

# Influence of Climate Change Response Act on Taiwan Fastener Industry

**O**n January 10, 2023, the Legislative Yuan of Taiwan passed the third reading of the draft amendment to the “Greenhouse Gas Reduction and Management Act”, officially renamed to “Climate Change Response Act”. And the first official document signed by the new Executive Yuan Premier Chen Chien-Jen on January 31, 2023 was the “Net-Zero Emission Pathway 112-115 Outline Plan”. The plan proposes 56 sub-projects, with a total funding of about NT\$74.3 billion and a total period of four years, demonstrating Taiwan Government’s determination to implement non-nuclear homes by 2025 and net-zero emissions by 2050.

In view of the worsening environment around the world, the UN Climate Conference (COP27) held in Egypt in November 2022 reached a resolution to establish a “Loss and Damage” global fund, which requires rich countries with high carbon emissions to provide financial assistance to poor countries with low carbon emissions that are suffering from climate disasters. On December 18 of the same year, the EU member states announced in the European Parliament an agreement on a major reform of the EU carbon market, which aims to accelerate the reduction of carbon emissions in the EU, and will gradually abolish free carbon credits for various industries, and levy fees on carbon emissions in the construction and road transport sectors. This agreement means that the carbon reduction force is increased and emissions from all industries in the EU ETS are to be reduced by 62% by 2030 compared to the 2005 level, higher than the previous target of a 43% reduction.

**Table 1** shows the values of Taiwan’s top 20 steel fasteners (HS Code 7318) export destinations in 2022. Among the top 20 countries in terms of the export value of Taiwan’s steel screws, bolts, nuts, automotive screws, screw hooks, rivets, pins, cotter pins, washers (incl. spring washers) and similar articles in 2022, the U.S. undoubtedly accounted for 44.73% of Taiwan’s total exports. Among the top 20 countries, 10 EU countries including Germany (8.32%), the Netherlands (5.46%), Sweden (2.19%), Italy (2.13%), France (1.57%), Spain (1.52%), Poland (1.48%), Slovakia (0.78%), Belgium (0.73%), Denmark (0.66%) were listed. The above 10 EU countries had a total export ratio of 24.84%. Plus 4.65% of the UK out of the EU, the EU accounted for 29.49% of Taiwan’s total fastener export value, making it the second largest export destination of Taiwan fasteners.



**Among Taiwan’s top 20 metal fastener export destinations in 2022, except for the U.S., Thailand and India, which have not yet legislated to complete the carbon fee or carbon tax mechanism, all the others have already implemented carbon tax and carbon fee mechanisms domestically, and the most significant impact on Taiwan’s fastener export will be U.S. “Clean Competition Act (CCA)” under consideration and the “Carbon Border Adjustment Mechanism (CBAM).”**

## Carbon Border Adjustment Mechanism (CBAM)

The EU Carbon Border Adjustment Mechanism (CBAM) has come into effect on January 1, 2023.

CBAM will set the carbon price based on the average price of carbon trading in the EU Emissions Trading System. Products imported into the EU must pay the same cost of carbon as goods produced within the EU and offset the carbon emissions of imports through CBAM certificates. **Reporting has begun on January 1, 2023 and the levy will begin on January 1, 2027.** In addition, EU country representatives reached an agreement on December 18, 2022, on a major reform of the European Union’s carbon trading market (EU-ETS), which covers the electricity producer, steel, cement, refinery and organic chemical industries. These industries are allocated a fixed number of free credits and will gradually reduce their carbon credits, contributing to a 62% reduction in carbon emissions from ETS-covered industries by 2030 compared to 2005. This also indicates that the amount of carbon trading will become higher and higher. The EU carbon trading market (EU-ETS) was €88.81 per ton of CO<sub>2</sub>-equivalent in January 2023, which is a 10-fold increase compared to 2018.



Table 1. Taiwan's Top 20 Steel Fastener (HS Code 7318) Export Destinations in 2022

Ranking	Country	USD(Thousand)	Weight(Ton)	USD(Thousand)/ Ton	% in Taiwan's Total Export Value	Status of Carbon Emission Measures
1	USA	2,747,393	715,379	3.84047	44.73%	USA CCA (in discussion)
2	Germany	510,768	145,519	3.509981	8.32%	EU CBAM
3	Netherlands	335,350	94,210	3.559595	5.46%	EU CBAM
4	Japan	285,679	68,008	4.200683	4.65%	Carbon tax
5	UK	207,494	50,201	4.133298	3.38%	Carbon fee
6	Canada	195,097	53,664	3.635523	3.18%	Carbon tax
7	China	171,962	26,809	6.414281	2.80%	Carbon fee
8	Mexico	137,130	33,037	4.15078	2.23%	Carbon tax
9	Sweden	134,792	32,637	4.130001	2.19%	EU CBAM
10	Italy	130,549	42,249	3.089985	2.13%	EU CBAM
11	Australia	114,119	25,254	4.518895	1.86%	Carbon tax
12	France	96,168	26,420	3.63993	1.57%	EU CBAM
13	Spain	93,338	32,054	2.911907	1.52%	EU CBAM
14	Poland	90,732	31,106	2.916903	1.48%	EU CBAM
15	Thailand	81,666	20,269	4.029101	1.33%	In discussion
16	Slovakia	48,182	16,977	2.838083	0.78%	EU CBAM
17	India	44,974	12,647	3.556017	0.73%	In discussion
18	Belgium	44,949	11,518	3.902433	0.73%	EU CBAM
19	Vietnam	41,222	6,894	5.979314	0.67%	Carbon tax
20	Denmark	40,712	10,159	4.007473	0.66%	EU CBAM

Not only for accelerating the process of carbon reduction, CBAM is also for avoiding “Carbon Leakage”, that is, high carbon emissions industries in order to avoid strict carbon emission regulations, will choose to move out to countries where the carbon emission regulations are more lenient, to avoid the cost of the carbon market. The carbon border tax can effectively control the phenomenon of carbon leakage of commercial speculation. For more CBAM info, please refer to the article “Impact of CBAM on Taiwan Fastener Industry” in Issue #190, 2021 of Fastener World Magazine.

## U.S. Clean Competition Act (CCA)

**In June 2022, the U.S. Clean Competition Act (CCA) draft entered the Senate floor. The Act aims to determine the carbon prices of domestic and imported products that emit greenhouse gases, a carbon pricing mechanism for U.S. homegrown products and the U.S. Carbon Border Adjustment Mechanism (US-CBAM) measures for imported products, in order to achieve the goal of reducing greenhouse gas emissions to net zero by 2050.**

The Act, if passed, would require manufacturers of petroleum, petrochemicals, fertilizers, hydrogen, adipic acid, cement, steel, aluminum, glass, pulp and paper, and ethanol in the U.S. to report their production processes to the Treasury Department from 2024 onward, as well as the greenhouse gas emissions, electricity consumption, and production data generated by production, for use in calculating the average greenhouse gas emissions of domestic industries, and greenhouse gas higher than the industry average manufacturers must pay taxes on the part of the above-average level, in order to force manufacturers to pay attention to the positive action of energy saving and carbon reduction, after the implementation imported products will also be taxed in accordance with this model of carbon tax.

As the U.S. Clean Competition Act is still under consideration by the Senate, it remains to be seen whether the legislation will be delayed by the high inflation in the U.S. in 2022 (CPI increased 9.1% in June) and the presidential election in 2024, but Taiwan Government has already passed the Climate Change Response Act in 2023 to address the requirement for a carbon tax on international trade.

## Response of Taiwan Government - Climate Change Response Act

**The “Climate Change Response Act” established the long-term greenhouse gas reduction target for Taiwan and strengthens the legal source of Taiwan’s climate governance.** The “Climate Change Response Act” consists of seven chapters and 63 articles, the authority in the central government is EPA. Upholding the principle of environmental justice of user fees, greenhouse gas emission allowances will gradually be allocated from free to auction or allocation of planning, and in accordance with the carbon dioxide equivalent CO2e as the unit of calculation, the central authorities include the Ministry of Economic Affairs, Ministry of Transportation, Ministry of the Interior, Ministry of Education, Environmental Protection Agency, which should guide the business under their jurisdiction to conduct emissions sources, inventory, inspection,



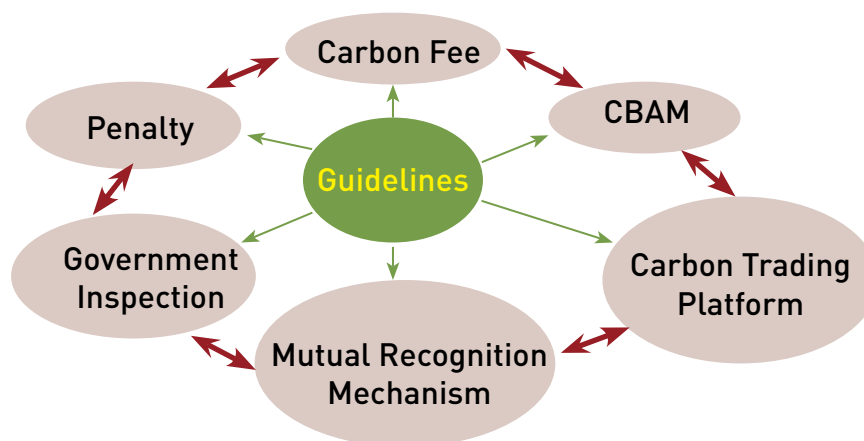
registration, reduction and participation in domestic or international cooperation in the implementation of greenhouse gas reduction measures. The national action plan is reviewed at least once every four years. **The “Net Zero Emissions Pathway 112-115 Outline Plan” signed by Premier Chen Chien-Jen of Taiwan’s Executive Yuan on January 31, 2023 is the first phase of the action plan.**

In addition to the division of labor in the authorities, the “Climate Change Response Act” also includes the important carbon fee, carbon tax mechanism and carbon trading platform in its provisions (Table 2 and Chart 1).

Table 2. Excerpts of Articles for Major Carbon Fee, Tax, and Trading Platform

Article	Excerpt
Carbon Fee	28 The central authority, in order to achieve the national long-term greenhouse gas reduction targets and the control targets for each phase, will impose carbon fees on direct and indirect sources of greenhouse gas emissions by phases.
CBAM	31 In order to avoid carbon leakage, enterprises importing products announced by the central authority should report the carbon emissions of products to the central authority and obtain reduction credits on the platform according to the carbon emission difference approved by the central authority.
Carbon Trading Platform	33 Information platform account creation, free allocation, auction, placement, transfer and transaction-related administrative work.
Mutual Recognition Mechanism	27 If the business obtains foreign reduction credits, the deduction shall be approved by the central authority.
Government Inspection	40 The authority for the purpose of the business may send an employee with a certificate or a sign showing sufficient identification to enter the business, where the emission source is located, or other related places to implement inspections of the operation of the emission source, emission-related facilities, carbon footprint labeling, greenhouse gas or related products manufacturing, import, sale, use, post-capture utilization, and post-capture storage.
Penalty	47 Any person who violates this Law shall be fined not less than NT\$200,000 and not more than NT\$2,000,000, and shall be notified of the deadline for improvement; if the improvement is not completed by the end of the period, the penalty shall be imposed in accordance with the order; if the case is significant, the operation, work or business may be suspended, and trading may be restricted or stopped.

Chart 1. Interrelationship of Carbon Fee, Carbon Tax, Carbon Trading Platform, Mutual Recognition Mechanism, Government Inspection, and Penalty



The “Climate Change Response Act” is based on the definition of “user fees”, which will be levied on direct sources according to their emissions and indirect sources according to their indirect emissions from electricity use. The EPA will first target 287 large carbon emitters with annual emissions of 25,000 tons or more, accounting for nearly 80% of Taiwan’s total emissions. The carbon fee will officially take effect and be used for counseling, subsidies and incentives for greenhouse gas reduction and technology research to promote greenhouse gas reduction and the development of a low-carbon economy. The EPA Climate Change Office Director Cai Lingyi said that after the Act is published and implemented by Taiwan President, more specific work items can begin to operate, after the EPA assessment there are 12 sub-laws needed to be amended as a matter of priority, including the carbon fee collection method, the greenhouse fund income and expenditure storage method, the management method of voluntary reduction, carbon inventory management method, greenhouse gas certification and inspection agency management method, etc., which will be published half a year after the publication of the parent Law. That is to say, **after Q3 2023, the supporting sub-laws related to carbon fee collection for Taiwan enterprises will be completed.**

In the article “The Impact of CBAM on Taiwan Fastener Industry (Issue no. 190 of Fastener World Magazine)”, the author mentioned that

the carbon dioxide equivalent per KG of Taiwan screws (including spheroidizing, coating and electroplating) is 3.41 kgco2e/kg as calculated by the Carbon Footprint Information Website of the Industrial Technology Research Institute. This figure will be an important basis for calculating the carbon tax of screws if Taiwan fastener companies do not calculate their own product carbon footprint. **At present, the common way to calculate the carbon footprint of a product is to use the ISO 14067 Carbon Footprint of Products.** ISO 14067 refers to the greenhouse gas emissions associated with a specific product or service. The carbon footprint of products takes into account the greenhouse gas emissions of each stage of the product life cycle, from the consumption side of the product to the upstream stage of the supply chain, and includes the disposal and recycling stage, which is the basis for the carbon tax levied on a single product.



**Carbon fee is calculated by the amount of carbon dioxide equivalent emitted from the production of an enterprise, and the current international standard is ISO 14064 as the “Organizational Carbon Inventory”**, focused on a national, regional or enterprise to calculate its social operation and production activities, and each link directly or indirectly emitted greenhouse gases (GHG), also known as the compilation of greenhouse gas emissions inventory, through the organization of carbon inventory. The following objectives can be achieved by organizing a carbon inventory.

1. To actively respond to the world trend and national policy and meet the market demand.
2. To serve as a basis and preparation for enterprises to participate in international carbon trading.
3. To facilitate the comprehensive control and management of greenhouse gas emissions.
4. To provide a data base for the carbon footprint of products.
5. Reduce carbon tax for exported products.
6. Enterprises can fulfill their social responsibility and improve their social image.

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In 2018, the International Organization for Standardization published the ISO 14064:2018 edition, which is mainly composed of ISO 14064-1 Design and Development of Organizational Greenhouse Gas Inventory, ISO 14064-2 Quantification, Supervision and Reporting of Emission Reductions and Removal Increases, and ISO 14064-3 Verification of Greenhouse Gas Declaration and Guidelines for Verification, which is currently the most popular standard used by global organizations. For more information, please refer to the article “How Taiwan Fastener Industry Gains International Competitive Advantages from Organizational Carbon Inventory and Product Carbon Footprint in Issue #191 of Fastener World Magazine.

## How Taiwan Fastener Industry Can Gain Global Competitive Edges

Under the trend of carbon neutrality, Taiwan fastener industry must understand the importance of “Low-Carbon Economy (LCE)”, which refers to an economy with little or no greenhouse gas emissions into the atmosphere, or an economy with a carbon footprint close to or equal to zero. A low-carbon economy allows the greenhouse gas content in the atmosphere to stabilize at an appropriate level to avoid drastic climate change and reduce the chance of harm caused by extreme climate. The final product will be the sum of the carbon emissions of the upstream, midstream and downstream manufacturers in the supply chain as the carbon footprint measurement of the final product.

After the enactment of the “Climate Change Response Act”, the fastener industry in Taiwan can no longer avoid it, and enterprises must actively implement the “carbon emission control” policy. Some suggestions are as below:

1. Strengthen the education and training on carbon risk and carbon inventory within the enterprise, and implement the learning of “carbon emission control” management ability.
2. Immediately implement “organizational carbon inventory”, calculate “product carbon footprint”, and grasp the burden of “carbon costs” generated by enterprise production.
3. Establish low-carbon upstream and downstream supply chain management partnerships and restructure the chain of low-carbon suppliers.
4. Revise the purchasing mindset, invest in equipment that reduces pollution, and actively reduce energy consumption in factory production.
5. Set annual carbon reduction targets to effectively reduce carbon costs and carbon taxes.

If Taiwan fastener industry can implement the above suggestions, it should be able to effectively reduce the carbon emissions of factories and products, and then, after verification by qualified third-party units in the country, issue proof of carbon emissions of organizations and carbon footprint emissions of products, and as long as the carbon emission value is lower than the average value of greenhouse gas emissions of the industry, it can apply for reduction of corporate carbon fee or carbon tax payment of products by the reduced greenhouse gas value. As a result, the gap between the company and its competitors can be closed, and a new competitive advantage can be created. ■

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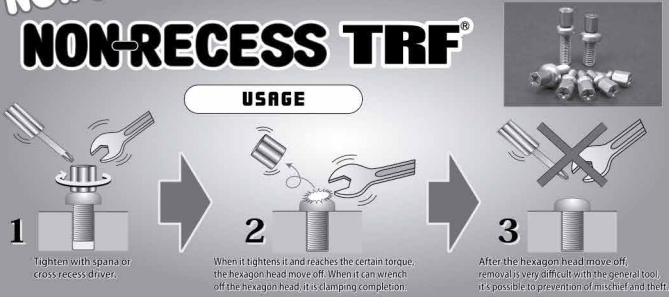




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