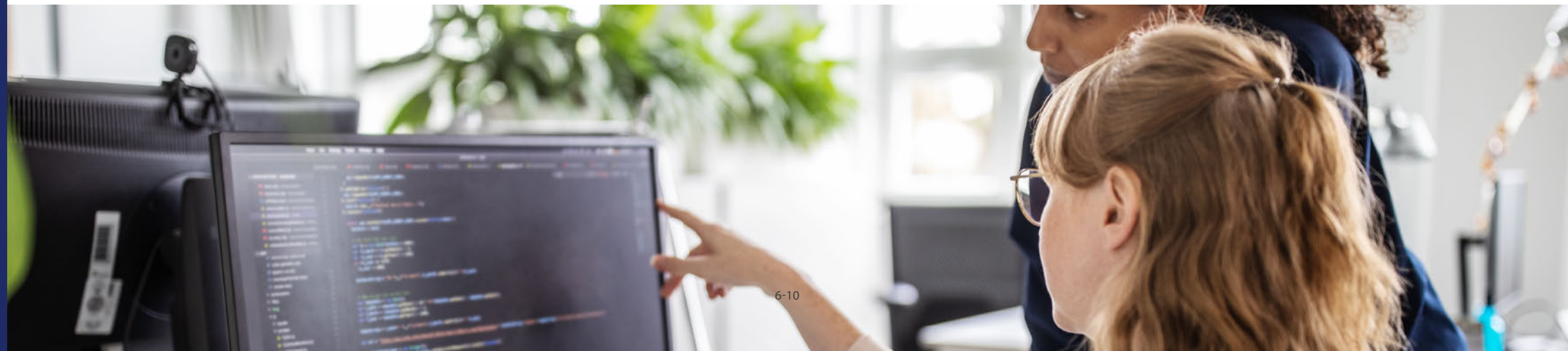
The amount of plastic used in ASUS products accounts for over 30% of the overall weight of the mainstream products, making it the most commonly used material. Therefore, we work with our major raw material suppliers to explore ways to increase the use of Post Consumer Recycled Plastic (PCR) as much as 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 of CO_2e 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 ISO14064 third-party verification, while 29% of them obtained ISO50001 certification.



Case Study

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

Inventory on suppliers' carbon reduction plans	Training on carbon reduction professional skills	Provide suggestions and goals for carbon reduction actions	Regularly track carbon reduction progress
Complete communication and investigation with 100% of our key suppliers : • Conduct communications on ASUS 2025 carbon reduction goals • Keep track of suppliers' carbon reduction capabilities and goals	• Hold 2 carbon reduction forums for all employees • Hold5 carbon reduction forums with individual suppliers	• Provide methodology and tools for carbon reduction decision matrix	• Track carbon reduction progress quarterly • Adjust carbon reduction strategies when necessary

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.

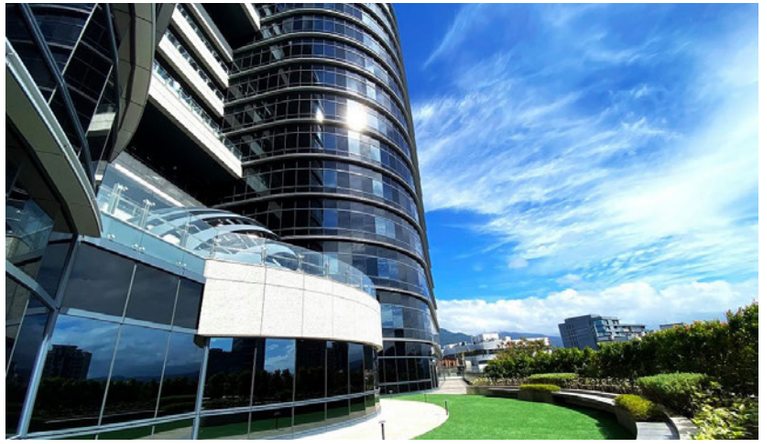
2023 : Map carbon reduction paths for key components based on emission hotspots and suppliers' capacity of reducing carbon emissions.

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.

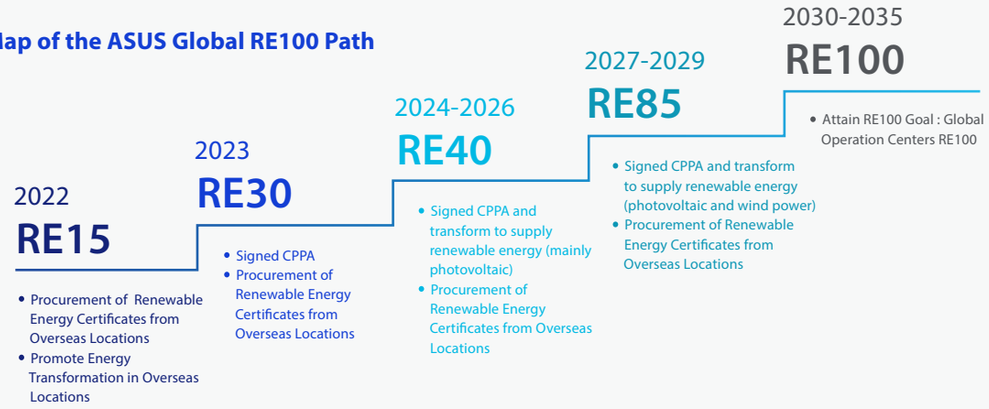


Case of energy saving transformation — Transformation of heating equipment in Swiss office : In Europe and America, indoor heating is a necessary household appliance that uses fuel and gas as its main source of energy. This is one of the factors contributing to global warming. In response to ASUS net 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 comittiment 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

- 50% of our overseas locations used renewable energy and our global operating locations achieved RE15.
- Established a regular review mechanism for the renewable energy market and compliance policies.
- Established an optimal procurement plan for wind, solar, and water in accordance with the RE100 definition.
- Established ASUS Taiwan and Global Operation RE100 Path by 2035.

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.