
2025

Information and Communications Technology

INVESTOR BRIEFING



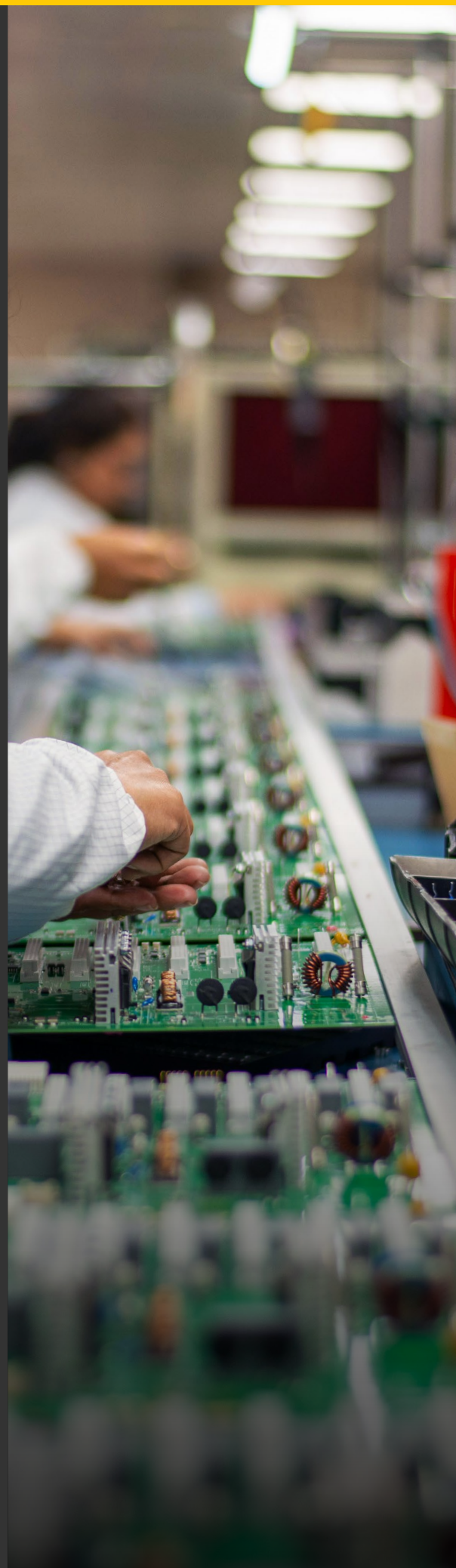
Executive summary

The information, communications and technology (ICT) sector is a major economic driver globally. In Taiwan, the sector generates approximately 15% of GDP, in India 13%, and in Malaysia 13.8%. It is also strongly predicted that historic average annual growth rates for the sector of upwards of 7% in OECD countries and the US will continue to increase over the next five years. The ICT sector is the bedrock of the digital economy, enabling rapid advancements in generative AI and 5G technology, which are set to reshape industries globally and on a massive scale. Vital components of all electronics systems, from smartphones to electric vehicles, are at the forefront of renewable energy technologies key to the energy transition.

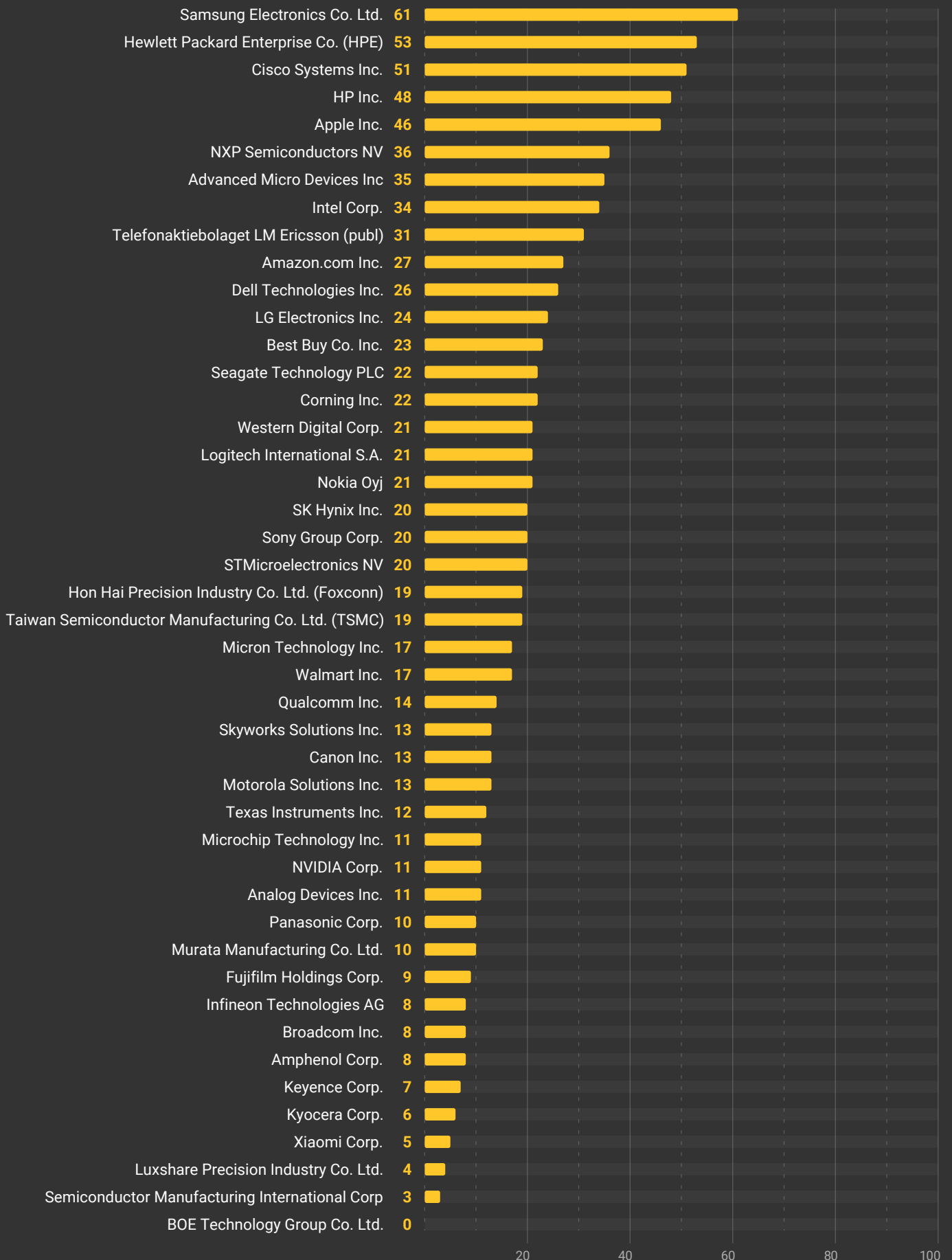
The dominance of this sector in terms of market share, growth and innovation potential, alongside the relatively low carbon footprint and professional makeup of its direct operations has provided opportunities for investors looking to mitigate ESG risks, while maximising profit – and most clearly evidenced by the overrepresentation of technology stocks in ESG portfolios and SFDR Article 8 & 9 Funds. However, these business models also reproduce negative environmental and public health impacts, and rely on a hidden supply chain built on critical minerals and the labour of millions of workers at heightened risks of exploitation and forced labour.

This briefing provides new insights for investors on how forced labour, and a failure of good governance within the sector, can create company, portfolio, and systemic level risks for investors concerned about long term value creation. These material risks should be accounted for as part of investor fiduciary duty and managed through engagements and investor stewardship. Against the background of the incoming European Union's mandatory human rights and environmental due diligence law, corporate sustainability reporting requirements, and forced labour ban, combined with existing US forced labour regulatory framework, risks associated with investee companies failing to eradicate even the most egregious forms of labour abuse – forced labour and modern slavery – from their supply chains are only growing. Reinforcing this point is the stark increase in the number of forced labour allegations identified by KnowTheChain in 2025 – **42 allegations against 36 benchmarked companies** – most related to the use of Uyghur forced labour.

Investors have a critical role to play in using their leverage to ensure portfolio companies adopt a risk-based approach to human rights due diligence and prioritise rightsholder engagement in line with international standards and domestic regulation to ensure safer, more equitable supply chains for some of the world's most vulnerable workers. Benchmark leaders such as **Samsung** and **Hewlett Packard Enterprise** demonstrate that better human rights practice does not come at the expense of healthy returns.



KnowTheChain ICT benchmark: 2025 ranking



Key findings

Findings from this year's ICT benchmark reflect a sector that is maturing in its human rights due diligence approach, but too slowly to keep up with rapidly multiplying adverse human rights risks and impacts. With an **average score of 20/100**, and only three companies scoring above 50/100 – **Samsung** (61/100), **Hewlett Packard Enterprise** (53/100) and **Cisco** (51/100) – companies demonstrate concrete improvement on policies, governance and baseline human rights due diligence processes, but most still fail to disclose how they support supply chain workers' right to organise, effective grievance mechanisms and access to remedy.

Despite many ICT companies enjoying **double-digit profit margins**, and therefore a comfortable ability to absorb the costs of human rights due diligence, **Purchasing Practices** and **Enabling Workers' Rights** – two effective preventers of labour rights abuse – were the lowest-scoring themes of the 2025 benchmark, with average scores of just **5/100**. Only one company in the benchmark (**Hewlett Packard Enterprise**) disclosed engagement with a union in its supply chains, while **Cisco** exclusively disclosed taking steps to ensure pricing covers living wages.

The implications of this growing gap between policy and practice are highlighted in KnowTheChain's research and case study on Taiwan – a key sourcing context for electronics supply chains. Testimonies from 29 migrant workers across 16 electronics production facilities linked to 49% of benchmarked companies relays that

despite the proliferation of no-recruitment fee policies in the sector (96% of benchmarked companies now have a policy that prohibits worker-paid recruitment fees in their supply chains, for example), most continue to experience several **ILO indicators of forced labour** including persistent recruitment fee charging, contract deception, restrictions on freedom of movement, and difficulty in accessing unions or worker representation. Despite some better practice, findings suggest that a lack of policy enforcement is leaving workers vulnerable to exploitation.

On the other hand, impressive **growth in revenue** from the top-performing benchmarked company – **Samsung** – demonstrates that a corporate strategy which embeds human rights due diligence can contribute, rather than detract from long-term sustainable growth or investor returns. **Samsung's** performance is matched by the significant score increases of other South Korea- and Taiwan-based companies **Foxconn**, **SK Hynix**, **LG Electronics** and **Taiwan Semiconductor Manufacturing Co (TSMC)**, relative to European and US peers, indicating that Asian companies are increasingly aware of the importance of strengthening human rights due diligence processes. While these latter companies' equities have underperformed companies like **Nvidia** (11/100) – number 31 in this year's benchmark – in terms of revenue generation over the past year, their higher scores suggest stronger operational practices and business resilience which may be beneficial to forward-looking long-term growth and returns.¹

¹ Causality between embedding human rights due diligence and long-term growth or investor returns is difficult to establish. Nvidia is a unique case, with returns linked to many factors such as geopolitics and technological advance.



Forced labour risks in electronics supply chains

Electronics supply chains tend to use “just-in-time” production, leading to excessive working hours due to short lead times and reliance on a flexible workforce. While ICT supply chains are highly interconnected, the sector is characterised by modular production, leading to offshoring and outsourcing to contract manufacturers, fragmenting supply chains as companies seek to lower costs. Fulfilment of small, frequent orders at short notice reduces suppliers’ ability to invest in facilities, pay a living wage and improve health and safety conditions. An uneven distribution of profit margins across the supply chain compounds these factors: semiconductor companies, often headquartered in developed economies, registered average net profit margins of between **17%-40%** in 2024, while **equipment manufacturers** (EMS) registered just 4% over the same period.

Most of the manufacturing and assembling takes place in low-cost, labour-intensive production sites in Asia,² home to substantial tax incentives, business friendly regulations and flexible labour laws – synonymous with weak labour protections. The **ITUC 2024 Global Rights Index** finds systemic violations of workers’ rights in many key electronics sourcing locations, while the US Department of Labour **identifies** China and Malaysia as high-risk countries for forced labour in the electronics sector.

The sector also relies on temporary and sub-contracted labour and a workforce comprised of women – who make up **60% of workers in the industry** – and migrant workers, who are **three times more likely** to be in conditions of forced labour. In Taiwan, where **approximately 20%** of migrant workers in Taiwan’s manufacturing sector work in the electronics industry, debt bondage is **well-documented and widespread**.

➔ **For more information see KnowTheChain’s key findings report.**

In addition to the salient human rights risks posed by sector business models, these characteristics make ICT supply chains prone to external and operational shocks – creating material impacts for business and their investors. Operational disruption from labour shortages, strikes and emerging trade tariffs; fines, penalties and injunctions because of legislation requiring better practice from companies, and financial and reputational impacts of strategic litigation create additional volatility in a sector already prone to disruption, which can impact stock prices and business performance.

Operational, financial, reputational and legal risks

In August 2024, 251 Bangladeshi migrant workers working at Kawaguchi Manufacturing, a plastics factory in Malaysia, and supplier to companies **Sony, Panasonic** and **Daikin**, **reported** being subjected to conditions amounting to forced labour; wage withholding, excessive overtime, and extortionate fee charging. One Bangladeshi migrant worker **said**: “*We are unable to repay the debts we took on in Bangladesh, and despite informing the company of our dire situation, they have disregarded our concerns and threatened us with deportation.*” By the end of November, **60 workers filed four separate reports with the labour department** in relation to unpaid wages and unauthorised salary deductions. **After months of dispute**, an agreement was reached to settle outstanding salaries, totalling over RM3 million (USD 411,873). Sony, Daikin and Panasonic acknowledged the allegations and pledged to take “corrective measures”. **In late December**, the **three main buyers agreed to compensate each worker 20,000 RM (USD 4,480)** for the exorbitant recruitment fees the workers paid, although this failed to cover the full costs. On 27 December, 251 Bangladeshi workers **filed an OECD complaint** with the Japanese National Contact Point against electronics Panasonic and Sony, purportedly the primary two companies buying from Kawaguchi. The workers are now **considering legal action** against Sony and Panasonic in US courts.

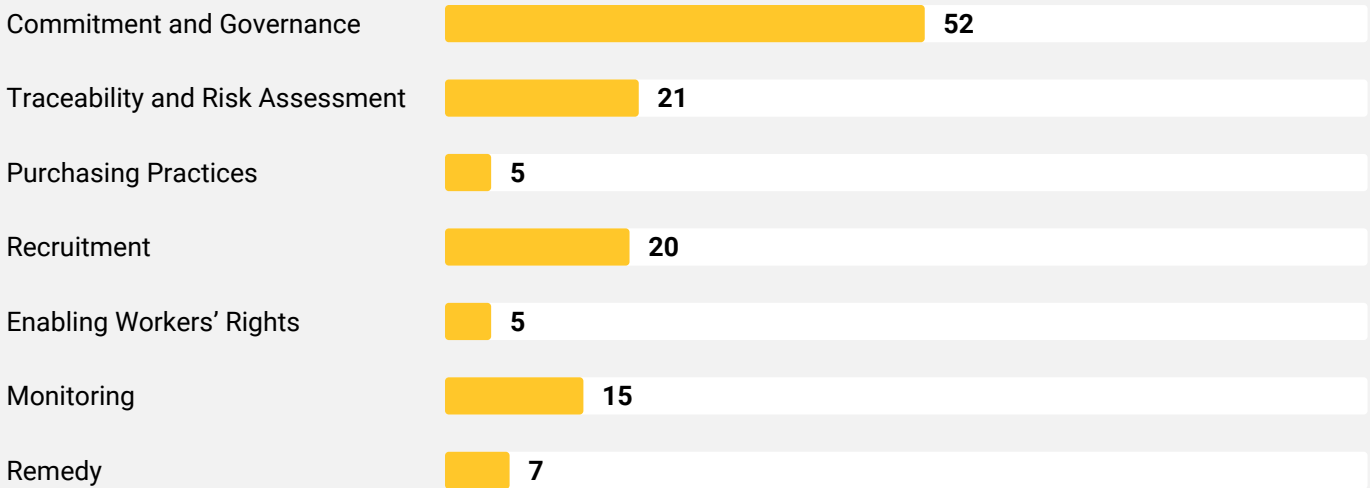
² The International Labour Organization (ILO) estimates that the electronics industry employed approximately 17.4 million workers globally in 2023, accounting for 3.5% of the world’s manufacturing workforce. The majority of these workers, slightly over 78% or roughly 13.5 million, are based in Asia.

Benchmark analysis

The following sections outline KnowTheChain’s key findings on company performance across four key areas of due diligence:

- | Traceability & supply chain risk management
- | Freedom of association
- | Purchasing practices
- | Access to remedy

AVERAGE THEME SCORES



Traceability and supply chain risk management

High-risk commodity sourcing requires a transparent and robust process for assessing human rights risks. However, **27% of the companies benchmarked show little to no efforts to trace and disclose their supply chains, getting a zero score.**

While **67% of ICT companies disclosed the methodology underpinning their supply chain human rights risk assessment** – evidencing limited engagement with relevant stakeholders – only **36% disclosed forced labour risks identified as a result of their assessment.**

The gap between risk assessment and disclosure points at best to an unwillingness by companies to be held accountable by stakeholders, and at worst to ineffective risk identification – which can result in legal, operational and reputational impacts. The recent [criminal charges](#) brought against Apple in the Democratic Republic of Congo make this plain.³

This lack of transparency also raises important questions as to firms’ ability to comply with legislation including [section 307 of the Tariff Act](#) and [Uyghur Forced Labour Prevention Act \(UFLPA\)](#), which necessitate robust supply chain traceability and due diligence, and demonstrable evidence that goods are not sourced from the Xinjiang Uyghur Autonomous Region (XUAR) or by entities on the UFLPA Entity List. The forthcoming [EU Forced Labour Import Ban](#) will enable the EU to prohibit the sale, import and export of goods made using forced labour, with non-compliant companies at risk of hefty fines.

Poor traceability and transparency around identified forced labour risks are particularly concerning given the stark increase in the number of forced labour allegations identified by KnowTheChain in 2025. The benchmark includes **42 public allegations**, identified

³ The Paris public prosecutor’s office dismissed the complaint on February 18 saying allegations of money laundering and deceptive business practices were “not sufficiently well-founded” and closed the case, but lawyers representing the plaintiffs in France said they would challenge the decision at the Paris Court of Appeal.

in a systematic search of media and civil society sources, **against 36 benchmarked companies**, with some firms linked to multiple allegations. All but six allegations, linked to the supply chains of five benchmarked companies, related to sourcing either directly or indirectly from facilities reportedly using Uyghur forced labour.

In particular, KnowTheChain identified allegations against four minerals suppliers reported to own gold mines in the Xinjiang region as well as refineries where the gold is processed, linked to 29 benchmarked companies, for allegedly receiving labour transfers from the Xinjiang region. One of the mines, Zijin Mining, which is certified by the London Bullion Market Association (LBMA) and Responsible Minerals Initiative (RMI),⁴ was placed on the [UFLPA Entity list](#) in January 2025. Despite the gravity of the allegations, only one company (**Microchip Technology**) disclosed taking steps to remove the identified mines from its supply chain.⁵

Among examples of better practice is **Ericsson**, which discloses levels of modern slavery risk (high, mid, low) per each of 25 supplier category groups, with heightened risks in the production of digital semiconductors, standard electronics, connectivity, filters and mechanics, IT hardware, and electronics manufacturing services. It states that modern slavery and human trafficking risks in hardware and component manufacturing are "often related to migrant labour and issues such as recruitment fees, debt bondage, withholding of identification papers and low wages". It states that beyond the first tier, it identified heightened risks of forced and child labour for activities involving the extraction of natural resources used in Ericsson's hardware, as well as electronics manufacturing in certain parts of the world including, but not limited to China, India, Brazil and Malaysia. It also identifies modern slavery risks "further upstream in these supply chains, in the extractive sector, where child labour and forced labour risks are associated with ongoing armed conflicts and instability in source countries."

⁴ In response to the allegation of forced labour risks, the LBMA and RMI leadership found the statements and reports sufficient to maintain the cross-listed refiners. See the full response [here](#).

⁵ At the time of publication, it was not clear whether Microchip had stopped sourcing from this supplier.

Audits and certifications: where next?

Audits have been shown to routinely [fail to detect human rights issues](#), and overstate compliance improvements due to flawed methodologies and wider industry opacity and incentive structures.

Notably, audits are particularly inadequate when it comes to identifying forced labour in Xinjiang – with audit firms [refusing to conduct audits in the region](#) due to their inefficacy and in monitoring conflict minerals supply chains. The EU's Corporate Sustainability Due Diligence Directive (CSDDD) mandates companies to go beyond the use of audits to identify and assess actual and potential impacts in their operations and supply chains. The CSDDD explicitly rejects a "safe harbour" approach, meaning there is no limited liability by transferring responsibility to third parties.

Despite this, KnowTheChain finds that companies continue to adopt a compliance-based approach to due diligence: relying on social audits and certification schemes to identify and assess risks particularly at raw materials level. This renders companies at risk of legal, operational and reputational risk, and many workers subject to abuse without remedy. For more information see KTC's transparency briefing.

Enforcement failings amid better practice in Taiwanese electronics manufacturing: Evidence from migrant workers

Accounting for an estimated 90% of global production capacity of advanced chips, as well as other critical parts of the supply chain, Taiwan is an indispensable sourcing location to the ICT sector. Its electronics industry, which contributes 15% to GDP, is also a key employer, relying heavily on migrant workers, comprising 3.6% of the population, predominantly

from the Philippines, Vietnam, Indonesia and Thailand, and facing unique and challenging labour conditions and exploitation. These findings, directly linked to **49% of benchmarked companies**, are relevant to all electronics companies sourcing from Taiwan, and should therefore be a priority for investors in the ICT sector more generally.

Key takeaways:

Worker testimony highlights a gap in policy implementation and enforcement on several fundamental labour rights enshrined in both company Supplier Codes of Conduct and Responsible Business Alliance Guidelines: recruitment fee charging, contract deception, restrictions on freedom of movement, and difficulty in accessing unions or worker representation. Workers' experiences shift between and within facilities, reflecting buyers' varied policy implementation and highlighting need for a sector-wide approach to eradicating recruitment fees in particular.

17 out of 29 workers (59%) reported being charged recruitment fees. Amounts ranged from 30,000 Philippine pesos (US\$520) to 80,000 pesos (US\$1,400) – and as such often exceeded the legal amount for a placement fee. **(ILO indicator: Debt Bondage)**

28% of workers, from five different supplier facilities, said their contract terms did not match their working conditions. **(ILO indicator: Contract deception)**

28% of workers reported they have a dormitory curfew, beginning from 9:45pm to 11pm. The curfew is applied on working days, as well as days off and weekends. One worker clarified the curfew extends until 6AM. **(ILO indicator: Restriction of movement)**

Only **one worker** reported there was a union at their factory; four others indicated the presence of other representation structures. Other workers reported fearing reprisals for joining a union or raising grievances.

Despite the presence of several indicators of forced labour, testimony suggests more recent positive developments in the prevention of recruitment fees, and the implementation of policies in line with the “Employer Pays Principle”. Notably, **all interviewed workers who joined a facility within the last 15 months said they did not pay placement fees and do not pay service fees**, signalling employers are covering these.

Among examples of better practice identified through corporate disclosure was **Apple**, which disclosed the use of 42 focused audits across six countries and regions in 2023 to detect whether workers had paid fees. These included verification of documents from both suppliers and their labour agencies and interviews with workers, and labour agencies. Investigations into fee payments have also included “monitoring job postings and hiring events on social media channels to identify non-compliant practices.” Apple also demonstrated the scope of its due diligence approach in understanding recruitment – reportedly mapping more than 2,100 labour agencies used by its suppliers across 40 countries and regions. The company specified that agencies are mapped regardless of whether they recruit workers domestically or from abroad.

→ **For more information on the methodology and worker interviews, see [key findings report](#).**

Enabling workers' rights

Public and demonstrable support for freedom of association and collective bargaining is vital in a sector where electronics manufacturing takes place amid crackdowns on worker rights. Ensuring supply chain workers' right to freedom of association is a powerful tool of due diligence, as workers who can freely organise in the workplace, join independent unions, defend common interests and formally negotiate for better conditions. Enforceable labour rights agreements like the apparel sector's [International Accord](#) and [Dindigul Agreement](#), have been found to reduce operational risks like health and safety incidents, and [increase productivity](#), worker engagement and supply chain resilience. The business case for binding agreements has been well [documented](#) by the Committee on Workers Capital.

However, the failure of companies to meaningfully engage stakeholders is evidenced across Benchmark themes. **Enabling Workers' Rights was the joint-lowest scoring theme in the benchmark (5/100)**, with 93% of companies scoring zero on this indicator. For the second successive cycle, only one company in the benchmark (**Hewlett Packard Enterprise**) disclosed engagement with a union in its supply chains, while just two companies (**Samsung** and **Intel**) disclosed the percentage of supply chains covered by collective bargaining agreements. In comparison, 22% of benchmarked companies in KnowTheChain's [2023 Apparel & Footwear Benchmark](#) disclosed examples of union engagement and 28% disclosed being party to a global framework agreement.

Purchasing practices

The importance of responsible purchasing practices is now underlined by EU legal frameworks such as the [EU Corporate Sustainability Due Diligence Directive](#) (CSDDD) and national regulations such as the [German Supply Chain Due Diligence Act](#) (GSCDDA), meaning companies face material risks for lack of implementation. [Recent analysis](#) by one financial institution finds that companies with shorter payment terms benefit from improved future share price performance, higher earnings growth and lower volatility. [Cornell University research](#) shows that collaborative buyer-supplier relationships in the apparel sector have led to better labour outcomes, specifically in relation to worker turnover, and a lower number of social audits.

Despite this, KnowTheChain finds a **continued misalignment between corporate human rights commitments and commercial decision making**, with only 55% of companies disclosing training for procurement staff on forced labour risks in supply chains, and only one company (**Cisco**) disclosing working towards ensuring pricing covers living wages. Indeed, poor performance on this indicator points to

systemic failures in the sector, which put workers and supply chains at risk. **Purchasing Practices was the joint-lowest scoring theme of the benchmark (5/100)**, with only two companies disclosing comprehensive forecasting or planning, while only seven companies (16%) disclosed quantitative datapoints that evidence how procurement decisions play out in practice i.e., by disclosing payment terms, forecast visibility, % of order changed/cancelled after the order has been placed. Notably, Cisco disclosed the ways in which it sought to smooth production spikes, including by building material stock and extra inventory to reduce the risks of materials shortages. It further stated it has increased forecasting visibility from less than one year to a rolling 24-month window across hardware products, reviewing forecasts and actual orders on a quarterly basis.

Cisco disclosed that it worked with its suppliers to "address certain labor costs independently of production costs" with a view to ringfencing the workforce from supply volatility, and states that it has seen as a result that this can address labour shortages while providing workers with more financial stability.

Access to remedy

In an environment where workers are at heightened risk of forced labour, access to effective grievance mechanisms is vital to ensure workers can seek redress and challenge abuse. Providing for, or cooperating in, remedy is integral to businesses' responsibility to respect human rights under the [UN Guiding Principles](#) and [OECD Guidelines](#). An effective grievance mechanism functions as a proactive risk management tool, and a powerful way to build worker and stakeholder trust. Recent learnings from [AIM-Progress's grievance mechanism](#) project highlights the benefits of worker-centric grievance mechanisms in enhancing overall accountability and improving employment relationships.

Despite this, **just over half (56%) of companies disclosed grievance mechanisms for suppliers' workers** and their representatives to submit grievances related to human rights. In addition, data on (a) the communication of the mechanism (and how to use it) to supply chain workers and (b) the data on the use of grievance mechanisms indicated workers may not be aware of mechanisms or feel able to use them.

Only 13% of companies (**Apple, Dell, HP, NXP, Samsung** and **Walmart**) disclosed how they communicated their grievance mechanism to workers, such as by posting details of the mechanism in supplier facilities, providing details of the hotline during worker interviews, or training workers on grievance channels. Less than a fifth (18%) of companies disclosed data showing their grievance mechanism was used by workers in their supply chains, which can indicate a lack of worker trust in the mechanisms, in relation to retaliation or grievance resolution – a finding evidenced by testimonies collected by migrant workers in Taiwan.

Notably, **Apple** disclosed running a grievance hotline awareness campaign which it states led to a 22% increase in the use of its hotlines, making it clear that when workers are aware of grievance channels, their usage is likely to increase. Demonstrable usage of the mechanism in turn, gives companies stronger insight into the conditions facing workers in their supply chains.

Given so few companies demonstrated a clear means of making suppliers' workers aware of grievance mechanisms, it is little surprise that companies scored poorly on the theme of Remedy overall – with only seven per cent disclosing detail on two or more examples of remedy outcomes for any labour rights violations for suppliers' workers. Amidst a stark increase in the number of allegations of forced labour, this poor performance signals a lack of understanding and maturity in companies' approach and understanding of responsibility in this area.



Investor recommendations

Industry analysts and portfolio managers should begin by engaging their companies on the regulations and practices noted above, using the KTC benchmark as a guideline of company performance. Together with stewardship teams, build an engagement strategy that is well-resourced and based on open and honest dialogue and clear objectives, focused on effecting positive change, and escalation for persistent non-improvement through collaborative investor statements and voting against directors, where appropriate.

Critical areas of engagement include:

Ensuring companies have proper oversight, including at board level, of due diligence practices that address human rights risks.

Ensuring companies understand, and publicly report risks related to labour practices across their supply chains, particularly in areas of heightened risks including Taiwan, China and Malaysia.

Ensuring companies support freedom of association across supply chains as a key preventative measure of labour rights abuse.

Ensuring companies understand their obligations with respect to remedy and provide effective access to remedy for supply chain workers.

Stewardship teams may also consider revising internal due diligence procedures to ensure appropriate human rights risk management in the changing regulatory environment, while also ensuring deep-dive research for high-risk areas are identified, and where salient and severe abuse appears likely.

These teams should also consider adopting a stewardship policy and voting guidelines which specifically call for respect for labour rights, as defined by ILO conventions with no tolerance of forced labour. Engagement priorities should include expectations on improved disclosure and effective due diligence, particularly related to worker voice, risk assessments, risk mitigation plans, and access to remedy and remedy outcomes for workers.

Regulation and other factors are creating increasing risk for laggards – and at the same time, opportunity for better performers. After engaging, an investor may choose to adjust their discount rate or valuation to account for performance in this area, just as they would for differing growth or management quality expectations.

Consider publicly supporting mandatory human rights and environmental due diligence, increased sustainability disclosure regulations and alignment of frameworks to more efficiently drive consistency across these industries.

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