



ACT



ELECTRICAL & ELECTRONIC EQUIPMENT

The Supplier Program Behind Scope 3 Progress

A sector guide to prioritizing suppliers, improving data quality, and giving your supply base an accessible, direct route to emissions reduction.

ACT ON IT.

Find what you need

- 01. Executive Summary
- 02. The Current State: Electrical & Electronic Equipment
- 03. Sector Sustainability Regulation
- 04. The Bottleneck
- 05. Geography and Cost
- 06. Sector Leaders Driving Supplier Action
- 07. The ACT Perspective
- 08. Implications
- 09. Working With ACT



For electronics, Scope 3 is a fabrication and components challenge

Electronics companies were early movers on carbon accounting. The harder problem is upstream reduction. For many OEMs and equipment manufacturers, the largest purchased-goods hotspots sit beyond assembly, in wafer fabrication, PCB production, plating, and metals refining.

The reporting bar is also moving closer to the supplier and product. In 2026, the Responsible Business Alliance and Global Electronics Association published sector-specific Category 1 guidance, while the GHG Protocol revision proposes a 95% Scope 3 coverage floor and visible data-quality labels. EU Digital Product Passport requirements are also increasing the focus on product-level data.

Execution depends heavily on geography. Many priority suppliers are concentrated in Asian markets where renewable electricity instruments, access rules, and prices vary sharply, particularly for smaller buyers.

14.1%

growth of renewable electricity share across Taiwan's wafer fabrication in 2024, against a RE100 pathway of 60% by 2030

TSIA (2025)

20.7 GW

renewable capacity operational across Apple's supply chain, avoiding 26+ MtCO₂e in 2025

Apple (2026)

+350%

growth in global electricity used for AI chipmaking between 2023 and 2024

Greenpeace East Asia (2025)

95%

minimum Scope 3 coverage proposed under the revised GHG Protocol

GHGP draft (Mar 2026)

Sources: Taiwan Semiconductor Industry Association via Digitimes (2025); Apple Environmental Progress Report 2026; Greenpeace East Asia, AI supply chain analysis (2025); GHG Protocol Scope 3 Standard Revisions Phase 1 Progress Update (Mar 2026); RBA & Global Electronics Association, Scope 3 Category 1 guidance (Apr 2026).





02. Your hotspot is two tiers below your purchase order

Most electrical and electronics equipment buyers contract with assembly and component partners. The emissions concentrate further upstream, where energy intensity and process gases are highest.

TIER 3+

Materials & refining

Silicon, copper, gold, aluminum, rare earths. Energy and process-intensive, almost never under direct contract.

TIER 2

Water fabrication & components

Fabrication, PCB production, plating, displays, passives. The single largest upstream block for most electrical and electronics buyers, and where F-gases sit.

TIER 1

Materials & refining

Contract manufacturers and module assembly. Where your contracts and your questionnaires usually stop.

SCOPE 3, CAT 4 / 9

Logistics & distribution

Air freight for high-value, time-critical components can be disproportionate to its tonnage.

SCOPE 3, CAT 11

Use of sold products

For equipment, networking and appliance makers this can exceed all upstream categories combined.

What this means

A program that stops at tier 1 improves your data without moving your footprint. The emissions you need to influence sit with companies you have no contract with, which leaves buyer expectation, aggregated purchasing power, and easy access to renewable electricity as your realistic levers.

Sources: GHG Protocol Scope 3 Standard categories; SEMI Semiconductor Climate Consortium, Scope 3 Category 1 Guidance (Jan 2024) and Category 11 Guidance (Apr 2025); RBA & Global Electronics Association Scope 3.1 guidance (Apr 2026).

02. Five challenges specific to electronics supply chains

Scope 3 averages across other sectors do not accurately represent the electrical and electronics equipment sector. The below constraints distinguish the sector:

1

EMISSIONS HOTSPOTS FROM NON-CONTRACTED STAKEHOLDERS

Tier 2 fabrication, PCB houses and platers drive the majority of upstream emissions within the sector but may largely sit outside your commercial relationship. Setting expectations for tier 1 contracted partners that are then cascaded to tier 2 operations is often the only route in.

2

PROCESS GASES PERSIST IN PROCESSES

NF₃, SF₆ and PFCs used in etching and chamber cleaning carry global warming potentials of roughly 7,000 to 23,500. Abatement of emissions relies on capital-intensive equipment, process engineering, and industry-wide emission-rate improvement.

3

YOUR SUPPLIERS ARE EVERYONE'S SUPPLIERS

The same fabrication or assembly partners serve dozens of buyers, each requiring their own style of reporting with different deadlines. Repeated requests create supplier fatigue, which is one reason the RBA, Global Electronics Association, and SEMI are working toward more standardized data requests.

4

DECARBONIZATION STILL NEEDS TO CATCH UP TO DEMAND

An advanced wafer fabrication line can draw around 200 MW. The overall electricity usage for AI chipmaking rose more than 350% between 2023 and 2024. That growth can push absolute supplier emissions higher even as carbon intensity improves.

5

PRODUCT-LEVEL DATA IS BECOMING THE UNIT OF ACCOUNT

Customers and regulators increasingly request component-level carbon data. A corporate average allocated by spend will not satisfy a Digital Product Passport or a customer PCF request.

Sources: SemiconductorX fab emissions analysis; Tandfonline, "Fluorinated greenhouse gas and net-zero emissions from the electronics industry" (2023); Greenpeace East Asia (2025); Environment+Energy Leader on fab power demand (2026); RBA & Global Electronics Association (Apr 2026); EU ESPR / Digital Product Passport framework.



03. The requirements are now written for this industry specifically

SECTOR GUIDANCE IS CONVERGING

- **RBA + Global Electronics Association** — Joint Scope 3 purchased-goods-and-services guidance published in April 2026 aims to increase the use of supplier-specific primary data across the sector.
- **SEMI Semiconductor Climate Consortium** — Category A (large) companies need limited assurance of base-year data and target metrics.

The effect: More sector alignment on what suppliers are asked to report, reducing the need for buyer-specific questionnaires.

REGULATION IS MOVING TO THE PRODUCT LEVEL

- **ESPR and the Digital Product Passport** — The EU's DPP infrastructure is now live, with product-specific requirements set to phase in over time, including repairability and recyclability requirements relevant to electronics.
- **CBAM** — From 2026, qualifying imported aluminum and steel carry an embedded-carbon cost, creating exposure across electronics supply chains that rely on these materials. The EU is also considering extending CBAM to selected downstream metal-intensive products.
- **Voluntary guidance still applies** — SBTi V2.0's 5% category significance test, and the GHG Protocol's proposed 95% coverage floor with visible data-quality tiers. **Primary data wins** — corporate, spend or averaged data substitutions is restricted, with product and site-level supplier data becoming the default.

Direction of travel

These requirements are pushing electronics companies toward more supplier-specific, product-level, and independently verifiable data.

Sources: RBA & Global Electronics Association, Accounting for Scope 3 Category 1 GHG Emissions (Apr 2026); SEMI Semiconductor Climate Consortium guidance and ambition statements; EU Regulation 2024/1781 (ESPR) and Commission DPP working plan; CBAM definitive regime; SBTi Corporate Net-Zero Standard V2.0 (Jun 2026); GHG Protocol Phase 1 update (Mar 2026).



Spend-based data breaks down faster in electronics

Component prices move with market cycles and allocation. A memory price spike can raise your reported footprint while nothing physical changes in your supply chain.

TIER 4

Spend-based estimates

Spend × industry average factor. Fast and cheap, but in this sector the distortion is acute: your reported footprint tracks the silicon market rather than emissions.

TIER 3

Activity-based averages

Units and mass by component type × average factors. Removes the price distortion, but stays blind to which supplier actually made the part.

TIER 2

Supplier-specific factors

The supplier's own verified footprint allocated to your purchases. Supplier action finally shows up in your number.

TIER 1

Primary product & site data

Product carbon footprints per component plus facility-level data. These aspects comprise the requirements for Digital Product Passports, customer requests, and assurance providers.

Where to invest

Your top component families and the fabrication behind them, not every supplier. Across industries, 79% of companies name supplier data availability as their biggest Scope 3 obstacle, while the share relying solely on spend-based methods halved from 30% to 15% in a year.

Sources: GHG Protocol Scope 3 Standard data hierarchy; GHGP Phase 1 Progress Update (Mar 2026); Sphera, 2025 Scope 3 Report (315 sustainability professionals across 18 industries).



04. Why supplier programs stall in this sector

The constraint is rarely willingness. It is that suppliers are asked to reduce without being given a route they can actually use.

SURVEY INCONSISTENCY

Shared suppliers receive different templates requesting data from multiple contractors. More requests can mean lower response rates and greater reporting fatigue.



LIMITED VISIBILITY BEYOND TIER 1

Tier 2 and tier 3 suppliers may sit outside your direct commercial relationship, leaving you with limited leverage and limited primary data.



VALIDATION BURDEN

Manual or unverified supplier submissions are harder to defend as SBTi V2.0 introduces limited assurance requirements for large companies.



LIMITED ACCESS TO RENEWABLES

In some markets, smaller or lower-volume electricity users have limited access to PPAs and other renewable electricity procurement routes.



INCENTIVE GAP

Suppliers are 52% more likely to cut emissions when buyers attach financial incentives, compared with training and guidance alone.



HEADCOUNT

Engaging a supply base at scale can absorb eight or more full-time roles across sustainability, procurement and data teams.



The common thread? Its operational. Participation improves when the ask is clear, the work is manageable, and suppliers have a clear, accessible route to reduce.

Your supplier's location determines the instrument, access, and price

Electrical and electronics equipment supply chains are concentrated in Asian markets where renewable procurement rules differ sharply. A global instruction to “buy renewable” is less straight-forward, so the available instrument, access rules, and cost depend on where the facility operates.

MARKET	INSTRUMENT	WHAT IT MEANS FOR YOUR SUPPLIER
China	GEC	The only accepted proof of renewable electricity attributes since I-REC withdrew. High volume, low cost, straightforward for suppliers of any size.
Taiwan	T-REC	Supply is tight and largely absorbed by the largest corporates. Wafer fabrication averaged 14.1% renewable electricity coverage in 2024.
South Korea	K-REC / PPA	Among the highest-priced markets in Asia Pacific, with PPA access being a recognized bottleneck for smaller manufacturers.
Japan	Non-fossil certificates	Established certificate market with growing corporate demand.
Vietnam	I-REC / DPPA	Certificates are the only realistic route for lower-volume electricity users. DPPA instruments are only available for consumers above 200,000 kWh per month.
Southeast Asia & India	I-REC	Malaysia, Thailand, and India offer high supply at low prices. These locations offer the fastest, cheapest wins in for electrical and electronics equipment suppliers.
EU, UK, US	GoO / REGO / REC	Mature markets with high liquidity. Costs vary widely by country and technology.

Practical consequence

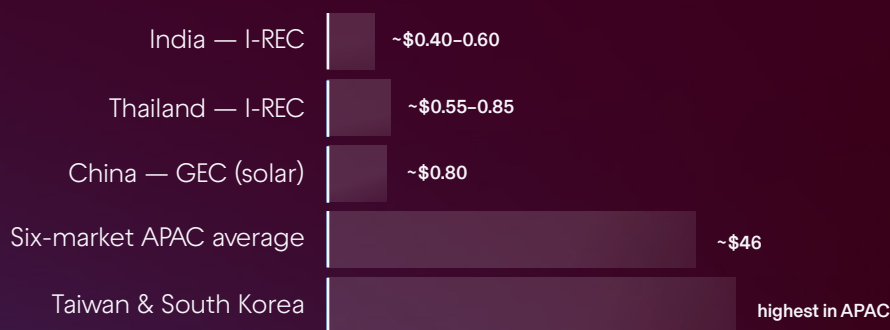
A supplier program must be localized to the market. The same request lands differently depending on where the facility operates, and a supplier who cannot access an instrument locally will not act.

Sources: ACT market coverage and transaction data (2026); Taiwan Semiconductor Industry Association via Digitimes (2025); GreenPowerHub on I-REC market withdrawal from China; National Energy Administration Rules for Issuance and Trading of Green Electricity Certificates (2024); Vietnam Decree 57/2025/NĐ-CP; IEEFA on Korean renewable access (2025).

Where a decarbonization dollar goes furthest

Certificates match renewable electricity attributes to MWh consumption and can differ dramatically depending on where a supplier operates, the sourcing criteria for instruments, and technology, along with availability.

Indicative certificate price by market, US\$ per MWh



Log scale. Different instruments and vintages — shown to illustrate spread, not to price a trade.

A practical sequencing logic

Best practice strategies for emissions reductions can be sequenced in the following order:

1 SUPPLIER ENERGY EFFICIENCY

SBTi V2.0 prioritizes activity-level reductions before indirect action. Mobilized infrastructure renewals lead to reduced operating costs.

2 CERTIFICATES IN LOW-COST MARKETS

Lowest cost per ton, fastest to execute, no volume floor. Markets include China, India and Southeast Asia.

3 CERTIFICATES IN EXPENSIVE MARKETS

Same mechanism but with materially higher prices. Markets include Taiwan, Singapore and South Korea.

4 AGGREGATED OR JOINT PPAS

Low long-run cost per MWh, but high-volume thresholds and multi-year lead times are a barrier to entry.

5 F-GAS ABATEMENT FOR FABRICATION

A key route for fabrication process emissions, but one that can require significant capital investment.

Sources: Wood Mackenzie, Price Outlook for Renewable Energy Certificates in Asia (2024) — six-market average of US\$46/MWh in 2023 falling to US\$11/MWh by 2050, with Taiwan and South Korea highest; DataM Intelligence on China GEC pricing (2023 data); GreenPowerHub observed I-REC trades; McK-insey on regional variance in marginal abatement cost.

One playbook from each region, and what to take from it

Case studies from electrical and electronics equipment companies, each solving a different part of the same challenge: how to make suppliers act when you don't control their site, grid, or capital budget.

APPLE

20.7 GW

AMERICAS • US • TECHNOLOGY

Apple's Supplier Code of Conduct requires 100% renewable electricity for all Apple production before 2030, backed by funding structures and market access. Through its China Clean Energy Fund, over 1 GW was deployed across 14 provinces with direct market access support. Suppliers went on to independently bring more than 20 GW online, avoiding 26+ MtCO₂e in 2025.

Insight: Set the requirement in supplier contracts, then back it with financing and market access.

INFINEON

72.5%

EMEA • GERMANY • SYSTEM SOLUTIONS

Committed that 72.5% of suppliers, segmented and grouped by emissions from purchased goods, capital goods and upstream transport, will commit to science-based targets by 2029. Works directly with more than 100 suppliers and recognizes the strongest performers publicly through its Green Awards.

Insight: Set a dated supplier target, then give suppliers enough runway and support to meet it.

TSMC

20,000 GWh

APAC • TAIWAN • SEMICONDUCTORS

Signed a 20-year joint renewable procurement agreement that included access for suppliers and subsidiaries comprising of electricity assessments, adoption planning, and long-term energy price stability that could never have been secured independently. A carbon reduction subsidy was added as a reward for tier-1 material suppliers in 2024.

Insight: Aggregate demand so smaller suppliers can leverage economies of scale pricing.

Sources: Apple Environmental Progress Report 2026; Infineon supplier engagement releases and UMC partnership announcement (Mar 2026); TSMC releases on the ARK Power joint procurement agreement;



Five moves that make supplier action easier within your sector

Across supplier programs that ACT runs in more than 100 countries, the same pattern appears: progress depends on credible data, focus, participation, and a clear, easy route to act.

1

START WITH THE SUPPLIERS THAT MOVE YOUR FOOTPRINT

A small share of suppliers typically drives the majority of purchased-goods emissions. Work on segmenting suppliers by impact, maturity, category, and region before engaging anyone.

2

IMPROVE DATA WHERE IT CHANGES THE DECISION

Prioritize supplier-specific and product-level data from your highest-impact suppliers. First interactions will likely lead to most supplier data being modeled for the long tail, which is acceptable as long as the primary versus averaged data mix is disclosed.

3

RUN CAMPAIGNS, NOT MASS QUESTIONNAIRES

Segmented 6–8 week engagement waves across supplier groups, with access to training materials, zero-cost tools, and proactive personal follow-up can produce better response rates and data quality from emailed questionnaires.

4

GIVE SUPPLIERS A ROUTE THAT WORKS IN THEIR MARKET

GEC in China, T-REC in Taiwan, I-REC across South East Asia. For many suppliers, renewable electricity is one of the most accessible levers to begin decarbonizing. **ACT's global click-to-buy EACs with no minimum volume removes a significant procurement barrier for small and medium suppliers.**

5

CLOSE THE LOOP IN YOUR REPORTING

Verified supplier reductions must flow back into your supplier-specific emission factors. This means that their action shows up in your Scope 3 inventory, targets, and assurance when it comes to auditing.

What this means for procurement and sustainability teams

FOR PROCUREMENT

- **Treat supplier emissions as sourcing criteria by adding conditions for selection, contracts and incentives.** CDP's Strengthening the Chain says 13% of companies worldwide already include climate requirements into supplier contracts based on 23,000+ disclosing companies.
- **Segment by component family and fabrication location**, so the request delivery matches what that supplier can realistically deliver in that market.
- **Do not request supplier specific data you have no route to use. Ask for what changes a decision.**
- **Pool demand across smaller suppliers where possible**, so they can access pricing and terms they could not secure independently.

FOR SUSTAINABILITY

- **Aim to move your top component suppliers** to Tier 2 (supplier specific data) and Tier 1 (primary & site data) data before the GHGP's proposed 95% coverage floor and data-quality labels take effect.
- **Treat product carbon foot printing as the future unit of account**, driven by customer requests and the EU's Digital Product Passport.
- **Track and disclose your data mix by tier** so the share of spend-based estimates will become a visible quality supplier signal.
- **Make supplier renewable electricity administration submissions straightforward** with retirement evidence linked to a named facility and reporting period.

Q1

Baseline & segment: Scope 3.1 & 3.2 calculation, supplier screening

Q2

Pilot: 6-8 week focused engagement campaign with a selection of your suppliers

Q3

Enable action: renewable electricity procurement for suppliers via easy to access digital tools

Q4

Close the loop: ensure verified supplier emission reductions are converted into reporting & targets

Sources: CDP & BCG (2024); SBTi Corporate Net-Zero Standard V2.0 (2026); GHG Protocol Phase 1 update (2026); Technology.org survey of carbon clauses in electronics RFQs (2026); EU ESPR / DPP framework. CDP's Strengthening the Chain (2024)



ACT's operating model behind measurable supplier progress

ACT runs managed supplier campaigns at scale, validates supplier data, and gives suppliers a practical route to Scope 2 reductions that can feed into your Scope 3 reporting. Below are the 4 products we offer that can be combined, or used independently depending on your supply chain decarbonization needs and maturity level.

01 • MEASURE

Audit-grade Scope 1, 2, and 3 measurement with finance-ready controls.

02 • PLAN

Identify priority suppliers by emissions impact, maturity, category, and region.

03 • REDUCE

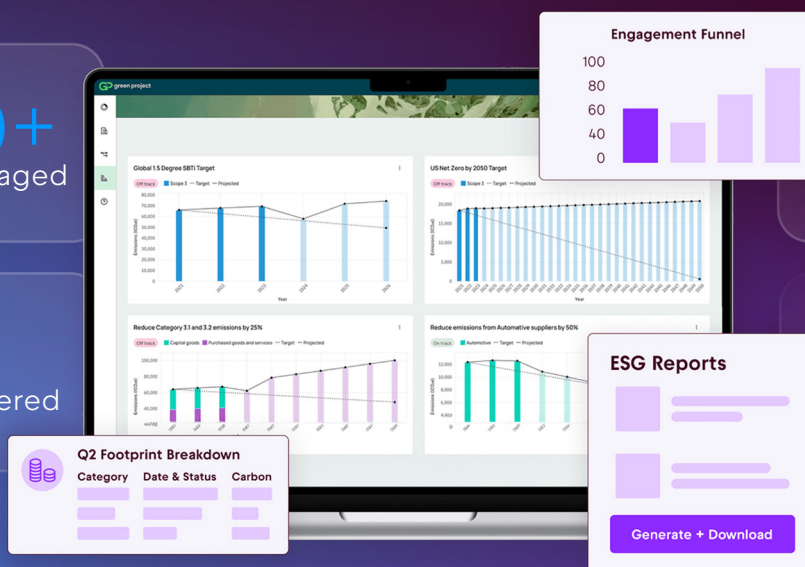
Managed 6–8 week campaigns with tools, education, outreach, and 1:1 support.

04 • ACT

A digital marketplace with instantly transactable global EACs, with no minimum volume requirements.

6,000+
suppliers engaged

100+
countries covered



15-20
day average
onboarding time

NO
min. EAC volume

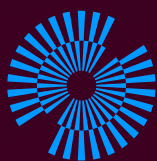
See the full supplier decarbonization solution



See how this could work with your suppliers.

Book a discovery call and discuss a focused pilot with ACT.

ACT ON IT.



ACT

AMSTERDAM HEADQUARTERS

Strawinskylaan 3127
1077 ZX Amsterdam
The Netherlands

+31 (0)20 8911780
info@actgroup.com



www.actgroup.com

This document/presentation contains proprietary and confidential information of ACT [Commodities (Group) B.V.]. Nothing of this document may be reproduced, duplicated, transmitted, stored in a retrieval system, nor translated into any human or computer language, in any form or by any means, electronic, manual, or otherwise, without the prior written permission of ACT. If you have received this presentation in error, please notify the sender immediately and delete/destroy any and all copies.