Supply Change

Climate commitments and renewable energy progress by consumer electronics brands and their top suppliers

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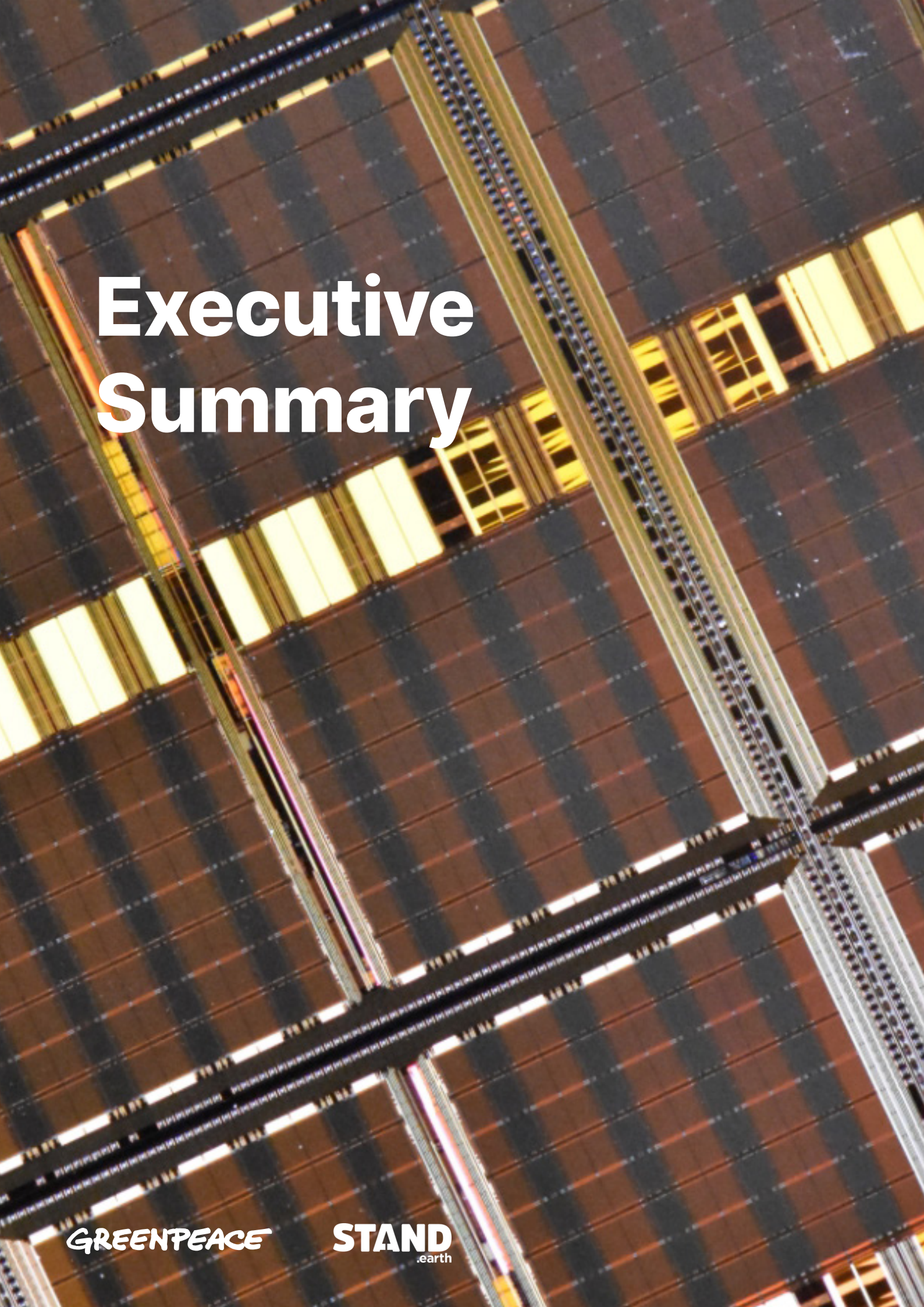

Executive Summary

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Introduction

The technology sector is growing fast, and the industry's electricity consumption continues to rise. Electricity use from the global tech sector is projected to grow by more than 60% between 2020 and 2030.[1] Because the sector relies heavily on fossil fuels, rising electricity consumption has been accompanied by an increase in carbon emissions.

In some respects, consumer electronics brands have been at the forefront of corporate climate efforts. Industry leaders including Apple, Microsoft and Google were among the first global brands to commit to 100% renewable energy and have demonstrated that it's possible to achieve 100% renewable energy using high impact strategies that can displace fossil fuels.

While some consumer electronics brands have made significant progress transitioning their offices and data centers to 100% renewable energy, this ambition has not carried over to their supply chains. To date, no major consumer electronics company has achieved 100% renewable energy across its supply chain. Instead, the world's biggest consumer electronics brands continue to sign contracts with suppliers that have extremely low renewable energy usage rates. As a whole, the consumer electronics brands evaluated in this report have not provided sufficient incentives or support for their suppliers to decarbonise. These electronics brands have also demonstrated a low level of transparency around their supply chain emissions.

The climate impact of the consumer electronics supply chain is massive. Consumer electronics suppliers, including semiconductor manufacturers, display manufacturers and final assemblers, account for more than three-quarters of the electronics industry's total emissions.[2] All electronics suppliers studied in this report were found to rely heavily on fossil fuels. The median reported renewable electricity usage rate for the 14 suppliers was a mere 5%, compared to 30% renewable electricity generated globally.[3]

This report tracks decarbonisation efforts by 10 of the world's top consumer electronics brands and 14 of their biggest suppliers. In 2021, the combined electricity consumption of all companies exceeded 170,000 GWh, more than Argentina's annual electricity consumption.[4] To limit global heating to 1.5 °C above pre-industrial levels, the latest UNEP Emission Gap Report recommends a 55% emissions reduction by 2030.[5]

Renewable energy use plays a critical role in decarbonizing the power sector. All consumer electronics brands, including their suppliers, must achieve 100% renewable energy by 2030. A rapid shift to renewable energy within the tech industry has the potential to catalyze corporate climate efforts across all sectors and accelerate the global net zero transition.

1 Andrae, A. S. G. (2020). New perspectives on internet electricity use in 2030. *Engineer. Appl. Sci. Lett.* 3. 19-31

2 World Economic Forum & Boston Consulting Group (2021). Net-Zero Challenge: The supply chain opportunity. Retrieved September 20, 2022, from https://www.weforum.org/reports/net-zero-challenge-the-supply-chain-opportunity/

3 IEA (2022) Global Energy Review 2021, from https://www.iea.org/reports/global-energy-review-2021

4 IEA. (2022). Electricity Information. Retrieved September 20, 2022, from https://www.iea.org/countries/argentina

5 UNEP. (2021). Updated climate commitments ahead of COP26 summit fall far short, but net-zero pledges provide hope. Retrieved September 21, 2022, from https://www.unep.org/news-and-stories/press-release/updated-climate-commitments-ahead-cop26-summit-fall-far-short-net

Key Findings

Consumer Electronics Brands

Leading consumer electronics brands, such as Amazon, Microsoft, Google and Sony, continue to rely heavily on fossil fuels across their supply chains, despite having set ambitious renewable energy and climate targets for their own operations.

Seven out of ten ranked consumer electronics brands have committed to achieve 100% renewable energy across their own operations by 2030, and three (Apple, Google and Microsoft) have already achieved this goal. However, of the ten consumer electronics companies, only Apple has reported significant progress on supply chain decarbonisation. The median reported renewable energy usage rate for the electronics suppliers studied in this report is 5%.

Amazon, Microsoft, Google, HP and Sony have set climate targets that include their supply chains, but have not designed pathways to achieve them.

Six ranked companies – Apple, Amazon, Microsoft, Google, HP and Sony – have set an emission reduction target that includes their supply chain. However, only Apple has designed a supply chain emission reduction pathway by requiring its suppliers to achieve 100% renewable energy by 2030. Amazon, Microsoft, Google, Sony and HP share a number of suppliers with Apple but have not set renewable energy requirements for their supply chains, which has resulted in an uncertain pathway for these companies to meet their climate commitments.

Amazon and Microsoft both pledged to reduce their emissions, including their supply chain, by 2040 and 2030, respectively. In 2021, Amazon and Microsoft's supply chain emissions increased by 21% and 23%, respectively.[6,7]

Samsung Electronics received the lowest score in the consumer electronics brand ranking, an F, despite the company's recent commitment to 100% renewable energy.

On September 15, 2022, Samsung Electronics committed to achieve 100% renewable energy across its global operations by 2050.[8] However, Samsung's 2050 deadline is two decades later than most other ranked companies. Seven of the ten ranked consumer electronics brands have targeted 100% renewable energy by or before 2030, and one by 2040 (Dell). Samsung's pursuit of its 100% renewable energy goal in the US, EU, and China relies heavily on low-impact renewable electricity credits, a strategy that has been largely abandoned by most global consumer electronics brands. Samsung's 2050 target does not include its supply chain.

No consumer electronics brand, including Apple, disclosed sufficient data about its supply chain renewable energy use.

On average, 77% of technology manufacturing emissions are generated from the supply chain.[9] However, of the consumer electronics brands included in the ranking, only HP disclosed energy consumption data for its supply chain. None of the brands disclosed detailed sourcing or regional data. Apple, which received the highest score in the ranking, has disclosed only limited renewable energy data related to its supply chain.

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6 Judge, P. (2022). Data Center Dynamic pushlished online on August 02, 2022: 'Amazon's carbon emissions went up by 18% again, says it will still hit zero carbon by 2040'. Retrived from October 05, 2022, from https://www.datacenterdynamics.com/en/news/amazons-carbon-emissions-went-up-by-18-again-says-it-will-still-hit-zero-carbon-by-2040/

7 Smith, B. & Joppa, L. (2022). Official Microsoft blog published online March 10, 2022: 'An update on Microsoft's sustainability commitments: Building a foundation for 2030'. Retrieved September 14, 2022, from https://blogs.microsoft.com/blog/2022/03/10/an-update-on-microsofts-sustainability-commitments-building-a-foundation-for-2030/

8 Kim, T. (2022). The Washington Post published online on September 15, 2022: Samsung sets goal to attain 100% clean energy by 2050. Retrieved September 14, 2022, from https://www.washingtonpost.com/business/samsung-sets-goal-to-attain-100percent-clean-energy-by-2050/2022/09/14/d1e84be8-34a2-11ed-a0d6-415299bfebd5_story.html

9 World Economic Forum & Boston Consulting Group (2021). Net-Zero Challenge: The supply chain opportunity. Retrieved September 20, 2022, from https://www.weforum.org/reports/net-zero-challenge-the-supply-chain-opportunity/

Apple and Google are the only consumer electronics brands that have reported financial support for suppliers to increase their usage of renewable energy.

Eight out of 10 consumer electronics brands have not set aside specific financial support for their suppliers to increase renewable energy use. Sony and Dell have both set emissions reduction targets for their supply chain but have not set aside any financial support for suppliers to achieve these targets. Microsoft and Amazon have created substantial climate funds, but they are not dedicated to supply chain renewable energy procurement.

Electronics Suppliers

TSMC, Samsung Electronics and SK Hynix have set 100% renewable energy targets, but the timeline is not in line with industry standards.

Leading semiconductor manufacturers TSMC, Samsung Electronics and SK Hynix have targeted to transition to 100% renewable energy by 2050, more than two decades later than the average commitment year for RE100 companies (2028).[10] Two other semiconductor companies, Intel and Kioxia, have committed to achieve 100% renewable energy by 2030 and 2040, respectively. The remaining eight suppliers have not issued 100% renewable energy commitments.

The median reported renewable energy usage rate for the 14 electronics suppliers is 5%.

In 2021, TSMC and SK Hynix, which manufacture components for Apple and Microsoft, reported renewable energy usage rates across their own operations of 9.2% and 4.1%, respectively. By contrast, Apple and Microsoft have achieved 100% renewable energy across their own operations, highlighting the discrepancy between major tech brands' operations and their supply chains.

Since 2019, emissions from four of the world's biggest semiconductor manufacturers have increased.

Since 2019, emissions have increased from Samsung Electronics (26.1%), TSMC (17.5%), Intel (13.5%), and SK Hynix (11.7%), four of the world's top semiconductor manufacturers by revenue.

SK Hynix received the lowest score among semiconductor manufacturers.

In 2021, SK Hynix's electricity usage in South Korea was equivalent to that of 1.6 million South Korean households, and the company joined RE100 in 2020. Yet SK Hynix's renewable energy ratio remains at 4.1%.

Five of the 14 suppliers have not issued any climate or renewable energy pledges.

LG Display, BOE, Pegatron[11], Goertek and Japan Display have not set any carbon neutrality, net zero targets or renewable energy targets. Of the nine suppliers that have set targets, only Intel and Hon Hai included their supply chains.

10 RE100. (n.d.). Technical guidance. Retrieved September 20, 2022, from https://www.there100.org/technical-guidance

11 Pegatron joined SBTi in 2022. However, the company has not issued any pathway and timeline yet.

Ranking

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Ranking

Consumer Electronics Brands

The total grade is based on progress towards reducing emissions and increasing renewable energy use across brands' own operations as well as their supply chains.

Company	Total Grade
Apple	B
Google	C-
Microsoft	C-
HP	C-
Amazon	D-
Dell	F
Lenovo	F
Sony	F
LG Electronics	F
Samsung Electronics*	F

* Samsung was evaluated as a global consumer electronics brand and a key supplier of semiconductors.[12] For an overview of the evaluation criteria for each category see appendix.

12 Samsung. (2022). Samsung Electronics Announces Fourth Quarter and FY 2021 Results. Retrieved September 21, 2022, from https://news.samsung.com/global/samsung-electronics-announces-fourth-quarter-and-fy-2021-results

Electronics suppliers

	Company	Total Grade
Semiconductor	Intel	C+
	TSMC	C-
	Samsung Electronics	D+
	Kioxia	D
	SK Hynix	D
Display Manufacturing	Samsung Display	D+
	LG Display	D
	Sharp	D
	BOE	F
	Japan Display	F
Final Assembly	Hon Hai	D+
	Luxshare Precision	D+
	Pegatron	D-
	Goertek	F

Problem Overview

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On the surface, consumer electronics brands have been at the forefront of corporate climate efforts. Brands including Apple, Microsoft and Google were among the first to commit to 100% renewable energy across their own operations and issue climate pledges. However, the majority of consumer electronics brands have not included supply chain emissions in their climate pledges.

East Asia has played a pivotal role in the electronics industry due to its advanced technology, geographical resources for factories, and market maturity. The electronics manufacturing industry in the region carries out some of the most significant parts and manufacturing processes for global electronics brands, from semiconductors, to display manufacturing to final assembly. The total export value of electronics components from East Asia ranked first in the world in 2021, at 286.24 billion USD.[13]

The consumer electronics sector in East Asia has grown rapidly and has resulted in a sharp emissions increase. Despite the ambitious climate targets in the region, the majority of electricity in East Asia is generated from fossil fuels,[14] and electronics brands' supply chains constitute a significant source of greenhouse gas emissions.

Emissions reductions and decarbonisation has become a key operational strategy for electronics suppliers, which face pressure from consumer-focused electronics brands to decarbonise. Companies such as Apple have made pledges to manufacture their products with 100% renewable energy by 2030. Promises such as this have added pressure on supply chains to actively source renewable energy to meet client demands.

Renewable energy potential

Renewable energy technology is advancing rapidly. Wind and solar reached 10% of global electricity generation in 2021.[15] Growth in renewables capacity is expected to account for almost 95% of the increase in global power capacity through 2026.[16] In East Asia, 2030 is perceived as a significant benchmark for the energy transition. In China mainland, solar and wind installed capacity is expected to reach 1.2 billion kW by 2030.[17] In Japan, the government has pledged that 36%-38% of energy will come from renewables by 2030.[18] South Korea has targeted 21.5% renewable energy by 2030.[19] In Taiwan, total installed solar and wind capacity is expected to reach 40 GW by 2030.[20]

To keep global warming to 1.5 °C above pre-industrial levels, emissions must peak by 2025, according to IPCC,[21] and the global power sector needs to transition to 100% renewable energy by 2040 with at least 60% from solar and wind, according to the International Energy Agency (IEA).[22] This means that governments and corporations must take the lead to introduce renewable energy-friendly policies and 100% renewable energy goals, including across their supply chains, especially in East Asia.

13 Brodzicki, T. (2021). The role of East and Southeast Asia in the Global Value Chain in Electronics. Retrieved September 14, 2022, from https://ihsmarkit.com/research-analysis/the-role-of-east-and-southeast-asia-in-the-global-value-chain-.html Data Source: IHS MarkitGTAS ForecastingAnalytics Dashboard.

14 Greenpeace International (2014). GreenGadgets: Designing the Future. Retrieved September 20, 2022, from https://www.greenpeace.org/international/publication/7503/green-gadgets-designing-the-future/

15 Jones, D. (2022). Ember: Global Electricity Review 2022. Retrieved September 14, 2022, from https://ember-climate.org/insights/research/global-electricity-review-2022/

16 IEA. (2021). International Energy Agency. Renewables 2021: Analysis and forecast to 2026. Retrieved September 20, 2022, from https://iea.blob.core.windows.net/assets/5ae32253-7409-4f9a-a91d-1493ffb9777a/Renewables2021-Analysisandforecastto2026.pdf

17 National Development and Reform Commission People's Republic of China. (2022). Relevant responsible comrades of the National Development and Reform Commission and the National Energy Administration answered questions from reporters on the "14th Five-Year Plan for Renewable Energy Development". Retrieved September 14, 2022, from http://www.nea.gov.cn/2022-06/01/c_1310611147.htm (original in Chinese)

18 International Trade Administration United States Department of Commerce. (2022). Japan – Country Commercial Guide. Retrieved September 19, 2022, from https://www.trade.gov/country-commercial-guides/japan-renewable-energy

19 Ministry of Trade, Industry and Energy Republic of Korea.. (2022). Public Subcommittee Working Plan for 「10th Basic Plan for Electricity Supply and Demand」. Retrieved September 19, 2022, from http://www.motie.go.kr/motie/ne/presse/press2/bbs/bbsView.do?bbs_seq_n=165956&bbs_cd_n=81&currentPage=91&search_key_n=title_v&cate_n=&dept_v=&search_val_v= (original in Korean)

20 Wang, C. (2022). Bloomberg News published online on March 30, 2022: Taiwan Vows $32 Billion Clean Energy Spree as It Lags on Targets. Retrieved September 19, 2022, from https://www.bloomberg.com/news/articles/2022-03-30/taiwan-vows-32-billion-clean-energy-spree-as-it-lags-on-targets#:~:text=The%20government%20plans%20to%20stop,2040%2C%20the%20government%20report%20said.

21 IPCC. (2018). Headline Statements from Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. Retrieved September 23, 2022, from https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Headline-statements.pdf

22 IEA. (2021). International Energy Agency. Net Zero by 2050 – A Roadmap for the Global Energy Sector. Retrieved September 20, 2022, from https://www.iea.org/reports/net-zero-by-2050

Not all renewable energy is equal

Not all renewable energy sourcing methods are equally impactful. Four types of sourcing methods are typically available: onsite generation; renewable energy investment; Power Purchase Agreements (PPAs); and Renewable Energy Certificates (RECs).

Three primary factors must be considered to achieve high-impactful sourcing: trackability, local procurement, and additionality. Trackability means that sourcing methods have clear ownership and power consumption of the environmental attributes of renewable energy, and avoid double counting. Local procurement means that methods promote local consumption of renewable energy and help local grids to decarbonize. Additionality means that options can contribute to increasing new renewable energy installed capacity.

Companies are encouraged to source renewable energy primarily through high-impactful sourcing, including onsite generation, PPAs and renewable energy investment. In some markets, such as China, South Korea and Japan, RECs can be used as a back-up option because RECs contribute to the renewable energy development in these markets.

Company Performance

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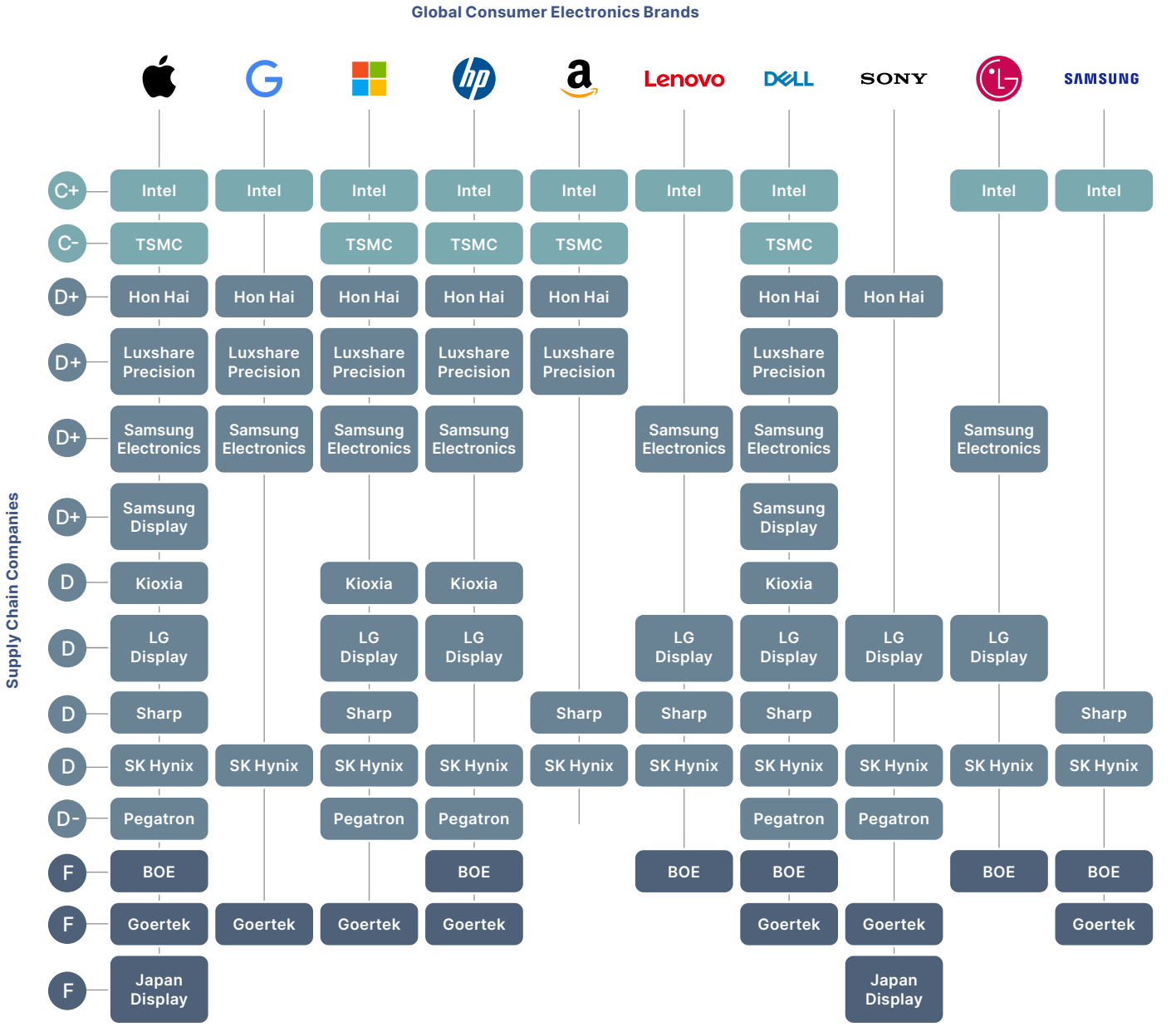
Connecting Brands and Suppliers

Several consumer electronics brands have achieved 100% renewable energy use across their own operations, but have yet to include their suppliers in their climate commitments. However, on average 77% of technology manufacturing emissions are generated from supply chains.[23] As the majority of supply chain emissions are produced by electricity consumption, adopting renewable energy is the key to decarbonisation.

Figure 1. shows how all of the consumer electronics brands assessed have ties to low-performing supplier companies, despite strong commitments to reduce their emissions.

Figure 1. The relationship between consumer electronics brands and key suppliers



Source: Bloomberg L.P. (2022) Supply Chain Analysis

23 World Economic Forum & Boston Consulting Group (2021). Net-Zero Challenge: The supply chain opportunity. Retrieved September 20, 2022, from https://www.weforum.org/reports/net-zero-challenge-the-supply-chain-opportunity/

Ranked consumer electronics brands are outsourcing their emissions to key suppliers. Seven out of ten ranked consumer electronics brands have committed to achieve 100% renewable energy across their own operations by 2030. Three companies, Apple, Google and Microsoft, have already achieved 100% renewable energy in their own operations. However, these three tech giants continue to work with manufacturing companies whose renewable energy ratio remains below 25%, including Samsung Electronics, TSMC, SK Hynix, Luxshare Precision, LG Display and Kioxia.

Most ranked consumer electronics brands have not set renewable energy requirements for their supply chain, which creates major challenges for decarbonising the supply chain. Six ranked companies – Apple, Amazon, Microsoft, Google, HP and Sony – have set an emission reduction target that includes their supply chain. However, only Apple has designed a supply chain emission reduction pathway by requiring its suppliers to achieve 100% renewable energy by 2030. Amazon, Microsoft, Google, Sony and HP have not set renewable energy requirements for their suppliers, which has resulted in an uncertain pathway for these companies to meet their climate commitments.

Figure 2. Renewable energy ratio from ranked suppliers' latest disclosure (refer to scorecard)

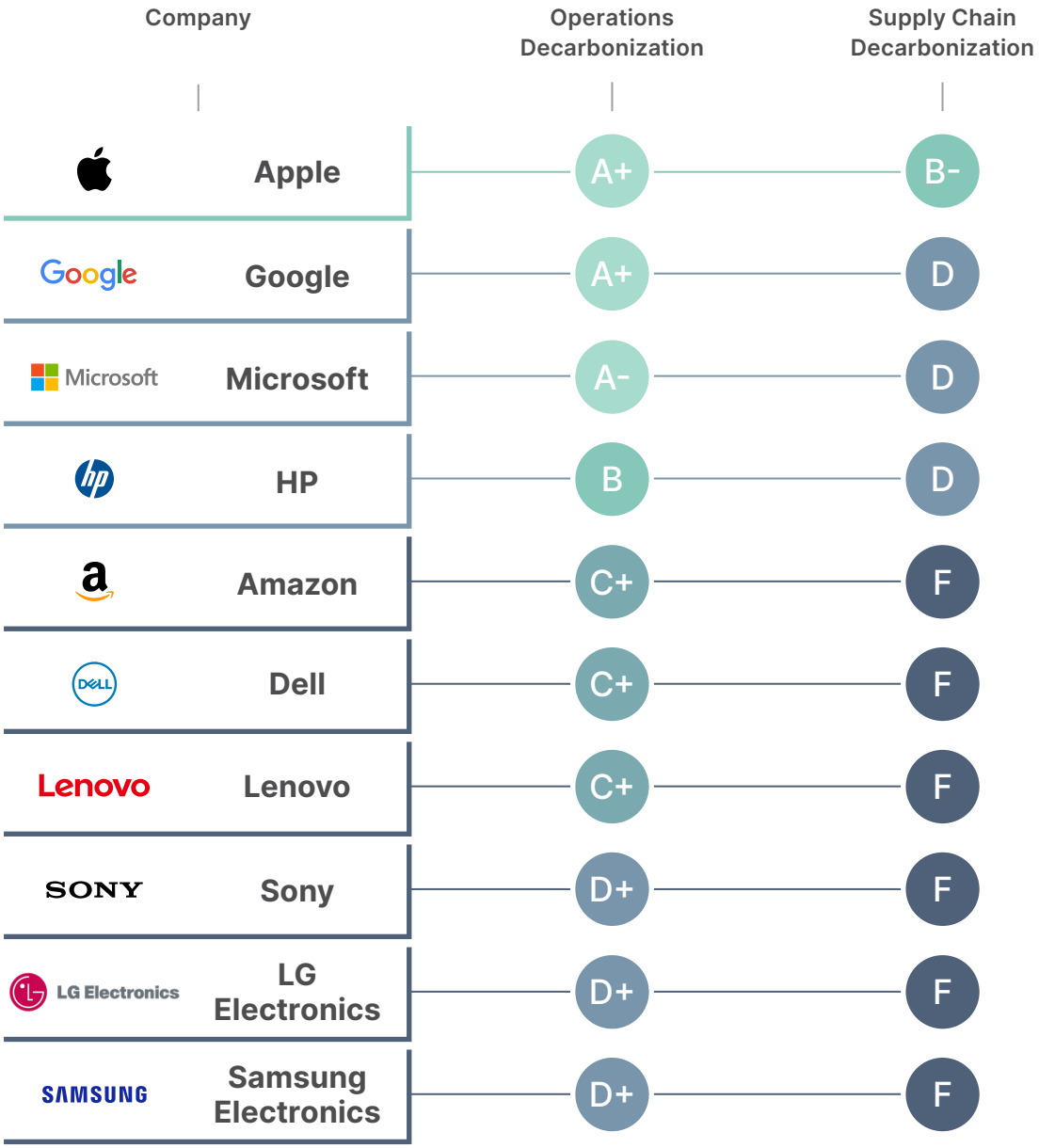
Supplier Company	Claimed Renewable Energy Ratio (2021)	Renewable Energy Sourcing
Intel	82%*	REC/Unbundled Attributes: 98% Self-generated: 50MW of solar across 100+ facilities Renewable PPAs in Pipeline: - 138 MW Solar (Oregon, US) - 100 MW Solar (Arizona, US) → estimated output of PPA would equal 9% of 2021 renewable supply
Samsung Electronics	20.48%	REC: 68.2% Green premium: 11.4% Self-generated: 0.3% PPA: 0.6%
Luxshare Precision	13.26%	REC: 88.3% PPA: 10.80% Self-generated: 5.9% Investment: 5.6%
LG Display	11%	Self-generated solar: installed capacity 10MW (factories in Paju and Gumi, South Korea)
TSMC	9.20%	Self-generated solar: 4,879 MWh PPA: totalling 1.6GWh
Hon Hai	5.17%	PPA: 72.8% - 862.2 MWh (Mexico) - 4,204.7 MWh (Brazil) - 753,000 MWh (China) - 5,530 MWh (China) Self-generated: a total installed capacity of 257MW, generated 28,497 MWh

* The majority of Intel's renewable energy was sourced through low-impact Renewable Energy Certificates.

Supplier Company	Claimed Renewable Energy Ratio (2021)	Renewable Energy Sourcing
Samsung Display	5%	RECs: 388GWh (China and Vietnam) Green Premium: 10GWh (South Korea) Self-generated solar: 6.3 KW
SK Hynix	4.1%	Made equity investment in RE production, 3rd party PPA, and REC purchases.
Sharp	<1%	2020 Renewable energy total: 11000 MWh Self generating: 58% PPA: 36% Other: 11.6% REC: 8.6%
Japan Display	<1%	PPA: - 15379.58 MWh hydropower (Philippines) - 116.78 MWh solar (Japan) Self-generated: 120MWh
Kioxia	<1%	J-credit solar power purchase: 123MWh (2020)
Goertek	Not disclosed	Self-generated: capacity of 34310MWh
Pegatron	Not disclosed	2021 Purchased hydropower: 35000MWh (China) Self-generated: Solar generation capacity just over 9,000 MWh
BOE	Not disclosed	Self-generated solar: installed capacity 384MW.

There is significant disparity between brands' efforts and progress to decarbonise their supply chain and their own operations. By comparing the brands' climate and renewable energy commitments, renewable energy ratios, and transparency in their own operations versus their supply chains, we can see that there is a clear disparity in every brand. Even as brands have increased the use of renewable energy in their own data centers and facilities, they have not done enough to address their reliance on fossil fuels within the supply chain.

Apple scored the highest in supply chain decarbonization as the only brand to set a renewable energy goal for its supply chain. Most of the brands, including Microsoft, Google, Amazon and Dell showed a significant disparity between their operational and supply chain performance, reflecting lower levels of ambition in their commitments outside their direct operations, a lack of supply chain transparency, and lack of data on renewable energy within their supply chains.



Category Breakdown – Consumer Electronics Brands

Climate commitments

Ambitious climate goals are a positive first step towards ensuring that the consumer electronics industry's climate impact is reduced. To limit global climate heating to below 1.5 °C above pre-industrial levels and avoid the worst impacts of climate breakdown, global emissions need to be cut by 55% by 2030 in comparison to 2018 levels.[24]

The majority of the consumer electronics sector's biggest brands, with some notable exceptions, have recognised the need to increase the use of renewable energy in their own operations. However, the vast majority of companies have failed to set meaningful renewable energy targets where it really counts – in their supply chains.

High scoring companies must have an absolute emissions reduction target of at least 55% by 2030 in both their own operations and across their supply chain, with a commitment to 100% renewable energy within the same time frame. Because the majority of emissions and energy use falls on the supply chain, points in this category are weighted towards meaningful supply chain commitments.

Current status

Within their own operations, the majority of the companies scored have set emissions reductions targets in line with, or close to, a 1.5 °C pathway. Seven out of ten companies, including Apple, Amazon, Google, Microsoft, HP, Sony and Lenovo, have set a goal of 100% renewable energy by 2030. Microsoft and Google stood out for committing to 24/7 carbon-free energy matched on an hourly basis, which is an important step for brands to fully decarbonise their operations.

In the supply chain, only Apple, Google, Microsoft and HP met or approached emission reduction targets in line with keeping warming to below 1.5 degrees. LG Electronics, Samsung Electronics and Lenovo had either no or negligible climate commitments within their supply chains; Amazon, Dell and Sony's commitments are too little or too late to be in line with a 1.5°C pathway. Few companies recognise their responsibility to transition their supply chains to renewable energy, with only Apple targeting 100% renewable energy by 2030. Without a clear commitment to 100% renewable energy in the supply chain, it is unclear how companies will meet their emissions targets.

Company	Climate and Renewable Energy Commitments
Apple	A+
Google	B-
Microsoft	B-
HP	C+
Sony	D+
Amazon	D+
Lenovo	D
Dell	D-
LG Electronics	F
Samsung Electronics	F

24 UNEP. (2021). Updated climate commitments ahead of COP26 summit fall far short, but net-zero pledges provide hope. Retrieved September 21, 2022, from https://www.unep.org/news-and-stories/press-release/updated-climate-commitments-ahead-cop26-summit-fall-far-short-net

Figure 3. Ranked consumer electronics brands' climate and 100% renewable energy targets tracker

Company	Climate commitments scope 1/2	Climate commitments scope 3	RE commitments own operations	RE supply chain commitments	1.5 °C aligned
Apple	Carbon neutral by 2030; 75% absolute scope 1 and 2 reduction	Carbon neutral across entire footprint, 75% reduction by 2030 from FY15	100%, achieved 2018	100% by 2030	✓
Google	Net zero by 2030; absolute scope 1,2 and 3 reduction target of 50% by 2030	Net zero across value chain by 2030, 50% reduction by 2030	24/7 carbon free by 2030	5GW of new renewable power across supply chain	✓
Microsoft	Carbon negative by 2030, 75% scope 1 and 2 reductions by 2030	Scope 3 50% reductions by 2030	100% zero carbon 24/7, 100% RE by 2030	No targets	✓
Amazon	Net zero by 2040	Net zero by 2040	100% by 2025	No targets	–
Dell	Net zero across scope 1, 2 and 3 by 2050, 50% decrease scope 1 and 2 by 2030	Net zero by 2050; intensity-based emissions reductions target 60% by revenue from scope 3 category 1 by 2030	75% RE by 2030, 100% by 2040	No targets	–
HP	Net zero by 2040; reduce scope 1, 2 60% by 2025	Reduce Scope 1, 2, and 3 emissions by 50% by 2030	100% RE by 2025	No targets	✓
Samsung Electronics	Net zero carbon emissions by 2050	No targets	100% RE by 2050	No targets	✗
LG Electronics	Carbon neutral by 2030; reduce absolute scope 1 and 2 GHG emissions 54.6% by 2030	Intensity-based target: reduce scope 3 GHG emissions 20% per unit sold by 2030	100% RE by 2050	No targets	✗
Lenovo	Net zero by 2050, scope 1 & 2: 50% by FY29	Remove 1M tons of GHG from supply chain by FY25; reduce scope 3 emissions 25% per ton of transported product by FY29	90% RE by FY25/26	No targets	✗
Sony	Net zero for scope 1 and 2 by 2030	Net zero for full scopes by 2040; reduce scope 3 emissions 45% by 2036	100% RE by 2030	No targets	–

Climate action

Top scoring brands must demonstrate that they are growing the ratio of renewable to non-renewable energy within both their own operations and their supply chain towards 100% and that the energy they use is local and additional to the grid. They must also demonstrate active engagement with suppliers to drive the energy transition forward through financial support or incentive, training, reporting, and target setting.

Within their own operations, Apple, Microsoft and Google emerged as clear leaders by demonstrating a high renewable energy ratio from primarily high-impact sources such as PPAs and on-site or owned generation. Although Amazon reported a high renewable energy ratio, a lack of transparency into how much of that is driven by purchased RECs makes it difficult to verify the exact ratio. The majority of the brands, however, particularly HP, Lenovo and Dell, are relying heavily on purchased Renewable Energy Credits to increase their renewable energy ratio. Samsung Electronics, LG Electronics and Sony all disclosed low overall rates of renewable energy use in their own operations, while South Korean brands Samsung Electronics and LG Electronics fell far behind, powering their operations with less than 1% high or medium impact renewable energy.

In the supply chain, however, where emissions and energy use are highest, it is impossible to get a clear picture. Only HP reported a total renewable energy percentage for its tier 1 suppliers of 26%, and it is not discernible whether the power was local or additional to the grid. Only Apple reported significant use of high-impact renewable energy across its supply chain, having added or supported close to an additional 16GW of new power within the supply chain. None of the remaining companies disclosed sufficient detail about their suppliers' energy use to measure the total renewable energy ratio or how it is sourced.

Company	Renewable Energy Actions
Apple	B-
Google	D+
HP	D+
Microsoft	D+
Lenovo	D-
Amazon	F
Dell	F
Sony	F
Samsung Electronics	F
LG Electronics	F

Figure 4. Consumer electronics brands' operational and supply chain renewable energy status

Company	Claimed renewable energy ratio (scope 2)	High or medium impact RE ratio (scope 2)	Claimed renewable energy ratio (scope 3)	High or medium impact RE ratio (scope 3)
Google	100%	100%	Not disclosed	Not disclosed
Apple	100%	98%	Not disclosed	Not disclosed
Microsoft	100%	53%	Not disclosed	Not disclosed
Amazon	85%	Not disclosed	Not disclosed	Not disclosed
Lenovo	75%	2.63%	Not disclosed	Not disclosed
Dell	55%	4.58%	Not disclosed	Not disclosed
HP	54%	6.85%	26%	Not disclosed
Samsung Electronics	20.48%	<1%	Not disclosed	Not disclosed
Sony	14.62%	4%	Not disclosed	Not disclosed
LG Electronics	4.6%	<1%	Not disclosed	Not disclosed

Sources: CDP Climate Change 2021, CDP Climate Change 2022

Consumer electronics brands' engagement with their suppliers has been mixed. While the majority of companies offer some kind of training or logistics support and require their suppliers to report emissions, only Apple, Google, Microsoft, Amazon and HP reported any kind of financial support or incentives through either investment or climate action funds, or by tying procurement decisions to sustainability. Among the Asian brands, Lenovo emerged as a leader on supplier engagement, disclosing an in-depth training and engagement strategy, and a requirement for 100% RE commitment.

Of the brands scored, only Apple reported requiring its suppliers to set their own renewable energy targets, an important step towards increasing clean power in the supply chain. Six of the brands did not report requiring their suppliers to set GHG reduction targets, including Amazon and HP despite having internal supply chain emissions targets. Neither Samsung Electronics or LG Electronics reported any meaningful supplier engagement on renewable energy or emissions reductions.

Key steps for decarbonizing the supply chain:

- Require supply chain renewable energy and GHG emissions reduction targets.
- Actively promote renewable energy procurement with financial incentives and training materials.
- Help suppliers join PPAs, build new on-site renewables and improve the regional market.
- Work with suppliers to improve environmental reporting.

Transparency

Full transparency on where in the supply chain a brand's carbon emissions are coming from, as well as how and where energy is being used, is essential to understand how the company is performing against its targets. Companies should publish full emissions data, energy use, renewable energy ratio and attributes across different geographies both for their own operations and for their supply chain, including supplier lists and information on key suppliers' energy use and emissions.

The majority of brands have published detailed emissions data within scope 1 and 2 and across their own operations. Apple, Google, and HP have published the most comprehensive emissions data. However, none of the brands on the ranking shared the same level of environmental data of their supply chain, especially on energy and electricity usage. None of the brands provided a regionalised breakdown of their suppliers' energy use, renewable energy attributes, or carbon emissions by manufacturing sector or supplier tier, and only HP shared a top-line overview of supply chain tier 1 energy use and renewable energy ratio.[25]

Company	Transparency
Apple	C
HP	C
Google	C-
Microsoft	C-
Dell	D
Lenovo	D-
Samsung Electronics	D-
Amazon	F
LG Electronics	F
Sony	F

25 HP. (2022). 2021 HP Sustainable Impact Report. Retrieved September 20, 2022, from https://www8.hp.com/h20195/v2/GetPDF.aspx/c08228880.pdf

Figure 5. Consumer electronics brands' environmental data disclosure

	Amazon	Apple	Dell	Google	HP	Lenovo	LG Electronics	Microsoft	Samsung Electronics	Sony
Scope 1 and 2 emissions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Scope 2 energy usage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Scope 2 electricity usage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Scope 3 emissions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Scope 3 emissions regional breakdown		✓			✓			✓		✓
Scope 3 energy usage					✓					
Scope 3 energy regional breakdown										
Scope 3 electricity usage										
Supplier list published	✓	✓	✓		✓	✓		✓	✓	
Emissions data of key suppliers										

Advocacy

Global brands have an important part to play in advocating for supportive renewable energy policy frameworks within the countries that they and their suppliers operate. For brands, meeting their scope 3 emissions reductions goals is dependent on steady and increasing access to renewable energy within their supply chain, which relies on the local government and utility companies promoting a cleaner grid and greater renewable supply. The concentration of manufacturing within certain key regions also represents an important opportunity. When multiple brands with supplier connections within the same manufacturing region advocate for clean energy, together they can wield considerable political and purchasing power, creating momentum for a broader shift away from investment in fossil fueled power generation and towards renewables.

Overall, our research found limited examples of high value national or international advocacy from the brands assessed, with a few notable exceptions. Apple was the only major IT brand to sign a letter to the Vietnamese government calling for high-ambition power development planning in Vietnam,[26] and Amazon signed a joint statement of mutual aspiration for increased renewable energy in Indonesia.[27] As part of the Japan Climate Initiative, Sony endorsed a letter to the Japanese government calling for more ambitious renewable energy deployment beyond nuclear power. The majority of the brands made no discernible advocacy interventions to grow renewable energy capacity within their supply chain regions.

Other examples of advocacy that are less direct but still represent valuable advocacy include joint support for interventions in favor of Build Back Better[28] by HP, and support for the Inflation Reduction Act by members of the Clean Energy Buyers Association, including Google, Microsoft, Amazon, HP and Samsung.[29]

Company	Advocacy
Apple	B
HP	C
Microsoft	C
Amazon	C
Sony	D
Google	D
Dell	D
LG Electronics	F
Samsung Electronics	F
Lenovo	F

26 CEIA. (2021). Clean Energy Investment Accelerator: Joint Statement of Support for High-Ambition Power Development Planning in Vietnam. Retrieved September 16, 2022, from https://static1.squarespace.com/static/5b7e51339772aebd21642486/t/619565dd1cf92a0d50c0013b/1637180894505/CEIA+Vietnam+Joint+Statement+to+GVN_2021.11.17.pdf

27 CEIA. (2021). Clean Energy Investment Accelerator: Statement of Mutual Aspiration: Supporting Renewable Energy Procurement for Commercial and Industrial Sectors in Indonesia. Retrieved September 16, 2022, from https://static1.squarespace.com/static/5b7e51339772aebd21642486/t/6119c1cfc64e0324746bb812/1629077968156/Statement+of+Mutual+Aspiration+-+Indonesia.pdf

28 C2ES. (2022). Center for Clean Energy Solutions: Build Back Better Company Letter. Retrieved September 21, from https://www.c2es.org/wp-content/uploads/2022/02/02.09.22.BBB_.CompanyLetter.pdf

29 CEBA. (2022). Clean Energy Buyers Association: CEBA Welcomes the Pivotal Inflation Reduction Act of 2022 to Reduce Energy Costs and Accelerate Clean Energy. Retrieved September 21 from: https://cebuyers.org/blog/ceba-welcomes-the-pivotal-inflation-reduction-act-of-2022-to-reduce-energy-costs-and-accelerate-clean-energy/

Category Breakdowns – Suppliers

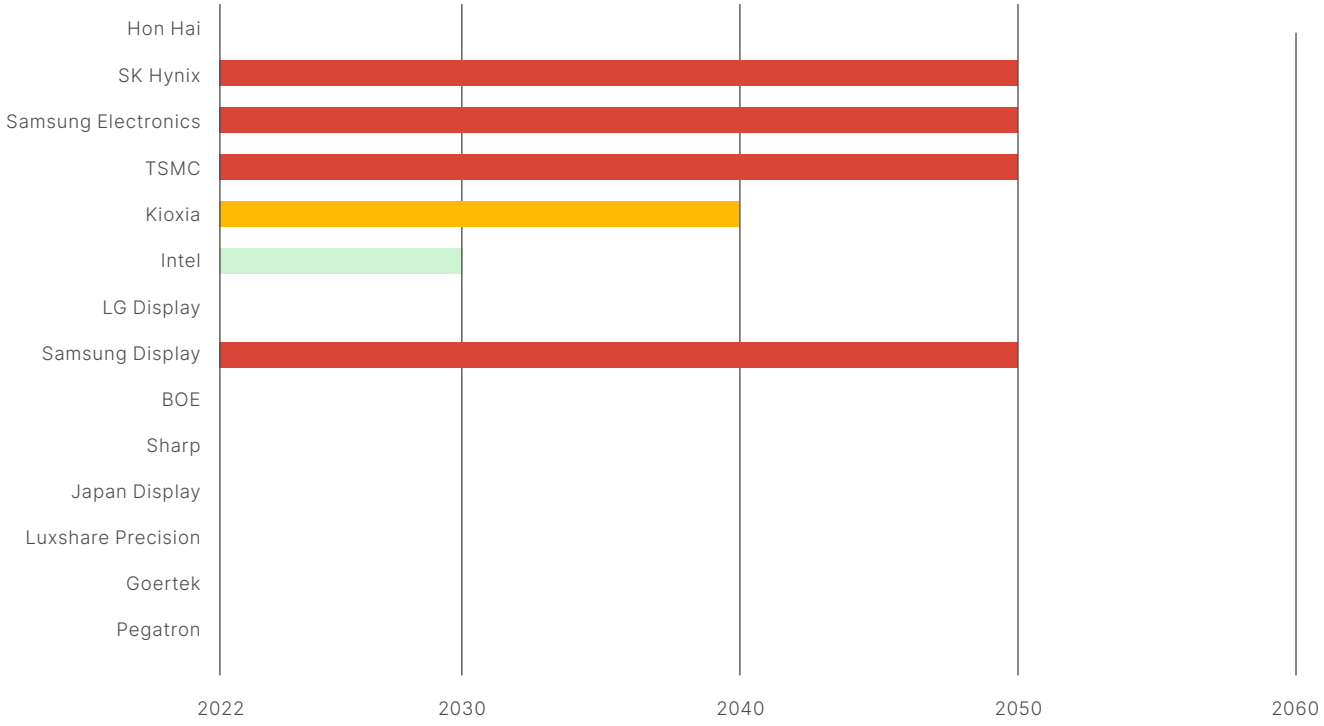
Climate commitments

Company	Commitment
Intel	B+
Kioxia	D-
TSMC	D-
Hon Hai	D-
Samsung Electronics	D-
SK Hynix	D-
Samsung Display	D-
Luxshare Precision	F
Sharp	F
LG Display	F
Pegatron	F
Japan Display	F
BOE	F
Goertek	F

A climate pledge demonstrates a company's determination to take climate action and illustrates that it is ready to take responsibility for GHG emissions reduction. Emissions from product manufacturing are often included in consumer electronics brands' scope 3 emissions reduction targets, but it is essential for manufacturing companies to set up their own emissions reduction and 100% renewable energy goals. Suppliers in East Asia must achieve 100% renewable energy by 2030 across their own operations to contribute to the energy transition in the region and also help clients to achieve their climate targets.

The Climate Commitments section assesses whether a company has pledged to achieve emission reduction and 100% renewable energy with an ambitious timeline and scope.

Figure 6. 100% renewable energy timeline of ranked suppliers



The target dates that suppliers have set to achieve carbon neutrality or net zero are too far in the future. Eight suppliers (Intel, SK Hynix, TSMC, Hon Hai, Sharp, Luxshare Precision, Samsung Electronics and Samsung Display) have targeted to achieve their goals by mid-century. Further, only two (Intel and Hon Hai) of eight suppliers that issued pledges have included supply chain emission reduction plans in their climate goals.

Besides issuing carbon neutrality and net zero commitments, ranked suppliers have not shown sufficient commitment to transitioning to 100% renewable energy.

Among the 14 ranked suppliers, five have committed to switching to 100% renewable energy, but without an ambitious timeline. The companies are Kioxia, TSMC, SK Hynix, Samsung Electronics and Samsung Display. Others, including Luxshare Precision and LG Display, have not yet issued any pledges.

Climate action

It is essential to examine whether suppliers have followed through on their renewable energy commitments with renewable energy adoption, emission reduction, and energy efficiency. Companies are evaluated based on their renewable energy ratio, renewable energy sourcing methods, whether the company has helped their suppliers to procure renewable energy, energy efficiency, and whether emissions within the company's own operations over the past three years have decreased. Companies with a high ratio of renewable energy and high-impact renewable energy sourcing methods are granted higher scores.

Company	Action
Luxshare Precision	C-
Intel	D+
Hon Hai	D+
TSMC	D+
Samsung Electronics	D
Pegatron	D
LG Display	D
Samsung Display	D
Sharp	D-
SK Hynix	F
BOE	F
Kioxia	F
Japan Display	F
Goertek	F

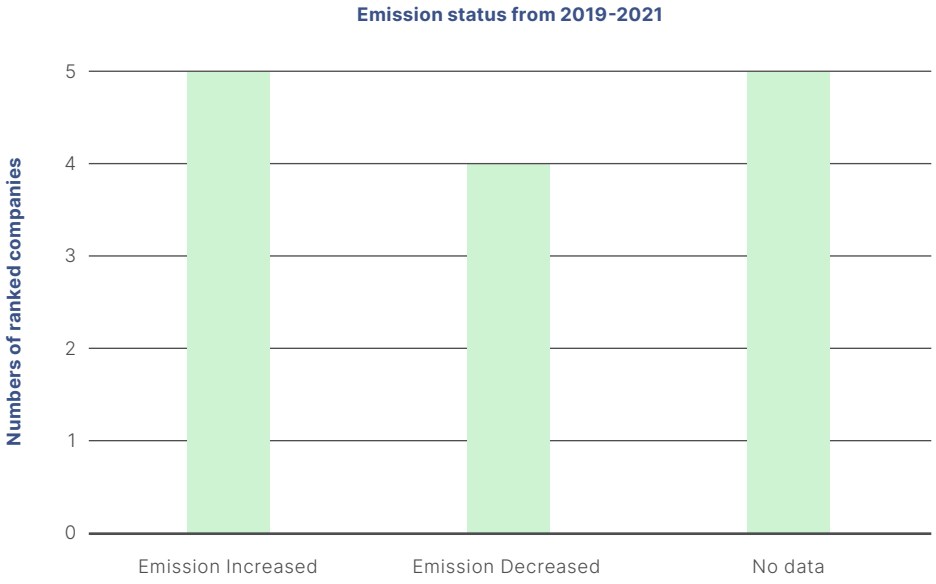
Ranked suppliers' renewable energy ratios are too low to contribute to the energy transition in East Asia and their clients' climate commitments. Among 14 ranked companies, 11 have disclosed their renewable energy ratio. Six out of 11 ranked suppliers reported a renewable energy ratio lower than or equal to 5%; those companies include Samsung Display, Hon Hai and Sharp. The RE ratio of TSMC is between 6% and 10%. Only four suppliers (Luxshare Precision, LG Display, Samsung Electronics and Intel) reported a renewable energy ratio that exceeded 10%.

Sourcing renewable energy through the self-generating system is the most popular approach by ranked electronics suppliers followed by RECs and PPAs. Thirteen of 14 suppliers, including Samsung Electronics, TSMC and Intel, have taken steps to procure renewable energy. Eight out of 14 ranked suppliers purchased RECs and seven ranked suppliers sourced renewables through PPAs. Investing in renewable energy power stations was the least chosen option for RE sourcing, with only Luxshare Precision and SK Hynix selecting this approach.

Only Luxshare Precision and Samsung Electronics have provided data sufficient to calculate the ratio of high-impact sourcing methods, at 22.3% and 0.9% respectively. Two suppliers, Hon Hai and Sharp, sourced renewable energy more than 70% from high-impact sourcing; however, the companies' low renewable energy ratio renders this achievement relatively insignificant.

All suppliers on the ranking have taken measures to improve energy efficiency. However, only four suppliers – Samsung Display, LG Display, Pegatron and Hon Hai – have reported an overall emissions decrease across their own operations since 2019. By contrast, the emissions of Samsung Electronics, Luxshare Precision, SK Hynix, TSMC and Intel have increased since 2019. Furthermore, none of the ranked suppliers have provided practical support, such as financial help and renewable energy investment, to their suppliers for renewable energy procurement.

Figure 7. Emission status from 2019-2021 of ranked suppliers



Transparency

Information transparency gives any outsiders the opportunity to know what climate impacts a company's activities are bringing to society.

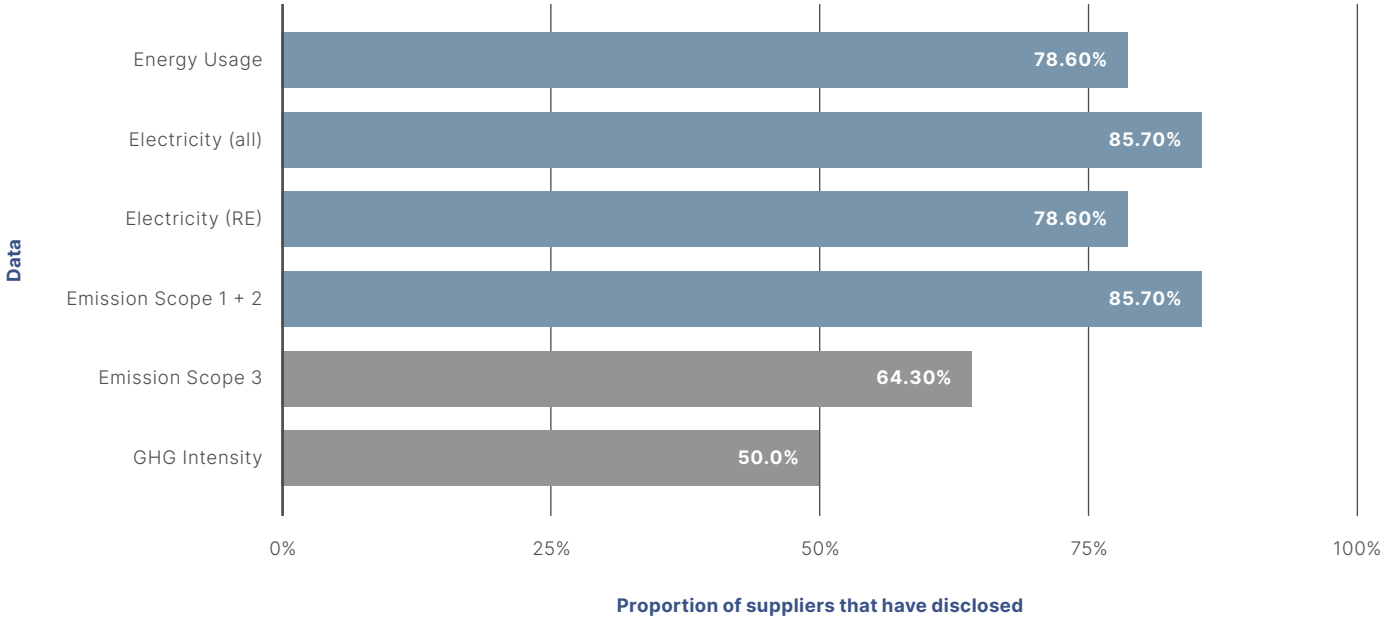
The suppliers' transparency section assesses whether a company has disclosed key energy and environmental information. The metrics include companies' energy consumption, electricity usage, and emission information. A regional breakdown of energy consumption is an important metric to consider.

Company	Transparency
TSMC	A-
Samsung Electronics	A-
LG Display	A-
Samsung Display	A-
SK Hynix	A-
Japan Display	B
Sharp	B-
Intel	B-
Luxshare Precision	B-
Hon Hai	C+
Kioxia	C+
Pegatron	C-
BOE	F
Goertek	F

Current status

Four out of five suppliers on the ranking disclosed energy use, electricity use and scope 1 and 2 emissions. However, more than one-third of ranked suppliers did not disclose their scope 3 emissions, including Hon Hai, Luxshare Precision and Pegatron. Only half of the 14 ranked suppliers have disclosed their emission intensity. Two ranked suppliers, BOE and Goertek, did not disclose any environmental data.

Figure 8. Environmental transparency status of ranked suppliers



Advocacy

Corporate advocacy refers to the engagement that corporations conduct on various levels, from government lobbying to industry conferences. Companies that are considered to be leaders in the industry are able to lead the conversations with governments, peers, and within their own internal structure. When companies make their voices as loud as possible, their demands will be heard by relevant stakeholders, which is key to developing renewable energy-friendly or ambitious climate commitments on a larger scale.

The advocacy section assesses companies' engagement regarding renewable energy and emission reduction-related topics on three levels: policy, peer, and governance.

Company	Advocacy
TSMC	C+
LG Display	C+
Samsung Display	C+
Kioxia	C+
Intel	D+
Hon Hai	D+
Samsung Electronics	D+
Luxshare Precision	D+
SK Hynix	D+
Sharp	D+
Pegatron	D+
Japan Display	F
BOE	F
Goertek	F

Current status

Most of the ranked suppliers have set up climate-related task forces internally and have conducted sharing sessions on renewable energy procurement or emission reduction with peers. Only three suppliers, BOE, Japan Display and Georgtek, have not reported any peer advocacy activities.

For policy advocacy, four out of 14 ranked suppliers – LG Display, Samsung Display, TSMC and Kioxia – recorded engaging with relevant policy stakeholders to develop renewable energy-friendly policies, but the ambition of the suggestions is insufficient. Top suppliers such as Samsung Electronics, SK Hynix and Luxshare Precision have not shown enough effort in policy advocacy.

Figure 9. Advocacy status of ranked suppliers

Company	Policy	Peer	Governance
SK Hynix	✗	✓	✓
Samsung Electronics	✗	✓	✓
TSMC	✓	✓	✓
Kioxia	✓	✓	✓
Intel	✗	✓	✓
LG Display	✓	✓	✓
Samsung Display	✓	✓	✓
BOE	✗	✗	✓
Sharp	✗	✓	✓
Japan Display	✗	✗	✓
Luxshare Precision	✗	✓	✓
Goertek	✗	✗	✓
Pegatron	✗	✓	✓
Hon Hai	✗	✓	✓

Recommendations

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Recommendations

Consumer electronics brands need to target 100% renewable energy across the supply chain by 2030.

Consumer electronics brands must design a clear pathway for supply chain emissions reduction. The majority of emissions are from electricity consumption, therefore it is essential that suppliers adopt renewable energy. Brands must set up a 100% renewable energy target across the supply chain by 2030.

Suppliers need to take responsibility to set up their own ambitious net zero or carbon neutrality targets and 100% renewable energy targets by 2030.

Companies are encouraged to achieve 100% renewable energy by 2030. Both a clear timeline and emissions reduction pathway are key to achieving this goal. A minimum of 55% emissions reduction by 2030 is necessary to align with the target of 1.5 °C global heating,[30] and reaching 100% renewable energy use by 2030 is critical.

Consumer electronics brands should actively engage with suppliers on renewable energy procurement and emission reduction

Active engagement with suppliers is imperative to drive the renewable energy transition and achieve scope 3 emissions reductions goals. Brands should provide financial support and incentives to their suppliers, engage meaningfully through training and reporting, and actively require key suppliers to set their own renewable energy and emissions reductions targets.

Choosing high-impact sourcing methods

High-impact renewable energy sourcing options, such as PPAs, renewable energy investment, and onsite generation should be the primary options for a company to achieve renewable energy targets because these methods have clear additionality and trackability. Renewable energy certificates can be an additional choice for companies to meet their target. When companies set the renewable energy targets for the supply chain, high-impact sourcing methods need to be clearly stated.

Brands need to increase transparency in their supply chain to ensure full accountability

Full supply chain transparency is essential to increase accountability, oversight and understanding of where emissions are buried and how and where energy is being consumed in the supply chain, and across IT manufacturing.

Corporations including consumer electronics brands and suppliers should use their position to actively engage with policymakers and government institutions to develop renewable energy-friendly policies.

When large corporations voice their demands, policymakers listen. Consumer electronic companies must challenge and engage policymakers to remove barriers to renewable energy procurement and to streamline solutions.

30 UNEP. (2021). Updated climate commitments ahead of COP26 summit fall far short, but net-zero pledges provide hope. Retrieved September 21, 2022, from https://www.unep.org/news-and-stories/press-release/updated-climate-commitments-ahead-cop26-summit-fall-far-short-net

Scorecard

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Consumer Electronics Brands

Company: Amazon

Overall grade	Own operations grade	Supply chain decarbonization grade	Scored suppliers
D-	C+	F	TSMC, SK Hynix, Intel, Sharp, Luxshare Precision, Hon Hai

Summary	Amazon's current supply chain commitments and actions are not commensurate with the urgency of the moment or the scale of its climate impact. Amazon's net-zero target, set for 2040, is too late to be aligned with a 1.5 C scenario and lacks the essential pathway of an absolute emissions reduction target. Amazon does have a timely goal for 100% renewable energy in its own operations, and does report signing significant numbers of high-impact sourcing deals, but should go a step further and commit to 24/7 carbon-free energy to match its competitors' level of ambition. The company has not set a goal for renewable energy in its supply chain, and does not appear to engage actively with its suppliers on target setting or procurement. Amazon scores poorly on transparency for both its own emissions and its supply chain's emissions, energy data, and electricity data, sharing only limited data online and failing to make CDP reports publicly available.	
Commitment (D+)	**Climate Commitment**	Amazon's target of net zero by 2040 fails to include absolute reduction targets with no clear pathway of achieving this goal. While the target includes scope 1, 2, and 3 emissions, Amazon has been criticized by analysts for only counting scope 3 emissions as they relate to its own brand products, rather than the huge volume of products it retails.
	100% RE Commitment	Within its own operations, Amazon aims to achieve 100% renewable energy consumption by 2025, and reports procuring significant amounts of new renewable energy through utility-scale contracts, on-site generation, and green tariffs. However, unlike Microsoft and Google, Amazon has not committed to powering its facilities with carbon-free energy 24/7. Amazon has no commitments to renewable energy in its supply chain, which is where the majority of the emissions are created.
Action (F)	**Renewable Energy - Own Operations**	Amazon claims to be 85% powered by renewable energy in its own operations, and shares data on each energy deal and how the electricity is sourced, but is not transparent about the volume of unbundled RECs being purchased.
	Renewable Energy - Supply Chain	Amazon does not disclose any data on renewable energy usage within its supply chain.

Action (F)	**Capacity Building**	Amazon has no renewable energy or greenhouse gas emissions target requirements for its supply chain, but does encourage a reduction in emissions by suppliers. There is limited engagement with suppliers on climate mitigation strategies. The company does encourage the reporting of both renewable energy usage and emissions. Amazon does not disclose the proportion of its supply chain that currently has commitments on renewable energy or greenhouse gas emissions reduction. Amazon has launched a $2 billion USD Climate Pledge Fund, although this fund is not specific to the supply chain, and the company does not report offering specific financial support to its supply chain for renewable energy capacity.
Transparency (F)	Amazon provides limited data on its own operations' energy and electricity usage or emissions. The company also provides limited data on its supply chain and limited scope 3 data with minimal breakdowns. Amazon data reported to CDP is not publicly available.	
Advocacy (C)	Amazon has advocated in the US by signing joint industry letters for several legislative initiatives including with CEBA for support of the IRA, to the SEC for standardizing climate reporting, and in support of the Build Back Better Act. In Indonesia, Amazon signed a joint statement of mutual aspiration for supporting renewable energy procurement.	

Data Source

- Amazon. (2022). *2021 Carbon Neutralization & Nature-Based Solutions*. Retrieved August 20, 2022, from https://sustainability.aboutamazon.com/amazon-2021-carbon-neutralization.pdf
- Peter, J. (2022). *Even by cheating, Amazon can't look green*. Retrieved August 20, 2022, from https://www.datacenterdynamics.com/en/opinions/even-by-cheating-amazon-cant-look-green/
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- Amazon. (n.d.). Transportation. Retrieved August 20, 2022, from https://sustainability.aboutamazon.com/environment/transportation
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- Amazon. (2022). [Letter from Amazon to U.S. Securities and Exchange Commission]. Retrieved August 20, 2022, from https://www.sec.gov/comments/s7-10-22/s71022-20132266-302794.pdf

Company: Apple 

Overall grade	Own operations grade	Supply chain decarbonization grade	Scored suppliers
B	A+	B-	SK Hynix, Samsung Electronics, TSMC, Intel, Kioxia, LG Display, Samsung Display, BOE, Sharp, Japan Display, Luxshare Precision, Goertek, Hon Hai, Pegatron

Summary	Apple is a clear leader, and it is the only company to have set goals that are both ambitious and near-term for emissions reductions and renewable energy in both its own operations and its supply chain. Through significant renewable energy investments, PPAs, and high impact utility partnerships Apple has locally matched the electricity demand of its own operations with 100% renewable energy. Through its Supplier Clean Energy Program, Apple reports adding nearly 16 GW of new renewable energy in its supply chain, showing the key role that ambitious RE targets and direct financial support play in manufacturing regions' energy transitions. Apple has also been using its influence to push governments to increase the deployment of renewable energy in its supply chain.	
Commitment (A+)	**Climate Commitment**	Apple has set the most ambitious climate targets for its value chain among all the brands assessed here, with an ambitious 75% absolute emissions reduction, as compared to a 2015 baseline, across scope 1, 2, and 3 by 2030, along with a 2030 carbon neutrality target for its entire supply chain. This goal clearly aligns with a 1.5 C pathway.
	100% RE Commitment	Apple was one of the first companies to commit to powering its own operations with 100% renewable energy (2012), committing to sourcing renewable energy that is local and additional to the grid, but has not advanced this commitment to 24/7 RE as Google and Microsoft have. Apple was the first company to commit to 100% renewable energy across its supply chain by 2030, asking suppliers to secure enough renewable electricity to match the electricity used in the production of Apple products or components, and set standards for high impact and local renewable energy sourcing.
Action (B-)	**Renewable Energy - Own Operations**	Apple reports that 100% of its operations are powered by renewable energy, predominantly locally sourced from PPAs and other high impact sources, reporting only 2% of renewable energy is purchased from unbundled RECs.
	Renewable Energy - Supply Chain	Apple does not report its supply chain renewable energy ratio or the overall energy use of its supply chain. However, Apple reported a significant increase in renewable energy in the supply chain in 2022, with almost 16GW of clean energy commitments, 92% of it sourced from high impact sources including PPAs and direct investments.

Action (B-)	**Capacity Building**	Through its Supplier Clean Energy Program, Apple has engaged with its suppliers to build their capacity to deploy renewable energy projects to reduce Apple's supply chain emissions. Apple offers financial support and incentives through the China Clean Energy Fund and direct investment in new renewable energy programs for its suppliers. Suppliers in the Clean Energy Program are required to report emissions and set and maintain renewable energy targets. Apple reports that 70% of companies on its supplier list – making up a total 98% of direct expenditure for materials, manufacturing and assembly – have set 100% renewable energy targets for the electricity demand associated with the manufacturing of Apple products or components. It is not clear what proportion of Apple's suppliers have set emissions reductions targets.
Transparency (B)	Apple has disclosed extensive scope 1 and 2 emissions and energy data broken down by region, including lists of renewable energy projects with energy use by country and facility. Apple disclosed a full scope 3 emissions breakdown, and shared an overview of energy efficiency metrics and renewable energy use in the supply chain, but failed to provide transparency on fossil fuel energy use or regional breakdown of supply chain energy demand. Apple published a partial list of suppliers with renewable energy commitments as well as a full supplier list, but did not provide data on key suppliers' emissions.	
Advocacy (B)	Apple has engaged in meaningful active policy advocacy to promote renewable energy growth and climate policy in the last 12 months, both in the US and internationally, including co-signing a joint statement of support for the development of renewable energy in Vietnam, writing to the US Securities and Exchange Commission in support of a common disclosure framework, and joining with other US corporations in defense of the Environmental Protection Agency. Apple is an active member of the RE100 advisory board.	

Data Source

- Apple. (2022). *Supplier Clean Energy 2022 Program Update*. Retrieved August 20, 2022, from https://www.apple.com/environment/pdf/Apple_Supplier_Clean_Energy_Program_Update_2022.pdf
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Company: Dell

Overall grade	Own operations grade	Supply chain decarbonization grade	Scored suppliers
F	C+	F	SK Hynix, Samsung Electronics, TSMC, Intel, Kioxia, LG Display, Samsung Display, BOE, Sharp, Luxshare Precision, Goertek, Hon Hai, Pegatron

Summary	Dell is among the lower performing US brands, falling behind competitors HP and Microsoft in its climate commitments and action on renewable energy. Dell's net-zero target date of 2050 for scope 1, 2, and 3 is too late to be in line with a 1.5 C warming pathway, but it has set a commendable short-term goal of 50% emissions reduction in scope 1 and 2 by 2030. The company needs to back this up with an ambitious scope 3 reduction target along the same time frame. Dell has set a longer-term 100% RE goal for 2040, which it should expedite, and Dell's current RE ratio of 54% comes primarily from higher-impact sources. However, there is currently no commitment to extend this commitment to the supply chain, or any data on the current energy mix. Dell engages with its suppliers through training and reporting, but it is not discernible that the company requires or supports its suppliers to set RE or emissions targets, or procure renewable energy. Within its own operations, Dell has prioritized improving the recyclability and repairability of products, and the reduction of materials emissions.	
Commitment (D-)	**Climate Commitment**	Dell has set a net-zero greenhouse gas emission commitment for scope 1, 2, and 3 of 2050, with a specific target to reduce scope 1 and 2 emissions by 50% by 2030 against a 2020 baseline. In the supply chain, Dell has committed to reduce direct material suppliers' emissions by 60% per unit of revenue, equivalent to a 30% absolute reduction target by 2030, which falls short of the 55% reduction required to be in line with a 1.5 degree pathway.
	100% RE Commitment	Dell has committed to 100% renewable energy by 2040 with a mid-range step of 75% renewable energy by 2030, which is a positive step, but it is unclear whether the electricity will be local and additional to the grid. The company has not set any renewable energy goals for use in its supply chain.
Action (F)	**Renewable Energy - Own Operations**	In 2022 Dell reported a renewable energy ratio of 55% in its own operations. The company uses a mix of high-impact contracts for its renewable energy mix including self-generating, PPAs, and EACs, but relies heavily on less impactful renewable energy sources such as green tariffs and RECs.
	Renewable Energy - Supply Chain	Dell does not disclose renewable energy sourcing within its supply chain.

Action (F)	**Capacity Building**	Dell discloses limited information on how the company engages its supply chain on renewable energy support. There is no disclosure on financial incentives or on emissions targets within the supply chain. Minimal supply chain engagement includes a supplier scorecard and a toolkit for improving environmental impact. Dell does not disclose the proportion of suppliers with renewable energy and emission reductions commitments.
Transparency (D)	Dell discloses scope 1 and 2 greenhouse gas emissions, energy data, electricity usage, and renewable energy data, and shares a breakdown of renewable energy sourcing by region in its CDP disclosure. Scope 3 emissions data is published annually with further breakdown. Dell publishes a supplier list for further transparency. However, the company stopped publishing supply chain reports in 2020 and does not provide details on its supply chain renewable energy data or energy use.	
Advocacy (D)	Dell signed onto a joint industry letter for standardizing climate metric reporting to the SEC, and Dell's CEO signed onto an open letter for world leaders at COP26. However, while the company published policy positions on global energy transformation, Dell did not engage in any visible renewable energy advocacy within regions impacting its supply chain.	

Data Source

- Dell. (n.d.). 2030 Goals. Retrieved August 20, 2022, from https://www.dell.com/en-us/dt/corporate/social-impact/reporting/2030-goals.htm
- Dell. (n.d.). Advancing Sustainability. Retrieved August 20, 2022, from https://www.dell.com/en-us/dt/corporate/social-impact/advancing-sustainability.htm
- Dell. (2022). *FY22 Environmental, Social and Governance Report*. Retrieved August 20, 2022, from https://www.dell.com/en-us/dt/corporate/social-impact/esg-resources/reports/fy22-esg-report.htm#pdf-overlay=//www.delltechnologies.com/asset/en-us/solutions/business-solutions/briefs-summaries/delltechnologies-fy22-esg-report.pdf
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Company: Google

Overall grade	Own operations grade	Supply chain decarbonization grade	Scored suppliers
C-	A+	D	SK Hynix, Samsung Electronics, Intel, Luxshare Precision, Goertek, Hon Hai

Summary	Google scored highly within its own operations, emerging as a leader in renewable energy with its pledge to run on 24/7 carbon free energy by 2030 - an important step to grow local renewable energy and storage capacity. However, Google has yet to include its supply chain in its 100% renewable energy target, making sufficient scope 3 emissions reductions more difficult and less likely to be achieved. Meaningful engagement has led to a high proportion of suppliers reporting emissions data and setting emissions reductions targets, but a lack of supply chain transparency makes it unclear what impact that engagement is having on energy use.	
Commitment (B-)	**Climate Commitment**	Google has set a target of net zero by 2030 across both its own operations and its supply chain, and has additionally set an absolute scope 1, 2 and 3 emissions reduction target of 50% by 2030.
	100% RE Commitment	Google has set a goal of 24/7 carbon free energy by 2030 using local carbon-free electricity within its own operations, one of only two brands in this analysis to do so. Unlike Apple, Google has not set a similar 100% renewable energy target for its supply chain. Google has pledged to enable 5GW of new carbon-free energy through investments in key manufacturing regions, but provided few details.
Action (D+)	**Renewable Energy - Own Operations**	Google reports that 100% of its operations are powered by renewable energy, predominantly locally sourced from PPAs and other high impact sources, and is one of the few companies that reports the amount of renewable electricity supply being provided to its data centers on a 24/7 basis.
	Renewable Energy - Supply Chain	While Google reports that 21% of its suppliers' electricity usage came from renewable sources, it does not provide any detail on how or where this was being achieved, nor how much reflected high impact renewable electricity procurement or investment by its suppliers.

Action (D+)	**Capacity Building**	Google reports some financial support planned to build renewable energy capacity through $150 million USD of direct investment in key manufacturing regions, and reports significant non-financial engagement with suppliers through training and data collection, including reducing knowledge gaps on renewable energy procurement options, energy efficiency and emissions savings. Google requires suppliers to report emissions and set emissions reductions targets and provide in-depth reporting, but not renewable energy targets. Google reports that 57 of its suppliers had set renewable energy targets by 2022, representing 22% of its supply chain. Google reports that 72% of companies who responded to a survey that had a 95% survey response rate have set emissions reduction targets.
Transparency (C-)	Google shares its CDP reports online, and disclosed full scope 1 and 2 emissions and energy data, divided into US and International data, and shares a breakdown of its renewable energy purchasing by country to the CDP. Google disclosed a full scope 3 emissions breakdown, but failed to include transparency on fossil fuel energy use or regional breakdown. Unlike Apple, Dell, HP and several other brands, Google did not publish a supplier list or data on key suppliers' emissions, but did publish an overview of supply chain engagement in its annual Supplier Responsibility Report.	
Advocacy (D)	In the last 12 months, Google has engaged in policy advocacy within the US, including signing a joint letter to the SEC on emissions reporting standards, a letter with 15 other major US corporations in support of the Build Back Better Act, and as part of the Clean Energy Buyers Association in support of the Inflation Reduction Act, but has not engaged in visible advocacy within its supply chain regions. In 2022 Google released its clean energy roadmap towards 24/7 renewable energy.	

Data Source

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Company: HP

Overall grade	Own operations grade	Supply chain decarbonization grade	Scored suppliers
C-	B	D	SK Hynix, Samsung Electronics, TSMC, Intel, Kioxia, LG Display, BOE, Luxshare Precision, Goertek, Hon Hai, Pegatron

Summary	HP has set ambitious absolute emissions reductions targets across its value chain, with emissions targets close to a 1.5 C-aligned pathway. HP's 2025 renewable energy target for its own operations sends a strong message. However, the brand's current renewable energy ratio relies heavily on RECs rather than high-impact sourcing. For the 2025 target to be impactful, the company needs to focus on sourcing renewable energy that is local and additional to the grid. In its supply chain, HP was the only brand to disclose data on the energy and renewable energy ratio of its suppliers. HP engages its suppliers specifically on renewable energy and incentivizes action by tying procurement decisions to sustainability, resulting in a high proportion of suppliers with renewable energy commitments. HP has also been active within the US on climate advocacy, supporting the Inflation Reduction Act as part of the Clean Energy Buyers Association, and jointly urging congressional leadership on clean energy and climate action.	
Commitment (C+)	**Climate Commitment**	HP has set an appropriate absolute emissions target of 50% by 2030 for scope 1 and 2, with a net zero emissions target of 2040. For scope 3, HP commits to reduce emissions by 50% by 2030 compared to a FY19 baseline.
	100% RE Commitment	HP commits to a 100% renewable energy by 2025 for its own operations. HP does not disclose any specific renewable energy targets for its supply chain, but stated in its Sustainable Impact Report that "we aspire to using 100% renewable energy... [in] our manufacturing process."
Action (D+)	**Renewable Energy - Own Operations**	HP's energy mix includes 54% renewable energy. The company's ratio, as reported to CDP, is heavily reliant on RECs, with limited PPAs or self-generating renewable energy that would add to the overall renewable energy available on the grid.
	Renewable Energy - Supply Chain	HP is the only company to disclose data on its production supplier energy use and renewable energy use, reporting that 26% of its supplier energy was renewable in the last year of reporting (2020). The company states that 78% of its suppliers use renewable energy.

Action (D+)	**Capacity Building**	HP ties some supplier procurement to sustainability strategies and participation in capacity building initiatives. HP discloses assistance for 98% of suppliers via engagement on sustainability efforts and encourages reporting of renewable energy and greenhouse gas emissions. The company states 78% of suppliers report renewable energy use, 70% of which have specific renewable energy goals. HP also requires emissions reductions targets from its key suppliers, and reports that 95% of suppliers have GHG-related goals.
Transparency (C)	HP discloses scope 1 and 2 emissions, energy data, electricity data with full regional and type breakdowns. Scope 3 data does not include regional breakdown, but does include upstream and downstream transportation and distribution breakdowns, as well as supplier energy use and renewable energy data.	
Advocacy (C)	HP signed a joint letter to the SEC on standardizing climate reporting, signed an industry open letter to COP26, and supported the IRA as part of CEBA. HP is also a member of the We Mean Business Coalition, RE100, and the Clean Energy Buyers Association, and reported supporting renewable energy internationally through the Clean Energy Demand Initiative. HP also engaged in renewable energy discussions with representatives of the Chinese government to promote renewable energy sourcing in Jiangsu Province.	

Data Source

- Jolene, D. (2021). *HP Low Carbon Initiatives and Their Impact on the Environment*. Retrieved August 20, 2022, from https://www.hp.com/us-en/shop/tech-takes/hp-low-carbon-initiatives-impact-environment#:~:text=HP%20has%20committed%20to%20achieving,the%20U.S.%20and%2043%25%20globally
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Company: Lenovo

Overall grade	Own operations grade	Supply chain decarbonization grade	Scored suppliers
F	C+	F	SK Hynix, Samsung Electronics, Intel, LG Display, BOE, Sharp

Summary	For its own operations, Lenovo aims to reduce emissions 50% by 2029, but its net zero emissions target of 2050 is too distant, and does not include its supply chain emissions. The company does not have meaningful targets for either renewable energy or greenhouse gas emissions for its supply chain, and does not provide any financial support to increase renewable energy capacity. While Lenovo does utilize 75% of renewable energy for its own operations, it is not adding meaningful renewable energy capacity to the grid, and instead sources renewable energy through low-impact contracts. Lenovo also falls behind its competitors in advocacy for more strategic widespread climate change mitigation.	
Commitment (D)	**Climate Commitment**	Lenovo Group pledged that it would reduce its operational direct and indirect carbon emissions by 50%, reduce the carbon emission intensity of some value chains by 25% by 2030, and achieve net zero emissions by the end of 2050, with emissions for the 2018/19 financial year as a baseline.
	100% RE Commitment	Lenovo set and achieved a renewable energy target of 30MW by 2020. The company then expanded that goal for 90% of renewable energy by 2025. The company has no renewable energy target for its supply chain.
Action (D-)	**Renewable Energy - Own Operations**	Lenovo utilizes 75% renewable energy for its own operations' total energy usage. However, the company uses mostly low-impact energy contracts for this ratio.
	Renewable Energy - Supply Chain	Lenovo does not disclose renewable energy sourcing for its supply chain.
	Capacity Building	Lenovo does not provide financial support to help suppliers increase renewable energy capacity, however the company does require a renewable energy target for suppliers and engages in an in-depth engagement strategy. Lenovo empowers reporting and performance tracking and requires that suppliers have a greenhouse gas emissions strategy. As a result, Lenovo has disclosed that 72% of suppliers have renewable energy goals and 91% have greenhouse gas emission goals.

Transparency (D-)	Lenovo discloses scope 1 and 2 emissions with location, market, and regional data breakdowns. Overall energy, electricity, and renewable energy data is also disclosed. Scope 3 data is disclosed by category and the company publishes a suppliers list. However, there is no data on renewable energy or electricity in the supply chain and no public regional breakdown data for this category.
Advocacy (F)	Lenovo is a member of the We Mean Business Coalition but has not participated in any meaningful advocacy on climate change in the past 12 months.

Data Source

- Business Wire. (2022). *Lenovo Commits to Hiring 12,000 R&D Professionals, and Outlines Vision to Achieve Net-zero by 2050*. Retrieved August 20, 2022, from https://www.businesswire.com/news/home/20220403005029/en
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Company: LG Electronics

Overall grade	Own operations grade	Supply chain decarbonization grade	Scored suppliers
F	D+	F	SK Hynix, Samsung Electronics, Intel, LG Display, BOE

Summary	LG has set a competitive target of carbon neutrality by 2030, including a 50% absolute emissions target, significantly ahead of its competitor Samsung. However, LG falls behind competitors in supply chain decarbonization, with no absolute reduction targets for its supply chain. With a 100% renewable energy target by 2050 and only 4.6% renewable energy usage, LG is lagging on renewable energy in its own operations and has no target to increase renewables in its supply chain. LG provides minimal support in its supply chain to add renewable energy capacity and reduce greenhouse gas emissions.	
Commitment (F)	**Climate Commitment**	LG has set a strong climate commitment in its own operations: carbon neutrality by 2030 from a FY17 baseline, which includes an absolute emission reduction of 50%. However, LG has set an insufficient supply chain target to reduce scope 3 emissions from the use of sold products 20% per unit sold by 2030.
	100% RE Commitment	LG aims to achieve 100% renewable energy usage by 2050, and has not set a renewable energy target for its supply chain.
Action (F)	**Renewable Energy - Own Operations**	LG has an extremely low renewable energy ratio at 4.6% of the company's total energy usage.
	Renewable Energy - Supply Chain	LG does not disclose any data on renewable energy sourcing in its supply chain.
	Capacity Building	LG has limited engagement with its suppliers on increasing renewable energy usage. The company does not disclose the proportion of suppliers with renewable energy or greenhouse gas commitments.

Transparency (F)	LG discloses scope 1 and 2 emissions including market breakdowns, energy and electricity consumption by fuel type, and renewable energy data. Data is disclosed to CDP but not in its own public reporting. LG discloses scope 3 data by category and includes supplier lists. However, the company does not disclose renewable energy data, electricity within the supply chain, or a regional breakdown of data.
Advocacy (F)	LG advocated minimally in the past 12 months on the issue of climate change. The company is a RE100 gold member and as a member of CEBA supported the IRA.

Data Source

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Company: Microsoft

Overall grade	Own operations grade	Supply chain decarbonization grade	Scored suppliers
C-	A-	D	SK Hynix, Samsung Electronics, TSMC, Intel, Kioxia, LG Display, Sharp, Luxshare Precision, Goertek, Hon Hai, Pegatron

Summary	Microsoft was one of the top performers within its own operations, with an ambitious 24/7 renewable energy target, but still lags behind competitors Apple and Google in sourcing its renewable energy using high impact PPAs or onsite power generation. However, although Microsoft has set a meaningful scope 3 emissions reduction target, it has yet to set a renewable energy target for its supply chain to drive that reduction. Microsoft has one of the greatest disparities between its operations grade and its supply chain management grade, reflecting a lack of supply chain transparency and a failure to disclose the levels of renewable energy in its supply chain. To drive scope 3 emissions reductions and help promote the energy transition, Microsoft should set a 100% supply chain renewable energy goal and require that suppliers set their own renewable energy targets, ensuring that energy is local and additional to the grid.	
Commitment (B-)	**Climate Commitment**	**Own operations:** Microsoft set an absolute target of reducing greenhouse gas emissions by 75% by 2030 from the company's FY13 base for scope 1 and 2. **Supply chain:** Microsoft has released scope 3 emissions target of 50% reduction by 2030.
	100% RE Commitment	**Own operations:** Microsoft has set an ambitious goal of 100% renewable energy and 100% zero carbon 24/7 by 2030 for its own operations, joining Google in setting a higher impact 24/7 RE target. **Supply chain:** Microsoft has not set a renewable energy target for its supply chain, which saw emissions jump by nearly 20% in 2022.
Action (D+)	**Renewable Energy - Own Operations**	Microsoft reports using 100% renewable energy for its own operations. However, the company still employs a significant percentage of low impact unbundled RECs, reporting that 53% of its electricity came from high impact PPAs in 2020. Microsoft signed nearly 6GW of renewable energy deals in 2021-22.
	Renewable Energy - Supply Chain	Microsoft has not disclosed its supply chain's renewable energy sourcing and commitments.

Action (D+)	**Capacity Building**	While the company requires greenhouse gas targets for its supply chain, Microsoft does not require targets for renewable energy usage. The company disclosed that 45% of suppliers report a greenhouse gas commitment. The company receives points for having extensive training and engagement for its supply chain on climate mitigation strategies and requirement of suppliers reporting greenhouse gas emissions. Microsoft provides financial support for its suppliers to reduce emissions in partnership with IFC.
Transparency (C-)	**Own operations:** Microsoft discloses scope 1 & 2 emissions data as well as energy and electricity usage with full breakdowns of data disclosed both publicly and to CDP. **Supply chain:** Scope 3 emissions data is disclosed but not broken down by region, and the company does not disclose energy, electricity or renewable energy data for the supply chain. Microsoft publishes a partial supplier list, but does not share emissions data on key suppliers, supplier type or broken out by tier.	
Advocacy (C)	In the past 12 months, Microsoft advocated within the US by signing joint industry letters for some legislative initiatives, including with CEBA, to support the IRA, and to the SEC for standardizing climate reporting. Microsoft did not engage in any discernible renewable energy advocacy within supply chain regions, however, in September Microsoft released a policy brief on expanding access to carbon free energy globally, advocating for an urgent need to decarbonize the grid and increase access to reliable carbon-free power 24/7.	

Data Source

- Lucas, J. (2021). *Made to measure*: Sustainability commitment progress and updates. Retrieved August 20, 2022, from https://blogs.microsoft.com/blog/2021/07/14/made-to-measure-sustainability-commitment-progress-and-updates/
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Company: Sony SONY

Overall grade	Own operations grade	Supply chain decarbonization grade	Scored suppliers
F	D+	F	SK Hynix, LG Display, Japan Display, Goertek, Hon Hai, Pegatron

Summary	Sony has moved its net zero target for its own operations forward by ten years to 2030, and for its supply chain from 2050 to 2040, but its commitments still fail to meet the scale of the climate emergency. Sony's scope 3 ambition is still lacking, and its absolute emissions reduction targets are concerningly low, failing to set a clear pathway to meaningful impacts on climate. Sony has set sufficiently near-term renewable energy targets within its own operations, but it is less clear how much of this power will be additional to the grid, and the company still lacks RE targets for its supply chain. While it is positive that Sony is reporting engagement with its suppliers on target setting and reporting, it is clear that significantly greater engagement on clean energy procurement is required to impact supply chain emissions. Sony has taken important steps, however, on renewable energy advocacy as part of the Japan Climate Initiative, calling for greater ambition from the Japanese government to increase availability of clean power.	
Commitment (D+)	**Climate Commitment**	This year Sony increased its climate ambition to target carbon neutrality in its own operations by 2030, which is a positive step. However, it also updated its absolute emissions reductions goal to only a 5% reduction in scope 1 and 2 by 2025, compared to a 2020 baseline, raising concern as to whether the company will see meaningful emissions reductions or rely on carbon offsets and/or removal. In the supply chain, Sony has also increased its net zero ambition, moving the target date forward from 2050 to 2040, however this date is still too distant to be in line with a 1.5 C pathway, and does not include an absolute emissions reduction target for production.
	100% RE Commitment	Sony has set a new target of powering its own operations with 100% renewable energy by 2030, and a short-term goal of 35% renewable energy by 2025, but it is not clear to what extent this energy will be additional to the grid. Sony has not set a 100% renewable energy goal for its supply chain.
Action (F)	**Renewable Energy - Own Operations**	Sony reports that currently 14.6% of its energy is coming from renewable sources. According to Sony's 2021 CDP report, the majority of its renewable power is from low- or medium-impact sources, primarily unbundled RECs.
	Renewable Energy - Supply Chain	Sony does not disclose renewable energy sourcing for its supply chain.

Action (F)	**Capacity Building**	Sony reports requesting major suppliers to monitor their GHG emissions, set medium- and long-term targets for emissions reduction, and perform progress management, but Sony does not report supplier requirements to set targets for increasing renewable energy. Sony reports some limited training engagement including a video about sustainability, but it is not discernible that it offers any training or support to support access to renewable energy. Sony does not report any financial support or incentive for its suppliers to reduce emissions or increase renewable energy. Sony does not report the proportion of its supply chain with renewable energy targets. In its 2021 CDP Report, Sony reported that 46% of its suppliers have set emissions reductions targets.
Transparency (F)	Sony shares its scope 1 and 2 emissions including a full category breakdown since 2000, and notes the energy consumption of its sites without providing a breakdown by energy type or sourcing. In its CDP report Sony provides more detailed data on its energy sourcing, regional breakdown and electricity consumption. Sony provides limited transparency on its supply chain, only providing a scope 3 emissions breakdown by category without regional data or energy or electricity use. Sony shares an overview of its supply chain distribution by region, but does not share a supplier list or data on key supplier emissions or energy use.	
Advocacy (D)	As a member of the Japan Climate Initiative, this June Sony endorsed a call for the Japanese government to accelerate the deployment of renewable energy, and reduce energy use.	

Data Source

- Sony. (2022). Sony Sustainability Report 2022. Retrieved September 22, 2022 from https://www.sony.com/en/SonyInfo/csr/library/reports/SustainabilityReport2022_E.pdf
- Japan Climate Initiative. (2022). Non-State Actors call for accelerating renewable energy deployment now. Retrieved September 22, 2022 from https://japanclimate.org/english/news-topics/jci-message-re-release/

Suppliers

Company: BOE

Overall grade	Industry	Clients	Offset
F	**Display / Panel**	Apple, HP, Dell, Lenovo, LG Electronics, Samsung Electronics	Not disclosed.

Summary	BOE has not made any commitments on emissions reduction and 100% renewable energy use either in its operations or in the value chain. BOE has set up on-site solar at one of its facilities, but has not used any other sourcing methods. The company has not disclosed its environmental data. Advocacy is also lacking.	
Commitment (F)	**Climate Commitment**	BOE has not set targets to reduce absolute GHG emissions either in its operations or in its supply chain.
	100% RE Commitment	BOE has not set commitments to switch to 100% renewable energy use either in its operations or in its supply chain.
Action (F)	**Renewable Energy Ratio**	No publicly available information or direct disclosure.
	Renewable Energy Sourcing methods	According to BOE's CSR report, BOE installed 384 MW of self-generating solar facilities. The company did not disclose other information regarding renewable electricity consumption.
	Helping suppliers sourcing RE?	There is no publicly available information or direct disclosure of BOE helping its suppliers source renewable energy.
	Energy Efficiency	BOE reports it has improved energy efficiency from different perspectives, including production equipment renovation, cooling, lighting as well as heating retrofits, product design, and office area energy conservation. BOE reports it has conducted research and analysis on suppliers' three-year GHG emission data, covering over 100 suppliers. BOE has promoted suppliers to establish management systems for carbon peaking and carbon neutrality, and formulate corresponding goals and measures.

Action (F)	**Emission reduction from 2019-2021 (own operation)**	The emission change from 2019 to 2021 is untrackable due to the lack of data disclosure. Emission (2019-2021): 2019: Not disclosed. 2020: Not disclosed. 2021: Not disclosed.
Transparency (F)	BOE didn't disclose any of its latest environmental data, including energy, electricity and emissions.	
Advocacy (F)	There is board-level oversight of climate-related issues within BOE. However, there is no publicly available information or direct disclosure of BOE supporting renewable energy-related policies, or engaging with other companies on the topics.	

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for BOE. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- BOE. (2022). 2021 Corporate Social Responsibility Report. Retrieved September 14, 2022, from https://www.boe.com/about/socialResponsibility

Company: Goertek

Overall grade	Industry	Clients	Offset
F	**Final Assembly**	Apple, Microsoft, Google, Dell, HP, Sony, Samsung Electronics	Not disclosed.

Summary	Goertek has not made any commitments on emissions reduction or 100% renewable energy use. To fulfill corporate climate responsibilities, the company has adopted energy efficiency measures. It has procured renewables only through self-generating facilities, and yet scale and location are not stated. Further, Goertek lacks environmental data disclosure. Much more effort is needed regarding its policy and peer advocacy level.	
Commitment (F)	**Climate Commitment**	Goertek has not set targets to reduce absolute GHG emissions either in its operations or in its supply chain.
	100% RE Commitment	Goertek has not set commitments to switch to 100% renewable energy use either in its operations or in its supply chain.
Action (F)	**Renewable Energy Ratio**	Not disclosed.
	Renewable Energy Sourcing methods	Goertek installed self-generating facilities which can produce 34.41million kWh of renewable electricity annually, but no other information has been disclosed.
	Helping suppliers sourcing RE?	There is no publicly available information or direct disclosure of Goertek helping its suppliers source renewable energy.
	Energy Efficiency	Goertek has reportedly promoted energy-saving technologies to improve energy utilization efficiency and reduce annual emissions by 24,000t CO_2e in total. The company has adopted frequency conversion / maglev energy saving technology, central vacuum systems, solar collector projects, and applied automatic energy conservation systems for the cooler and energy recycling. However, there is no publicly available information or direct disclosure of Goertek helping its suppliers improve energy efficiency.

Action (F)	**Emission reduction from 2019-2021 (own operation)**	The emission change from 2019 to 2021 is untraceable due to the lack of data disclosure. Emission (2019-2021): 2019: Not disclosed. 2020: Not disclosed. 2021: Not disclosed.
Transparency (F)	Goertek has not disclosed its environmental data, including energy, electricity and emissions.	
Advocacy (F)	There is board-level oversight of climate-related issues within Goertek. However, there is no publicly available information or direct disclosure of Goertek advocating for renewable energy-related policies, or engaging with other companies on these topics.	

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for Goertek. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- Goertek (2022). 2021 Corporate Social Responsibility Report. Retrieved September 14, 2022, from https://www.goertek.com/en/Upload/202205/20220521161502_0540.pdf

Company: Hon Hai

Overall grade	Industry	Clients	Offset
D+	**Final Assembly**	Apple, Microsoft, HP, Dell, Amazon, Sony, Google	Not disclosed.

Summary	Hon Hai has committed net zero emissions for its own operations by 2050 and requires its suppliers to set up the same targets. Hon Hai has no 100% renewable energy target, and currently has a low renewable energy ratio. Hon Hai has not been actively engaging with policy makers regarding emissions reductions and renewable energy procurement.	
Commitment (D-)	**Climate Commitment**	Hon Hai committed to achieve net zero emissions by 2050. Hon Hai requires its suppliers to set up net zero targets.
	100% RE Commitment	Hon Hai has not set commitments to switch to renewable energy in its operations. Hon Hai pledged to have 100+ manufacturers switch to renewable energy by 2050.
Action (D+)	**Renewable Energy Ratio**	Hon Hai's 2021 renewable energy ratio was 5.17%.
	Renewable Energy Sourcing methods	Hon Hai did not disclose its renewable energy sourcing methods in its 2021 ESG report. In the latest CDP disclosure, Hon Hai claimed it purchased 1,048,560 MWh of renewable energy in 2020. More than 70% of RE was sourced from PPAs in various locations. The company also installed self-generating facilities. But Hon Hai's renewable energy ratio was still only 5.17% in 2021.
	Helping suppliers sourcing RE?	No evidence of Hon Hai helping its suppliers source renewable energy.
	Energy Efficiency	Hon Hai has taken steps to increase its energy efficiency, including process energy saving as well as improvements in air conditioning, air pressure and lighting systems. Hon Hai has held several conferences or sessions to promote the use of renewable energy by pilot suppliers. The company also encourages suppliers to conduct internal inventory checks on emissions and formulate relevant plans. The company has provided online training on the topic of GHG inventory as well.

Action (D+)	**Emission reduction from 2019-2021 (own operation)**	Emission decreased by 26.41% from 2019 to 2021. Emission (2019-2021): location-based 2019: 8,452,757 tCO_2e. 2020: 5,417,602 tCO_2e. 2021: 6,220,782 tCO_2e.
Transparency (C+)	Hon Hai disclosed the majority of its environmental data, including energy, electricity, and emissions and provided a regional breakdown of energy consumption. But the company did not disclose 2021 Scope 3 emissions and emission intensity.	
Advocacy (D+)	Hon Hai is one of the founding members of the Taiwan Alliance for Net Zero Emission (TANZE). The group aims to encourage Chinese industries to fulfill corporate social responsibilities and encourage enterprises to achieve global carbon reduction goals. Hon Hai has also invited external partners to jointly hold an online carbon neutrality policy promotion conference to publicize the group's net zero emission policy and requirements, global carbon neutrality trend interpretation and industry response, and an introduction to photovoltaic solar solutions. There is also board-level oversight of climate-related issues within Hon Hai. However, there is no publicly available information or direct disclosure of Hon Hai supporting renewable energy-related policies.	

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for Hon Hai. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- Hon Hai (2022). 2021 HON HAI Technology Group (Foxconn) Sustainability Report. Retrieved September 13, 2022, from https://www.Hon Hai.com/s3/reports/CSR/EN/2021/Hon Hai_2021_Sustainability%20Report_EN.pdf
- Hon Hai (2021). Climate Change 2021. CDP. Retrieved September 13, 2022, from https://www.cdp.net/en/formatted_responses/responses?campaign_id=74241094&discloser_id=899586&locale=en&organization_name=Hon+Hai+Precision+Industry&organization_number=21422&program=Investor&project_year=2021&redirect=https%3A%2F%2Fcdp.credit360.com%2Fsurveys%2F2021%2Fdbbr64mv%2F143166&survey_id=73557641
- Hon Hai. (2020). 2019 Corporate Social Sustainability Report. Retrieved September 13, 2022, from https://www.Hon Hai.com/s3/reports/CSR/EN/2021/Hon Hai_2021_Sustainability%20Report_EN.pdf
- Hon Hai. (2021). 2020 Hon Hai Corporate Social Sustainability Report. Retrieved September 13, 2022, from https://www.Hon Hai.com/s3/reports/CSR/EN/2020/2020%E9%B4%BB%E6%B5%B7%20CSR%20report-%E8%8B%B1%E6%96%87%E7%89%88.pdf

Company: Intel

Overall grade	Industry	Clients	Offset
C+	**Semiconductor**	Dell, HP, Lenovo, LG Electronics, Microsoft, Google, Apple, Amazon, Samsung Electronics	Not disclosed.

Summary	Intel has committed to net-zero emissions by 2040 with an interim goal for its suppliers. It also committed to 100% renewable energy use in its own operations by 2030. Intel has made efforts both in energy efficiency and procurement of renewables, with a higher ratio of renewable energy than any other company. The impact of its renewable energy purchase, however, remains unclear, with a large portion coming from REC trade.	
Commitment (B+)	**Climate Commitment**	Intel has not set climate commitments within its own operation or supply chain.
	100% RE Commitment	Intel committed to achieve net-zero greenhouse gas emissions in its global operations by 2040. Intel pledged to partner with suppliers to decrease supply chain greenhouse gas emissions by at least 30% by 2030.
Action (D+)	**Renewable Energy Ratio**	Intel's 2021 renewable energy ratio was 82%.
	Renewable Energy Sourcing methods	Intel has deployed solar at over 100 of its facilities, with installed capacity of over 50MW. Over 98% of Intel's renewable energy is currently reported as sourced via unbundled renewable energy attributes. Intel has recently signed two large renewable PPAs, 100MW of solar in Arizona and 120MW of Solar in Oregon. If the estimated output of these projects were used to replace a portion of the RECs reported in 2021, it would represent 9% of the company's total renewable supply.
	Helping suppliers sourcing RE?	There is no publicly available information or direct disclosure of Intel helping its suppliers source renewable energy.

Action (D+)	**Energy Efficiency**	Intel has reportedly increased energy efficiency by investing in efficient lighting, chilled water systems, compressed air, heat recovery and electrification and has improved products' energy efficiency as well as incorporating green design into the new construction and renovation of their facilities. Intel has run an engagement campaign to educate suppliers about climate change, featured climate change performance in supplier awards scheme, and requested suppliers with higher environmental impacts submit data on carbon footprints through the CDP Climate Change Questionnaire.
	Emission reduction from 2019-2021 (own operation)	Emission has increased by 13.54% from 2019 to 2021. Emission (2019-2021): market-based 2019: 2.88 million metric tons CO_2e. 2020: 2.88 million metric tons CO_2e. 2021: 3.27 million metric tons CO_2e.
Transparency (B-)	Intel has disclosed the majority of its environmental data, including energy, electricity and emissions. However, there is no emission intensity data disclosure.	
Advocacy (D+)	Intel is working with the Center for Climate Change and Energy Solutions and the Gridwise Alliance, which advocate for innovation and investments in climate solutions, including expanding ICT's role in driving change and grid modernization appropriations as part of future infrastructure investments. There is board-level oversight of climate-related issues within Intel. There is however no publicly available information or direct disclosure of Intel supporting renewable energy-related policies.	

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for Intel. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- Intel (2022). Intel Commits to Net-Zero Greenhouse Gas Emissions in its Global Operations by 2040. Retrieved September 13, 2022, from https://www.intel.com/content/www/us/en/newsroom/news/net-zero-greenhouse-gas-emissions-operations.html#gs.63syqp
- Intel (2022). 2021-22 Corporate Responsibility Report. Retrieved September 13, 2022, from http://csrreportbuilder.intel.com/pdfbuilder/pdfs/CSR-2021-22-Full-Report.pdf
- Intel (2021). Climate Change 2021. CDP. Retrieved September 13, 2022, from https://www.cdp.net/en/formatted_responses/responses?campaign_id=74241094&discloser_id=891337&locale=en&organization_name=Intel+Corporation&organization_number=9298&program=Investor&project_year=2021&redirect=https%3A%2F%2Fcdp.credit360.com%2Fsurveys%2F2021%2Fdbbr64mv%2F147732&survey_id=73557641

Company: Japan Display

Overall grade	Industry	Clients	Offset
F	**Display / Panel**	Apple, Sony	Not disclosed.

Summary	Japan Display has not made any commitments on emissions reduction and 100% renewable energy use either in its operations or in the supply chain. Japan Display has adopted renewable energy and improved energy efficiency to reduce emissions. It has reportedly procured renewables through various methods but the renewable energy consumption ratio remains quite low. Data transparency and policy advocacy are poor.	
Commitment (F)	**Climate Commitment**	Japan Display has not set targets to reduce absolute GHG emissions either in its operations or in its supply chain.
	100% RE Commitment	Japan Display has not set commitments to switch to 100% renewable energy use either in its operations or in its supply chain.
Action (F)	**Renewable Energy Ratio**	Japan Display's 2020 renewable energy ratio was 0.012%.
	Renewable Energy Sourcing methods	Japan Display has reportedly sourced renewable energy through installing self-generating systems which generated 120 MWh in 2020. And according to Japan Display's 2021 CDP disclosure, the company also sourced 15,379.58 mWh of hydropower in the Philippines through PPA and 116.78 mWh solar energy in Japan. However, no other detailed information has been disclosed.
	Helping suppliers sourcing RE?	There is no publicly available information or direct disclosure of Japan Display helping its suppliers source renewable energy.
	Energy Efficiency	Japan Display increased its energy efficiency by stopping using FCU, blower and tube boiler, using INV in cooling water pumps, insulating steam piping, and using LED light. Japan Display has not taken steps to encourage its suppliers to implement energy conservation actions.

Action (F)	**Emission reduction from 2019-2021 (own operation)**	The emission change from 2019 to 2021 is untrackable due to the lack of 2021 data. Emission (2019-2021): location-based 2019: 565,289.75 metric tons CO_2e. 2020: 545,215.88 metric tons CO_2e. 2021: Not disclosed.
Transparency (B)	Japan Display has disclosed the majority of its environmental data, including energy, electricity and emissions. However, there is no emission intensity disclosed.	
Advocacy (F)	There is board-level oversight of climate-related issues within Japan Display. There is however no evidence of Japan Display supporting renewable energy-related policies or conducting peer advocacy regarding climate action.	

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for Japan Display. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- Japan Display (2021). Climate Change 2021. CDP. Retrieved September 14, 2022, from https://www.cdp.net/en/formatted_responses/responses?campaign_id=74241094&discloser_id=896456&locale=en&organization_name=Japan+Display+Inc.&organization_number=53586&program=Investor&project_year=2021&redirect=https%3A%2F%2Fcdp.credit360.com%2Fsurveys%2F2021%2Fdbbr64mv%2F143343&survey_id=73557641
- Japan Display (2021). CSR Report 2021. Retrieved September 14, 2022, from https://www.j-display.com/english/Environment/report/pdf/env2021_e.pdf

Company: Kioxia KIOXIA

Overall grade	Industry	Clients	Offset
D	**Semiconductor**	Apple, Dell, HP, Microsoft	Not disclosed.

Summary	Kioxia has committed to 100% renewable energy in its operations by 2040. But currently, Kioxia's renewable energy use ratio remains low and sourcing methods remain limited.	
Commitment (D-)	**Climate Commitment**	Kioxia has not set climate commitments within its own operation or supply chain.
	100% RE Commitment	Kioxia committed to achieve 100% renewable energy by 2040. Kioxia has not set commitments to use renewable energy in its supply chain.
Action (F)	**Renewable Energy Ratio**	Kioxia's 2020 renewable energy ratio was 0.003%.
	Renewable Energy Sourcing methods	In Kioxia's 2021 CDP disclosure, Kioxia reported purchasing 123 MWh of solar power via the J-credit Scheme in 2020.
	Helping suppliers sourcing RE?	There is no publicly available information or direct disclosure of Kioxia helping its suppliers source renewable energy.
	Energy Efficiency	Kioxia reported increasing energy efficiency by improving productivity of washing tanks in the SH process, changing the type of gas used for injecting C ion from CO2 base to CO base, introducing energy-saving dry pumps in the ion injection process, heaterless piping, and reducing pressure loss in the system. Kioxia has been collecting climate change and carbon information at least once annually from suppliers, and suppliers make regular reports to Kioxia about their CSR management.

Action (F)	**Emission reduction from 2019-2021 (own operation)**	Emissions change from 2019 to 2021 is untrackable due to the lack of 2021 data. Emission (2019-2021): location-based 2019: 2,186,100 metric tons CO_2e. 2020: 2,365,300 metric tons CO_2e. 2021: Not disclosed.
Transparency (C+)	Kioxia disclosed the majority of its environmental data, including energy, electricity and emissions. However, there is no emission intensity data disclosure.	
Advocacy (C+)	Kioxia has reported gathering information on renewable energy by participating in industry groups and making proposals to the government to achieve the goal of using 100% renewable energy by 2040. Kioxia held meetings with departments and agencies that are involved in policies for climate change in 2020 in cooperation with Japan Climate Leaders' Partnership (JCLP). During the meetings, they explained climate change-related issues surrounding the semiconductor industry as well as requests of stakeholders (customer companies, in particular) related to climate change. Kioxia has taken CO2 emission reduction actions in line with the low-carbon society action plan promoted by the Japan Business Federation. There is board-level oversight of climate-related issues within Kioxia.	

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for Kioxia. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- Kioxia. Climate Change and Energy Management. Retrieved September 13, 2022, from https://www.kioxia-holdings.com/en-jp/sustainability/environment/climate.html
- Kioxia. (2021). Climate Change 2021. CDP. Retrieved September 13, 2022, from https://www.cdp.net/en/formatted_responses/responses?campaign_id=74241094&discloser_id=900574&locale=en&organization_name=Kioxia+Holdings+Corporation&organization_number=840012&program=Investor&project_year=2021&redirect=https%3A%2F%2Fcdp.credit360.com%2Fsurveys%2F2021%2Fdbbr64mv%2F145564&survey_id=73557641
- Kioxia. (2020). Climate Change 2021. CDP. Retrieved September 13, 2022, from https://www.cdp.net/en/formatted_responses/responses?campaign_id=70692136&discloser_id=854482&locale=en&organization_name=Kioxia+Holdings+Corporation&organization_number=840012&program=Investor&project_year=2020&redirect=https%3A%2F%2Fcdp.credit360.com%2Fsurveys%2F2020%2F6sc15v4h%2F101385&survey_id=68887525

Company: LG Display

Overall grade	Industry	Clients	Offset
D	**Display / Panel**	Apple, Microsoft, Dell, HP, Lenovo, Sony, LG Electronics	Not disclosed.

Summary	LG Display has been using its voice in the Korean Display Industry Association to demand more renewable energy-friendly policies. LG Display has not committed to any emissions or renewable energy targets.	
Commitment (F)	**Climate Commitment**	LG Display has not set targets to reduce absolute GHG emissions either in its operations or in its supply chain.
	100% RE Commitment	LG Display has not set commitments to switch to renewable energy either in its operations or in its supply chain.
Action (D)	**Renewable Energy Ratio**	LG Display's renewable energy ratio in 2021 was 11%.
	Renewable Energy Sourcing methods	According to LG Display's disclosure, the company installed 10 MW solar roof facilities between two factories in Paju and Gumi.
	Helping suppliers sourcing RE?	There is no publicly available information or direct disclosure of LG Display helping its suppliers source renewable energy.
	Energy Efficiency	In LG Display's 2021 Sustainability report, the company reported improving energy efficiency by plant facilities and processes. LG Display has conducted the Green SCM Consulting project to support partners' environmental management by providing GHG inventory construction and energy efficiency.
	Emission reduction from 2019-2021 (own operation)	Emission decreased by10.29% from 2019 to 2021. Scope 1 + 2 Emission (2019-2021): location-based 2019: 7,842,803 tCO_2eq 2020: 6,744,793 tCO_2eq 2021: 7,035,982 tCO_2eq

Transparency (A-)	LG Display disclosed complete environmental data, including energy, electricity and emissions.
Advocacy (C+)	LG Display requested carbon neutrality and renewable energy policy support at the Carbon Neutral Promotion Committee chaired by the South Korea's President and Minister of Trade, Industry and Energy, and for policy support to activate the use of new and renewable energy through the Ministry of Trade, Industry and Energy / Korea Federation of Economy / Display Association. LG Display has also participated in joint opinions for renewable energy expansion policy through Corporate Renewable Energy Initiative (CoRE i). As a member of the CoRE i, LG Display participates in the exchange of information with government agencies (Ministry of Commerce, Industry and Energy, Korea Energy Corporation), NGOs (WWF, Kosif, etc.), and companies. The company also participated in discussions and sharing activities on renewable energy in the display industry and the industry responses to the transition with Korea Display Association, discussions on the current status of new energy and renewable energy conversion and responses operation of a regular consultative body for new energy and renewable energy within LG group companies, and communicating industry opinions and discussion of industry responses through participation in the Energy Demand Policy Committee. According to LG Display's 2021 CDP report, there is board-level oversight of climate-related issues within LG Display.

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for LG Display. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- LG Display. (2022). 2021-2022 Sustainability Report. Retrieved September 13, 2022, from https://www.lgdisplay.com/attachment/esg/csm/LGD_CSR_report_2022_eng.pdf
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- Korean Sustainable Investment Forum. (2021). [Working Team Workshop] Results of Study Group 1st Meeting. Retrieved September 13, 2022, from https://kosif.org/corei/?pageid=2&mod=document&uid=52 (original in Korean)

Company: Luxshare Precision

Overall grade	Industry	Clients	Offset
D+	**Final Assembly**	Apple, Microsoft, HP, Dell, Amazon, Google	Luxshare Precision's 2021 carbon offset percentage was 5%.

Summary	Luxshare Precision has committed to carbon neutrality in its own operations by 2050. There is no 100% renewable energy target. Luxshare's efforts to procure renewable energy include self-generation, investment, PPAs, and local REC trade. Scope 3 emissions disclosure and public support for policy changes are lacking.	
Commitment (F)	**Climate Commitment**	Luxshare Precision committed to achieve carbon neutrality by 2050. Luxshare Precision has not set targets to reduce absolute GHG emissions in its supply chain.
	100% RE Commitment	Luxshare Precision has not committed to 100% renewable energy either in its operations or in its supply chain.
Action (C-)	**Renewable Energy Ratio**	Luxshare Precision's 2021 renewable energy ratio was 13.26%.
	Renewable Energy Sourcing methods	According to Luxshare Precision's 2021 sustainability report, the company consumed 271,197 MWh of renewable energy in FY 2021. Among that, 5.9% and 5.6% were from self-generation and renewable energy investment, respectively, 10.80% was sourced through PPA, and 88.3% was from local REC trade.
	Helping suppliers sourcing RE?	There is no publicly available information or direct disclosure of Luxshare Precision helping its suppliers source renewable energy.
	Energy Efficiency	In Luxshare Precision 2021 Sustainability report, the company reports increasing energy efficiency through adjusting energy structure, adopting more efficient technologies, improving energy use systems, and improved daily management. The company also invested RMB10,095,700 in air compressor transformation, lighting system optimization, waste heat recovery, and other special energy saving and emission reduction transformation projects, saving 49,480.93 MWh of electricity in total. Luxshare Precision held the Hazardous Substances and Green Supply Chain Management Sharing Conference at the end of 2021 to help suppliers conduct energy conservation and emissions reduction.

Action (C-)	**Emission reduction from 2019-2021 (own operation)**	Emission increased by 154.83% from 2019 to 2021. Emission (2019-2021): location-based 2019: 448,015.14 metric tons CO_2e. 2020: 547,715.32 metric tons CO_2e. 2021: 1,141,677.22 metric tons CO_2e.
Transparency (B-)	Luxshare Precision has disclosed the majority of its environmental data, including energy, electricity and emissions. However, there is no scope 3 emissions data disclosure.	
Advocacy (D+)	Luxshare Precision is a member of the ICT Industry Quality and Green Development League, which explores development trends, sets new standards, and leads high-quality development in the industry. There is board-level oversight of climate-related issues within Luxshare Precision. However, there is no publicly available information or direct disclosure of Luxshare Precision supporting renewable energy-related policies.	

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for Luxshare Precision. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- Luxshare Precision (2022, April 27). 2021 Sustainability Report. Retrieved from https://www.luxshare-ict.com/Upload/File/201712/2021sren.pdf
- Luxshare Precision (2021). Climate Change 2021. CDP. Retrieved September 13, 2022, from https://www.cdp.net/en/formatted_responses/responses?campaign_id=74241094&discloser_id=897264&locale=en&organization_name=Luxshare+Precision+Industry&organization_number=51312&program=Investor&project_year=2021&redirect=https%3A%2F%2Fcdp.credit360.com%2Fsurveys%2F2021%2Fdbbr64mv%2F143797&survey_id=73557641

Company: Pegatron PEGATRON

Overall grade	Industry	Clients	Offset
D-	**Final Assembly**	Apple, Microsoft, Dell, HP, Sony	Not disclosed.

Summary	Pegatron has not set any commitments to net-zero emissions and 100% renewables energy use. Pegatron has made efforts in energy efficiency, but its procurement of renewable energy is at a very small scale. Efforts are also needed in respect to transparency, given the lack of disclosure on renewable energy use ratio and scope 3 emissions. Pegatron also lags behind when it comes to the policy advocacy part.	
Commitment (F)	**Climate Commitment**	Pegatron has not set targets to reduce absolute GHG emissions either in its operations or in its supply chain.
	100% RE Commitment	Pegatron has not set commitments to switch to renewable energy either in its operations or in its supply chain.
Action (D)	**Renewable Energy Ratio**	No disclosure.
	Renewable Energy Sourcing methods	In the Pegatron 2021 sustainability report, the company reports building solar generating systems in 2021, generating 9.11 million KWh. Pegatron also purchased 35.35 million KWh hydropower in China Mainland.
	Helping suppliers sourcing RE?	No evidence of Pegatron helping its suppliers source renewable energy.
	Energy Efficiency	Pegatron has taken steps to improve energy efficiency, including production usage, operation, product, transportation and office-related electricity consumption. Pegatron has run an engagement campaign to educate suppliers about climate change.
	Emission reduction from 2019-2021 (own operation)	Emission decreased by 17.2% from 2019 to 2021. Emission (2019-2021): location-based 2019: 602,956.11 metric tons CO_2e. 2020: 599,078.01 metric tons CO_2e. 2021: 514,359.29 metric tons CO_2e.

Transparency (C-)	Pegatron has disclosed environmental data on energy, electricity and emissions. But renewable energy consumption and Scope 3 emissions are lacking.
Advocacy (D+)	Pegatron formed a climate partnership with seven other companies to promote and accelerate the decarbonisation of the global ICT industrial supply chain. There is also board-level oversight of climate-related issues within Pegatron. There is no publicly available information or direct disclosure of Pegatron supporting renewable energy or emissions reduction policies.

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for Pegatron. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- Pegatron (2022). 2021 Pegatron Sustainability Report. Retrieved September 13, 2022, from https://cht.pegatroncorp.com/files/backend/csr_file/2021%20Pegatron_Sustainability_Report.pdf
- Pegatron. (2021). Climate Change 2021. CDP. Retrieved September 13, 2022, from https://www.cdp.net/en/formatted_responses/responses?campaign_id=74241094&discloser_id=896260&locale=en&organization_name=Pegatron+Corporation&organization_number=14540&program=Investor&project_year=2021&redirect=https%3A%2F%2Fcdp.credit360.com%2Fsurveys%2F2021%2Fdbbr64mv%2F144677&survey_id=73557641
- H2O Communication (2022). Press release published online April 4, 2022: Taiwan Climate Partnership joins hands with ICT supply chain to initiate a new era for net-zero carbon emissions by 2050. Retrieved September 13, 2022, from https://www.einnews.com/pr_news/567451034/taiwan-climate-partnership-joins-hands-with-ict-supply-chain-to-initiate-a-new-era-for-net-zero-carbon-emissions-by-2050

Company: Samsung Display

Overall grade	Industry	Clients	Offset
D+	**Display / Panel**	Apple, Dell	Not disclosed.

Summary	Samsung Display has not made any commitments on emissions reduction or 100% renewable energy use in either its operations or in the supply chain. Samsung Display has adopted renewable energy and improved energy efficiency to reduce emissions. The company has procured renewables through RECs, green premium, and self-generation. But its current RE ratio remains low. Samsung Display has engaged with policy makers regarding renewable energy sourcing in South Korea.	
Commitment (D-)	**Climate Commitment**	Samsung Display has set a Carbon Neutrality goal in its own operations by 2050. Samsung Display has not set targets to reduce absolute GHG emissions in its supply chain yet.
	100% RE Commitment	Samsung Display committed to achieve 100% renewable electricity use across their global operations by 2050. Samsung Display has not set targets to switch to 100% renewable energy use in its supply chain.
Action (D)	**Renewable Energy Ratio**	Samsung Display's 2021 renewable energy ratio was 5%.
	Renewable Energy Sourcing methods	According to Samsung Display's disclosure, the company sourced 388GWh RECs in China and Vietnam, and 10GWh green premium in South Korea. Besides, Samsung Display installed 6.3 KW of solar generation facilities in factories.
	Helping suppliers sourcing RE?	There is no publicly available information or direct disclosure of Samsung Display helping its suppliers source renewable energy.
	Energy Efficiency	Samsung Display has reportedly increased its energy efficiency by introducing the life-cycle energy management system and the Factory Energy Management System (FEMS), operating their Energy Qual system, and setting the 'Energy consumption optimization strategy based on the environment, equipment, and the CDA (Clean Dry Air) system. By joining the CDP Supply Chain, Samsung Display supports its suppliers to calculate carbon emissions and reduce emissions.

Action (D)	**Emission reduction from 2019-2021 (own operation)**	Emission decreased by 0.74% from 2019 to 2021. Emission (2019-2021): market-based 2019: 5708 kiloton CO_2e. 2020: 5656 kiloton CO_2e. 2021: 5666 kiloton CO_2e.
Transparency (A-)	Samsung Display disclosed complete environmental data, including energy, electricity and emissions.	
Advocacy (C+)	In connection with the Korea Display Industry Association, Samsung Display used the press and government meetings with the Ministry of Industry and the Ministry of Environment to demand renewable energy-friendly policies. Meanwhile, Samsung Display has participated in the Semiconductor and Display Carbon Neutrality Committee, public-private cooperations for carbon neutrality, and the World Display Device Industry Cooperation (WDICC). Within Samsung Display's operations, internal governance regarding climate action and cooperation across regional branches are being strengthened as well.	

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for Samsung Display. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- Samsung Display (2022). [Press Release] Samsung Display Announces Environmental Strategy to Achieve Net Zero Emissions by 2050. Retrieved October 13, 2022, from https://global.samsungdisplay.com/30667/
- Samsung Display (2022). Samsung Display Sustainability Report 2022. Retrieved September 14, 2022, from https://www.samsungdisplay.com/kor/file/download/SAMSUNG%20DISPLAY%20SR%202022_Eng_web_220805.pdf

Company: Samsung Electronics SAMSUNG

Overall grade	Industry	Clients	Offset
D+	**Semiconductor**	Apple, Microsoft, Dell, Lenovo, LG Electronics, Google, HP	Partial disclosure, with no offset percentage disclosed yet.

Samsung Electronics was evaluated both as a global consumer electronics brand and a key supplier of semiconductors, and as such was graded differently according to the respective criteria. As a consumer electronics brand, Samsung was awarded the overall grade of F.

Summary	Samsung committed to carbon neutrality and 100% renewable energy by 2050. As an industry leader Samsung Electronics has made little effort to set up ambitious commitments on emissions reduction or 100% renewable energy adoption. Despite efforts in energy efficiency and data disclosure, Samsung Electronics has not actively advocated for renewable energy-related policy in South Korea. Samsung did achieve 100% renewable energy targets in China, Europe and US sites, but the majority of this renewable energy was purchased through low-impact REC trade.	
Commitment (D-)	**Climate Commitment**	Samsung Electronics has set a Carbon Neutrality goal in its own operations by 2050. Samsung Electronics has not set targets to reduce absolute GHG emissions in its supply chain.
	100% RE Commitment	Samsung Electronics has committed to switch to 100% renewable energy use by 2050. Samsung Electronics has not set commitments to switch to renewable energy in its supply chain.
	As a consumer electronics brand, Samsung was awarded an F in this category, for failing to extend its climate or renewable energy commitments to the supply chain.	
Action (D)	**Renewable Energy Ratio**	Samsung Electronics' 2021 renewable energy ratio was 20.48%.

Action (D)	**Renewable Energy Sourcing methods**	According to Samsung Electronics' 2022 CDP report, the company used several renewable energy sourcing methods in 2021, including self-generation (0.3%), PPA (0.6%), RECs (68.2%), and green premium (11.4%). Samsung Electronics's onsite facilities generated 16.5 GWh of renewable energy in 2021. The company also signed both on-site and off-site PPAs totaling 32.3 GWh in China, India and the US. Most RE procurement, however, was through REC trade. The company purchased RECs in the US (1,247,000 MWh), Poland (86,000 MWh), China (3,160,000 MWh) and Mexico (110,000 MWh). The company also purchased a total of 604 GWh of green tariffs in these five countries.
	Helping suppliers sourcing RE?	There is no publicly available information or direct disclosure of Samsung Electronics helping its suppliers source renewable energy either through public disclosure or from Samsung directly.
	Energy Efficiency	According to Samsung Electronics' 2022 sustainability report, the company has applied approaches to reduce its energy consumption, including, monitoring energy consumption through IoT and AI-based HVAC system for better efficiency and control, reducing energy consumption across all stages of semiconductor manufacturing. Alongside its own operation, Samsung Electronics has encouraged its suppliers to disclose their environmental data based on the Carbon Disclosure Project (CDP) framework. Samsung holds regular educational seminars on energy efficiency issues for suppliers.
	Emission reduction from 2019-2021 (own operation)	Emissions increased by 26.09% from 2019 to 2021. Emission (2019-2021): 2019: 13,800 thousand tonnes CO_2e 2020: 14,805 thousand tonnes CO_2e 2021: 17,400 thousand tonnes CO_2e
	As a consumer electronics brand, Samsung was awarded an F in Action for its low ratio of high impact renewable energy, and for failing to sufficiently engage its suppliers to increase renewable energy in the supply chain.	
Transparency (A-)	Samsung Electronics disclosed complete environmental data, including energy, electricity and emissions. In the supply chain, Samsung only provided limited scope 3 data with category breakdown, with no transparency on renewable or fossil fuel energy use or regional breakdown. Samsung does publish a list of suppliers who agreed to be disclosed, representing 80% by transaction volume. **In the consumer electronics brand rankings, Samsung was awarded a D- due to very limited supply chain transparency.**	

Advocacy (D+)	There is board-level oversight of climate-related issues within Samsung Electronics according to Samsung Electronics' 2022 CDP report. Samsung Electronics also joined the Clean Energy Buyers Association in the US, and recently joined RE100. It is not discernible if it has engaged in any meaningful advocacy in the last 12 months. **As a consumer electronics brand Samsung was awarded an F in advocacy for failing to engage in any significant public renewable energy advocacy in the last 12 months.**

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for Samsung Electronics. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- Samsung Electronics (2022). Samsung Electronics Sustainability Report 2022. Retrieved September 13, 2022, from https://images.samsung.com/is/content/samsung/assets/uk/sustainability/overview/Samsung_Electronics_Sustainability_Report_2022.pdf
- Samsung Electronics. (2022). Climate Change 2022. [Report submitted for publication]. CDP. Retrieved September 13, 2022, from https://www.cdp.net/en/responses/16191/Samsung-Electronics?back_to=https%253A%252F%252Fwww.cdp.net%252Fen%252Fresponses%253Futf8%253D%2525E2%25259C%252593%2526queries%25255Bname%25255D%253DSamsung%252BElectronics&queries%255Bname%255D=Samsung+Electronics

Company: Sharp SHARP

Overall grade	Industry	Clients	Offset
D	**Display / Panel**	Apple, Dell, Lenovo, Microsoft, Amazon, Samsung Electronics	Not disclosed.

Summary	Sharp pledged to achieve carbon neutrality by 2050 in its operations, but a 100% renewable energy target is still lacking. Although Sharp claimed that It has procured renewable energy mainly through methods with higher additionality such as PPAs but the total consumption of renewables remains small. Policy advocacy efforts are needed from the company.	
Commitment (F)	**Climate Commitment**	Sharp aims to achieve carbon neutrality in the scope of business activities by 2050.
	100% RE Commitment	Sharp has not set commitments to switch to 100% renewable energy use either in its operations or in its supply chain.
Action (D-)	**Renewable Energy Ratio**	Sharp's 2020 renewable energy ratio is 0.775%.
	Renewable Energy Sourcing methods	In Sharp's 2021 CDP disclosure, Sharp reported sourcing renewable energy through self-installation, PPAs, RECs, and green electricity products. The proportion of self-generation was 58%, PPAs was 36%, and green electricity products was 20.2%. However, in 2021 Sharp's renewable energy ratio was <1%.
	Helping suppliers sourcing RE?	There is no publicly available information or direct disclosure of Sharp helping its suppliers source renewable energy.
	Energy Efficiency	Sharp has reportedly increased its energy efficiency via machine / equipment replacement, production processes optimization, company policy or behavioral change (site consolidation / closure), and energy efficiency improvements in lighting, heating, ventilation and air conditioning. Sharp has reportedly been collecting climate change and emissions information from its suppliers and running a campaign to encourage suppliers to reduce climate change impacts.

Action (D-)	**Emission reduction from 2019-2021 (own operation)**	The emission change from 2019 to 2021 is untrackable due to the lack of 2021 data. Emission (2019-2021): Market-based 2019: 974 thousand tons CO_2. 2020: 951 thousand tons CO_2. 2021: Not disclosed.
Transparency (B-)	Sharp disclosed the majority of its environmental data, including energy, electricity and emissions. However, the company's electricity and emissions data are showing a big gap between the 2021 Sustainability report and the 2021 CDP climate change data even though the two sources were showing the same disclosing timespan. There is no emission intensity data disclosed.	
Advocacy (D+)	As a member of Japan Electronic Information Technology Association (JEITA) and Japan Electrical Manufacturers Association (JEMA), Sharp has participated in the discussion of the independent action plan of the electrical and electronic industry in 2020 and participated in the research of the "low-carbon Society" implementation plan in 2030. There is also board-level oversight of climate-related issues within Sharp. However, no evidence of Sharp support of renewable energy policies has been submitted or discovered.	

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for Sharp. 2021Q3. Retrieved September 19, 2022 from Bloomberg terminal.
- Sharp (n.d.) Climate Change. Retrieved September 14, 2022, from https://global.sharp/corporate/eco/environment/climate_change/
- Sharp. (2021). Sustainability Report 2021. Retrieved September 14, 2022, from http://global.sharp/corporate/eco/report/
- Sharp (2021). Climate Change 2021. CDP. Retrieved September 14, 2022, from https://www.cdp.net/en/formatted_responses/responses?campaign_id=74241094&discloser_id=891976&locale=en&organization_name=Sharp+Corporation&organization_number=16794&program=Investor&project_year=2021&redirect=https%3A%2F%2Fcdp.credit360.com%2Fsurveys%2F2021%2Fdbbr64mv%2F141396&survey_id=73557641

Company: SK Hynix

Overall grade	Industry	Clients	Offset
D	**Semiconductor**	Apple, Microsoft, Dell, HP, Amazon, LG Electronics, Google, Lenovo, Sony, Samsung Electronics	**Not disclosed.**

Summary	SK Hynix's commitments are overall very limited, despite commitments to achieve net-zero and 100% renewable energy use by 2050. SK Hynix has made efforts to improve energy efficiency but has performed poorly in renewable energy procurement and still has a low RE ratio. The company has not advocated for emission reduction or renewable energy-related policies.	
Commitment (D-)	**Climate Commitment**	SK Hynix has set a Net Zero goal in its own operations by 2050. SK Hynix has not included its supply chain emissions into its climate pledges.
	100% RE Commitment	SK Hynix has committed to achieve 100% renewable energy use in its own operations by 2050. SK Hynix has not included its supply chain in the renewable energy transition plan.
Action (F)	**Renewable Energy Ratio**	SK Hynix's current renewable energy ratio was 4.1% in 2021.
	Renewable Energy Sourcing methods	SK Hynix's 2021 ESG report describes renewable energy procured through onsite generation, equity investment, third-party PPA and RECs. SK Hynix did not disclose other details regarding sourcing location or scale.
	Helping suppliers sourcing RE?	There is no publicly available information or direct disclosure on SK Hynix helping its suppliers source renewable energy has been discovered.

Action (F)	**Energy Efficiency**	SK Hynix has improved its energy efficiency via out air conditioner (OAC) energy efficiency improvement, optimal operation of OAC, waste heat recovery systems, and freezing system optimal operation. SK Hynix launched 'ECO Alliance' in 2019 to solve environmental issues and help suppliers respond to the rapidly changing environmental regulations holding regular meetings, small group activities, ECO conferences, and publishing the ECO Alliance Newsletters.
	Emission reduction from 2019-2021 (own operation)	Emissions increased 11.68% from 2019 - 2021. Scope 1 +2 Emission (2019-2021): 2019: 6,839,470 tCO_2eq. 2020: 7,548,328 tCO_2eq. 2021: 7,638,465 tCO_2eq.
Transparency (A-)	SK Hynix disclosed all of its environmental data, including energy, electricity and emissions.	
Advocacy (D+)	SK Hynix launched 'ECO Alliance' in 2019. The company held regular knowledge-sharing sessions regarding waste and GHG emissions management. According to SK Hynix' 2021 ESG Report, there is also board-level oversight of climate-related issues within SK Hynix. There is no evidence, however, of SK Hynix engaging with government officials on renewable energy-related policy changes.	

Data Source

- Bloomberg L.P. (2022) Supply Chain Analysis for SK Hynix. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- SK hynix. (2021). *SK hynix Sustainability Report 2021*. Retrieved September 13, 2022, from https://www.skhynix.com/sustainability/UI-FR-SA1601/

Company: TSMC

Overall grade	Industry	Clients	Offset
C-	**Semiconductor**	Apple, Microsoft, Amazon, Dell, HP	TSMC's 2021 carbon offset was 241,577 metric tons-CO_2e.

Summary	TSMC has committed to achieve net zero and 100% renewable energy by 2050. Despite efforts to purchase renewable energy through PPAs around the world, the company's renewable ratio remains low. TSMC operates large, electricity-intensive chip plants and only uses limited renewable energy sources in the region. TSMC should use its industry leadership position to invest in and build out more renewable energy sources in the region.	
Commitment (D-)	**Climate Commitment**	TSMC has committed to Net Zero Emissions by 2050. TSMC has not set targets to reduce absolute GHG emissions in its supply chain yet.
	100% RE Commitment	TSMC has committed to 100% renewable energy by 2050. TSMC has not set commitments to switch to renewable energy in its supply chain yet.
Action (D+)	**Renewable Energy Ratio**	TSMC's 2021 renewable energy ratio was 9.2%.
	Renewable Energy Sourcing methods	In TSMC's 2021 Sustainability Report, the company reports generating 4,879 MWh of renewable energy from installed solar panels. TSMC signed renewable energy PPAs totaling 1.6 GWh. It is clear that TSMC has purchased renewable energy and RECs as well, but no details on the scale have been disclosed yet.
	Helping suppliers sourcing RE?	There is no evidence of TSMC helping its suppliers source renewable energy.
	Energy Efficiency	In TSMC's 2021 Sustainability Report, the company reports implementing various approaches to achieve energy efficiency within its factories and offices, including energy-saving programs for next-generation semiconductor fab tools, energy-saving programs on models, and thus saved 400 GWh electricity in a year. TSMC has encouraged suppliers to implement energy efficiency measures.

Action (D+)	**Emission reduction from 2019-2021 (own operation)**	Emissions increased by 17.5% from 2019 to 2021. Scope 1+2 Emission (2019-2021): 2019: 8,769,615 metric tons CO_2e 2020: 9,464,697 metric tons CO_2e 2021: 10,304,434 metric tons CO_2e
Transparency (A-)	TSMC disclosed complete environmental data, including energy, electricity and emissions.	
Advocacy (C+)	According to TSMC's 2021 CDP report, TSMC was invited to give demands and suggestions for local REC. Since 2015, TSMC has led the newly organized Energy & Resource Committee in TSIA (Taiwan Semiconductor Industry Association), communicating with the government's Bureau of Energy and discussing stability of electricity supply to mitigate operational risk with electricity supplier Taipower. TSCM held two communication meetings in 2020. TSMC and eight other companies in the ICT industry formed a climate partnership to share their carbon reduction experience and work within supply chains to promote a comprehensive transformation to net zero carbon emission. According to TSMC's 2021 CDP report, there is board-level oversight of climate-related issues within TSMC.	

Data Source

- Lin. A. (2022).TSMC: Inventory correction is here, but long-term prospects remain strong. Retrieved September 19, 2022 from https://seekingalpha.com/article/4523506-tsmc-q2-earnings-inventory-correction-long-term-prospects-strong
- Bloomberg L.P. (2022) Supply Chain Analysis for TSMC. 2021Q3. Retrieved September 19, 2022 from Bloomberg Terminal.
- TSMC. (2021). TSMC 2021 Sustainability Report. Retrieved September 13, 2022, from https://esg.tsmc.com/download/file/2021_sustainabilityReport/english/e-all.pdf
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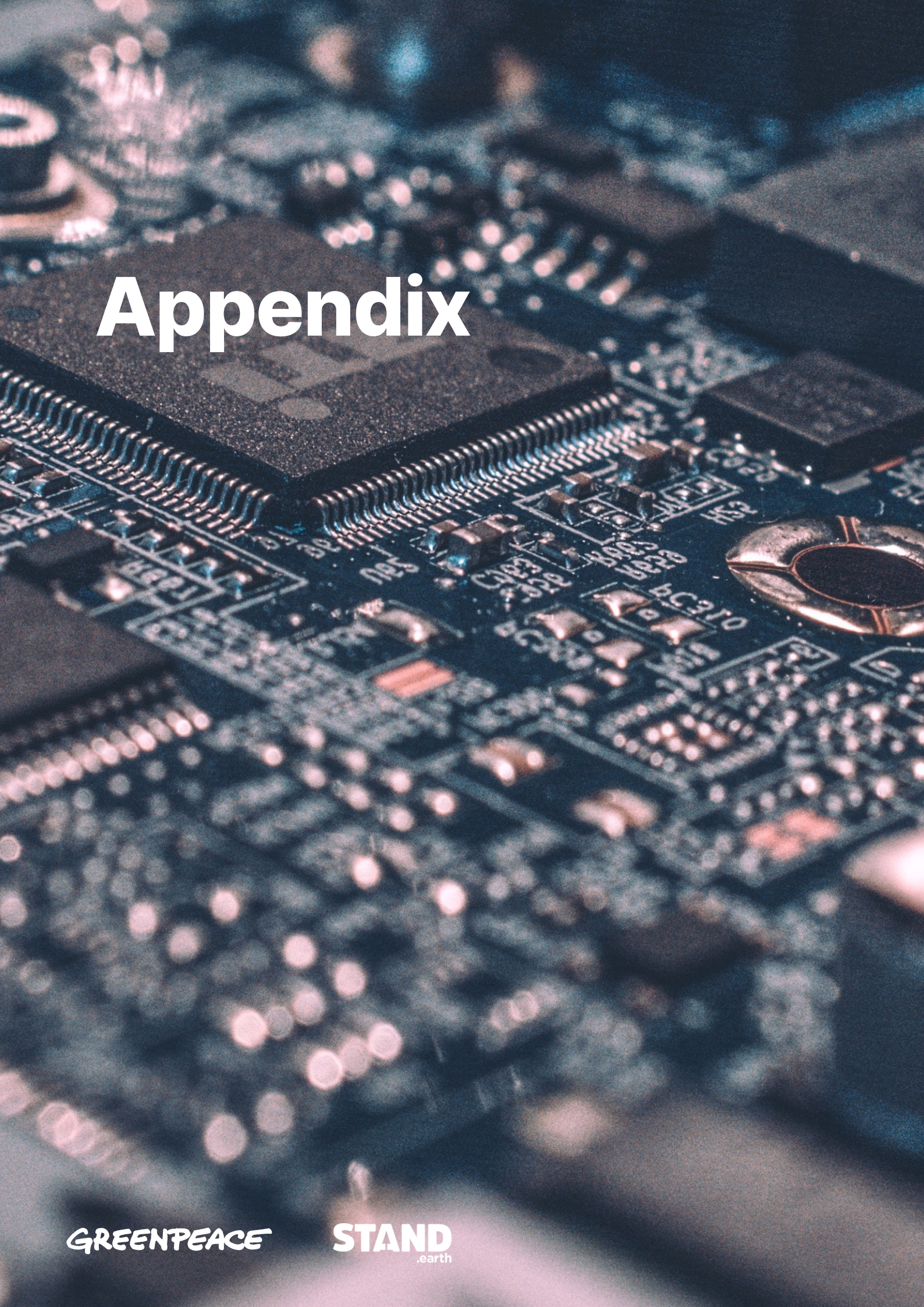

Appendix

GREENPEACE STAND.earth

Appendix

About data collection

Company data in this report comes from online disclosure materials, such as sustainability reports, CDP disclosure and news media. Greenpeace and Stand.earth have consulted with companies mentioned in this report to ensure data accuracy.

The data collecting period ended on 3rd October for consumer electronics companies and 29th July 2022 for suppliers companies. Besides companies' climate commitments, any environmental-related data after this period was not taken into account.

About the evaluation criteria

The research teams from Stand Earth and Greenpeace developed scoring indexes to reflect the climate commitment and action of consumer electronics brands and their key suppliers from semiconductor, display manufacturing and final assembly industries. Due to the different progress of brands and suppliers taken in the fight against climate change, the scoring indexes are designed accordingly for brands and supply chain companies, which aims to capture the most accurate and substantial climate commitments and actions of the companies.

Brands scoring rubric

Weight	Scoring Dimension	Scoring Principle
30%	Commitment	**Climate Commitment** - Global climate commitment with a clear pathway and ambitious timeline. - Supply chain included.
		100% Renewable Energy Commitment - Global 100% RE commitment with a clear pathway and ambitious timeline. - Supply chain included.
40%	Action	**Renewable Energy Ratio and Sourcing Method** - Disclosed ratio of renewable energy and ratio of high to low impact sourcing method, evaluated in own operations and supply chain.
		Capacity Building - Actions taken to increase availability of renewable energy in supply chain regions.

Weight	Scoring Dimension	Scoring Principle
15%	Transparency	**Energy Usage** - Total energy usage. - Energy usage regional breakdown.
		Electricity - All types. - Renewable energy consumption. - Electricity and renewable energy regional breakdown.
		Emissions - Scope 1+2. - Scope 3. - Greenhouse gas emission intensity. - Regional breakdown.
15%	Advocacy	**Policy** - Top-level advocacy with national/regional policymakers for renewable energy friendly and climate focused policies.

Supply chain scoring rubric

Weight	Scoring Dimension	Scoring Principle
30%	Commitment	**Climate Commitment** - Global climate commitment with a clear pathway and ambitious timeline. - Supply chain included.
		100% Renewable Energy Commitment - Global 100% RE commitment with a clear pathway and ambitious timeline. - Supply chain included.
40%	Action	**Renewable Energy Ratio**
		Renewable Energy Ratio and Sourcing Method - Disclosed sourcing methods with detailed information, including electricity consumption and location through each sourcing option.
		Helping Suppliers sourcing RE
		Energy Efficiency - Taken energy efficient actions across its own operation. - Energy efficient requirements to suppliers.
		Emission reduction from 2019 - 2021 (Own Operation)

Weight	Scoring Dimension	Scoring Principle
15%	Transparency	**Energy Usage** - Total energy usage. - Energy usage regional breakdown.
		Electricity - All types. - Renewable energy consumption. - Electricity and renewable energy regional breakdown.
		Emissions - Scope 1+2. - Scope 3. - Greenhouse gas emission intensity.
15%	Advocacy	**Policy** - Top-level advocacy with national/regional policymakers for renewable energy friendly and climate focused policies.
		Peer - Sharing experience with other businesses in carbon reduction and RE procurement.
		Governance - Establishment of a working group at the senior management level to support carbon neutrality work.