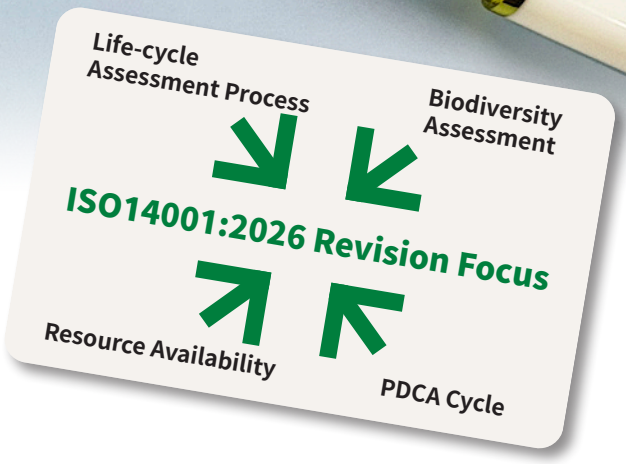
ISO 14001:2026 Guide for Taiwanese Fastener Companies

Part 2: Practical Steps and Methods for the Revision



The revision of ISO 14001:2026 represents a turning point for Taiwan's fastener industry, bringing both challenges and opportunities. The 2026 edition incorporates the 2024 climate change amendment, bringing climate risks, biodiversity, and resource availability into its core requirements while emphasizing systematic risk management, supply chain responsibility, and performance data. This means that environmental management is no longer limited to pollution control. Companies must comprehensively assess climate risks, ecosystem health, and resource sustainability and translate them into measurable targets. For Taiwanese fastener manufacturers, if they can proactively adopting the principles of the revised standard they can create a differentiated advantage in international markets and support continued progress toward sustainability and internationalization.

During the preparation stage for the revision, companies should first conduct a "gap analysis" to determine whether their existing environmental management systems cover the new requirements. The revised standard introduces mandatory topics such as "climate change," "biodiversity," and "resource availability." If an existing system remains focused only on pollution control or compliance management, strategic planning and performance data need to be strengthened. The results of the gap analysis should be developed into a "revision roadmap" clearly identifying the documents, processes, and resource allocations that need to be revised, serving as an action guide for subsequent work. Second, training and awareness are critical to successful implementation. ISO 14001:2026 emphasizes performance orientation and employee participation. In addition to basic interpretation of the clauses, training should cover new topics such as organizational carbon accounting methods, a life-cycle perspective for products, supply chain responsibility, and biodiversity management. Through internal communications, workshops, and simulation exercises, employees can understand how the new requirements affect their daily work and help build a corporate sustainability culture. Top management must demonstrate commitment by incorporating environmental management into organizational strategy and continuously monitoring revision progress during management reviews. Finally, identifying stakeholder needs is indispensable. The revised standard elevates stakeholder needs and expectations to a core requirement. Companies must systematically identify and respond to the needs of international customers, suppliers, investors, government agencies, and local communities. Since different stakeholders may have different concerns regarding environmental issues, companies should collect feedback through questionnaires, interviews, or collaborative platforms, establish a needs matrix, link those needs to environmental objectives, and align them with external stakeholder expectations to enhance customer trust in the market.

Regarding document and process revisions, **the Environmental Management Manual should be comprehensively updated to incorporate "climate change," "biodiversity," and "resource availability," while clearly stating the organization's commitments and strategies. The environmental policy should emphasize the protection of natural resources and the enhancement of ecological resilience rather than focusing solely on pollution prevention.** The structure of the manual should also be aligned with the harmonized structure of the revised standard to ensure compatibility when integrated with other management systems.

In addition to SWOT analysis, companies should expand their risk and opportunity assessment to include a Risk & Opportunity Matrix. Alongside traditional pollution risks, the matrix should incorporate climate risks and transition risks, such as extreme weather, carbon-fee policies, and supply chain disruptions. High-risk items—those with high impact and high likelihood—should not only be identified but also addressed with preventive measures and continuously monitored. Please refer to **Table 1**.

The introduction of a life-cycle assessment process is another important requirement of the revised standard. It covers 7 major stages: raw material acquisition, design, production, transportation, use, end-of-life, and final disposal. Companies should establish a life-cycle assessment process to identify and control the carbon footprint and resource efficiency at each stage, extending the assessment to suppliers and logistics activities to ensure sustainability throughout the supply chain. Please refer to **Table 2** for implementation methods.

Table 1. Risk & Opportunity Matrix Management Guide

Likelihood	Impact	Risk Examples	Opportunity Examples	Management Guidelines
Low (1–2)	Low (1–2)	Slight increase in costs	Small improvements in efficiency	Regular monitoring is sufficient
Medium (3)	Medium (3)	Market demand fluctuations	New market testing	Establish preventive measures and continuously monitor
High (4–5)	High (4–5)	Supply chain disruptions; policy changes	Technological breakthroughs; sustainability certification	Prioritize and develop a comprehensive response plan

Table 2. Life-Cycle Assessment Process

Step	Key Content	Management Focus
1. Goal & Scope Definition	Clearly define the assessment purpose (carbon reduction, sustainability reporting, supply chain requirements)	Set the functional unit and system boundaries
2. Life-Cycle Inventory (LCI)	Collect inputs (energy, water, raw materials) and outputs (emissions, waste)	Establish a complete database and ensure data quality
3. Life-Cycle Impact Assessment (LCIA)	Convert data into environmental impact indicators (carbon emissions, resource consumption, ecological impacts)	Analyze climate risks, biodiversity, and resource availability
4. Interpretation & Improvement	Identify environmental hotspots	Propose improvement measures (energy efficiency, low-impact materials, process optimization)
5. Seven-Stage Coverage	Raw material acquisition → Design → Production → Transportation/Delivery → Use → End-of-life → Final disposal	Identify carbon footprints and resource efficiency at each stage
6. Supply Chain Inclusion	Cover external suppliers and partners	Ensure sustainability requirements are met throughout the upstream and downstream supply chain
7. Data Transparency	Establish carbon accounting and sustainability data management systems	Ensure performance is verifiable and traceable

Biodiversity assessment is another key focus of the revised standard. For corporate biodiversity assessment, the Taskforce on Nature-related Financial Disclosures (TNFD) provides an assessment approach based on 4 steps: "Locate," "Evaluate," "Assess," and "Prepare." These steps are used to further analyze risks relevant to the organization, including dependencies, impacts, risks, and opportunities—the LEAP methodology—to ensure ecological health and species diversity within the plant site. **Four aspects should be assessed simultaneously: habitat health, biodiversity, ecosystem services, and risk dependencies.** Habitat health focuses on whether green areas, buffer zones, and drainage systems maintain their natural functions, with **indicators including vegetation coverage, soil quality, water quality, and the number of microhabitats.** Biodiversity can be assessed through species counts, evenness, and diversity indices to identify native and protected species. **Ecosystem services assessment examines whether the plant site provides functions such as pollination, carbon sequestration, and stormwater regulation, with indicators including the proportion of nectar-producing plants, carbon storage, and flood-retention capacity.** Finally, risk and dependency analysis examines the company's dependence on natural resources, such as water, and the potential impacts of its operations. Through these four dimensions, companies can gain a comprehensive understanding of ecological resilience and sustainability risks at their sites.

Figure 1. Example of a Biodiversity Survey Layout at a Plant Site

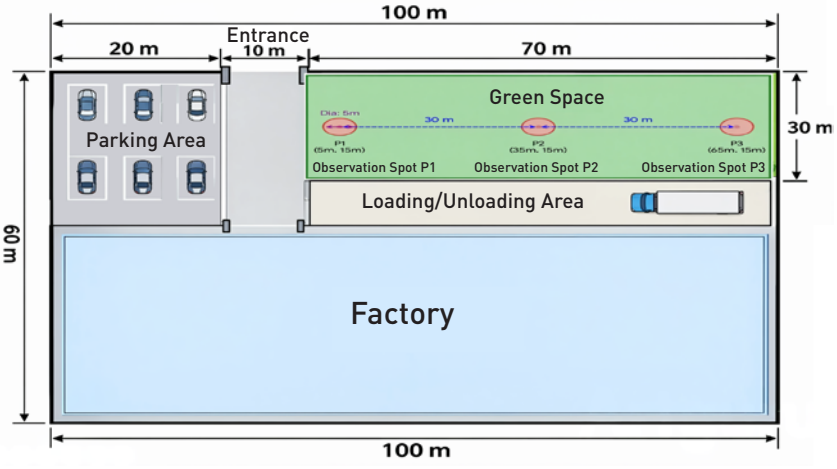





Table3. Example of Biodiversity Survey Record




Observation Spots	Survey Date	Species	Qty	Ecological Type	Ecological Function / Notes/Notes
p1	2026/11/03	Banyan Tree (Ficus microcarpa)	2	Tree (Native Species)	Provides habitat and carbon sequestration
p1	2026/11/03	Lantana (Lantana camara)	5	Shrub (Nectar Plant)	Attracts pollinators and increases ecological interactions
p2	2026/11/03	Butterfly (Papilio polytes)	8	Insect (Butterfly-attracting Species)	Indicator species reflecting habitat health
p3	2026/11/03	Frog (Hylarana taipehensis)	3	Amphibian (Night Observation)	Water-quality indicator showing wetland function

Table 4. Resource Availability Implementation Guide

Steps	Key Content	Management Focus	Example Indicators
1. Resource Inventory	Identify major resources (water, energy, raw materials)	Establish baseline data	Annual water consumption, energy consumption, raw material usage
2. Risk Assessment	Analyze scarcity, price fluctuations, and supply disruptions	Assess supply chain resilience	Resource supply stability, price volatility
3. Efficiency Improvement	Implement energy conservation and circular use	Set efficiency indicators	Energy intensity (kWh/product), water-use efficiency (m^3/product)
4. Alternatives	Explore renewable energy and substitute materials	Diversify resource sources	Renewable energy ratio, substitute material usage rate
5. Monitoring & Transparency	Establish a monitoring system and conduct regular tracking	Incorporate into ESG/ sustainability reporting	Resource-use disclosure, verification indicators

Point observation is a relatively suitable ecological survey method for fastener manufacturers. Observations are conducted at fixed locations or along fixed routes at specified times, recording the species and numbers observed. This method is commonly used to monitor birds, insects, and other mobile animals. It is simple and low-cost, enables companies to quickly understand species occurrence and activity, and is suitable as a basic biodiversity survey tool for a plant site or a specific environment. **Figure 1** shows an example of how a factory can conduct a biodiversity survey.

In **Figure 1**, the total plant area is 6,000 square meters, including 2,100 square meters of green space, giving a vegetation coverage rate of approximately 35%. To arrange observation spots in the green area (70 meters long and 30 meters wide), with a diameter of 5 meters and a center-to-center spacing of 30 meters, the ideal arrangement is one row along the central horizontal line, with 3 observation spots. In the vertical direction, a 15-meter safety boundary must be maintained at both the top and bottom, so only one row is required. In the horizontal direction, the spots are evenly spaced at 30-meter intervals, beginning after the left-side clearance, resulting in 3 spots. The overall configuration is therefore 1 row × 3 spots, maintaining the safety boundaries while ensuring an even distribution of observations. Personnel, such as security guards or cleaning staff, can be assigned to record biodiversity observations at a fixed time each day, such as during shift changes. Insects and amphibians can be photographed with mobile phones for identification and comparison. The data can be consolidated monthly, with an annual summary report submitted to the management review meeting at year-end. The biodiversity survey record format is shown in **Table 3**.

Resource availability refers to whether a company can ensure a continuous and stable supply of water, energy, raw materials, and other resources required for its operations. It concerns not only the quantity of resources but also the reliability of their sources, supply chain resilience, and efficiency of use. In practice, companies should first inventory their major resources and establish baseline data, then conduct risk assessments covering factors such as scarcity, price fluctuations, and supply disruptions. They should ensure continued resource availability through efficiency improvements (energy conservation and circular use), alternatives (renewable energy and substitute materials), and monitoring and transparency (establishing indicators and incorporating them into ESG reporting). In short, resource availability means enabling a company to maintain stable operations while pursuing sustainability even when external conditions change. Please refer to **Table 4** for an implementation checklist.

Finally, **the internal audit checklist should be substantially revised, shifting the audit focus from document conformity to environmental performance improvement. New KPIs should include emissions reduction, energy efficiency, and waste recycling rates,** and the checklist should be continuously updated in response to external issues to ensure that audits genuinely serve as a tool for improving performance.

Regarding internal audits and continual improvement, **ISO 14001:2026 shifts the focus of auditing from "document conformity" to "environmental performance improvement.**" Therefore, when designing audit systems, Taiwanese fastener manufacturers must address a broader range of issues. The author recommends **focusing audits on 9 major areas: "compliance obligations," "risk management," "life-cycle perspective," "supply chain responsibility," "environmental performance data," "biodiversity protection," "resource availability implementation," "continual improvement cases," and "management commitment.**" Auditing thus becomes more than a formal inspection; it becomes a core tool for driving improvements in environmental performance.

The revised standard also strengthens the Plan-Do-Check-Act (PDCA) cycle. In the Plan stage, climate change, biodiversity, and resource availability must be incorporated into environmental objectives, with quantitative performance indicators established. In the Do stage, carbon reduction and resource efficiency improvements are implemented through supply chain cooperation and the adoption of technologies. In the Check stage, internal audits and performance data monitoring are used to verify whether objectives have been achieved. In the Act stage, corrective measures are proposed for areas that have not met their targets, and improvement cases are fed back into management review.

Taiwanese fastener manufacturers can demonstrate continual improvement through cases involving emissions reduction, supply chain cooperation, biodiversity protection, and energy efficiency. Examples include introducing high-efficiency forging or heat-treatment equipment to reduce carbon emissions, jointly establishing supply chain carbon accounting platforms with international customers, increasing the coverage of native plants, and implementing smart energy management systems to improve energy efficiency.

From a strategic perspective, companies can integrate carbon accounting with ESG reporting. Carbon accounting should cover Scopes 1 to 3 (Categories 1–6), including direct emissions, energy-related indirect emissions, and indirect emissions from the supply chain, transportation, and waste treatment, with the data incorporated into the monitoring and measurement processes of the Environmental Management System. ESG reports can be directly supported by the documented information generated under ISO 14001. For example, the proportion of emissions reductions can be linked to GRI 305, while biodiversity indicators can be linked to GRI 304. Companies should also establish an ISO + ESG database and collect data aligned with ESG frameworks during annual monitoring to avoid duplicate work.

Establishing a sustainable supply chain system is also critical. Companies should work with suppliers to require carbon emissions data and environmental compliance certificates, jointly develop sustainability standards, and promote a green partnership program that encourages suppliers to adopt low-carbon technologies or circular economy models. Digital tools can improve efficiency and transparency, including product carbon footprint calculation, document management systems that ensure information is accessible, and smart energy management systems that monitor carbon emissions in real time. These tools enable companies to complete gap analyses, data collection, and audit preparation more efficiently during the revision process while demonstrating transparent environmental performance.

In recent years, Taiwan's fastener industry has experienced declines in both export volume and export value, indicating intensifying competitive pressure amid global supply chain restructuring and the rise of emerging markets. Against this backdrop, the revision of ISO 14001:2026 provides an opportunity for Taiwanese manufacturers to reposition themselves through sustainability strategies. Through carbon inventory, life-cycle assessment, resource availability management, and supply chain responsibility, Taiwanese fastener manufacturers can demonstrate maturity in environmental management and strengthen the trust of international customers. As China competes on cost and emerging markets rise rapidly, Taiwanese manufacturers that differentiate themselves through sustainability certification and quality improvement can maintain a distinctive position in international markets. The revision of ISO 14001:2026 is a turning point that presents both challenges and opportunities. Taiwanese fastener manufacturers should use the revision as an opportunity to move from compliance requirements toward competitive advantage, from simple document keeping toward demonstrated performance, and from local practices toward international standards. Only in this way can they continue advancing on the path of sustainability and internationalization while maintaining a strong position in global markets. ■

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