



# The Carbon Reduction War for Taiwan Fastener Industry After COP28

COP stands for "Conference of Parties" for members of United Nations Framework Convention on Climate Change, UNFCCC). COP holds a meeting every year. The first COP meeting was held in Berlin, Germany in March 1995, also known as its abbreviated form "COP1". The 2023 Climate Conference was held in Dubai, UAE (UAE) from November 30 to December 12, 2023. This conference was the 28th round, known as COP28, and all parties had to send representatives to participate in the Conference to review the implementation of the law and make necessary decisions on future institutional and administrative arrangements, with the purpose of promoting the effective implementation of the United Nations Framework Convention on Climate Change. The "Paris Agreement" that affects the direction towards low-carbon economy in the 21st century was unanimously adopted by 195 parties under the UNFCCC at COP21 in 2015. The agreement was to strengthen UNFCCC by restraining the increase in global average temperature at above pre-industrialization levels and below 1.5°C, and putting financial flows on a path to low greenhouse gas emissions and climate-resilient progression. The "Paris Agreement" directly affected "Carbon Border Adjustment Mechanism" (CBAM) proposed by the EU in 2021, as well as "Clean Competition Act (CCA)", known as the U.S. carbon border tax proposed in 2022.

COP28 focused on the carbon reduction target for 2030. The United Nations Environment Program (UNEP) released the "Emissions Gap Report 2023" on the eve of its launch. The study

analyzed that **if global warming is to be contained at a growth margin within 1.5°C, the world must reduce greenhouse gas emissions by 42% in 2030. However, a look at the carbon reduction paths currently proposed by various countries will lead to a finding that global greenhouse gas emissions will still increase by 3% in 2030, by which time temperature will grow over 2°C. The consequences will be disastrous.** At the COP28 meeting, the U.S., the EU and UAE joined forces to promote the commitment of 118 countries to triple the growth of renewable energy in 2030, gradually reduce the number of non-carbon-reducing coal power plants, and stop providing financing for new coal power plants. The U.S. and six other countries also announced joining Powering Past Coal Alliance, which currently has 170 countries, cities, organizations among others as members. The Alliance has pledged not to build new coal-fired power plants and to gradually phase out existing ones. **To increase incentives for countries around the world to invest in "green energy", the U.S. announced to provide US\$568 million in low-interest financing for the global green energy supply chain. Meanwhile, the European Investment Bank also intends to release 1.5 billion euros in financing five major wind turbine manufacturers and their supply chains in Europe before the end of the year.** Additionally, due to the large amounts of greenhouse gases (such as methane) produced during the extraction, refining and transportation stages of oil and natural gas, 50 oil companies signed the "Oil and Gas Decarbonization Charter" at COP28 to achieve near-zero



methane emissions by 2030 and decarbonize operations by 2050. The U.S. has also announced new regulations on methane emission for the oil & natural gas industry to cater to market demand for low-carbon fuels. Finally, 22 countries including France, the U.S., Japan, several European countries and Ghana in Africa signed a declaration on nuclear power expansion to support doubling the current nuclear energy production capacity in 2050. President Macron of France, which has the world's largest nuclear power industry, said he will work with the International Atomic Energy Agency to develop a regulatory framework, and hopes that World Bank will provide funds to support the nuclear energy expansion plan. There are four important resolutions reached at COP28, namely:

1. Gradually reduce non-carbon-reducing coal power plants
2. Provide low-interest financing for green energy
3. The oil & gas companies will have to sign the "Decarbonization Charter".
4. Singing the declaration on nuclear power expansion in hopes of tripling nuclear energy by 2050.

COP28 marked the first time to review carbon emission performance of global countries. The result was published in "The Climate Change Performance Index 2024, CCPI Ranking 2024 Report ( <https://newclimate.org/resources/publications/climate-change-performance-index-2024>)". As shown in **Figure 1**, Taiwan ranks 61st after China at 51st, the U.S. at 57th, and Japan at 58th. Taiwan came in seventh from the bottom among all evaluated countries. The evaluation is based on four grades with different weights, namely, greenhouse gas emissions accounting for 40%, renewable energy for 20%, energy use for 20%, and climate policy for 20%. Taiwan's lower ranking shows that the government and the private sector have a lot of efforts to make.

**Figure 1. CCPI Ranking 2024 Report**



## Taiwan Government's Coping Strategies

Taiwan government held the 15th plenary meeting of the Committee on Social Welfare and Healthy Environment in the Legislative Yuan on December 14, 2023, to report the trip to COP28 and discuss follow-up reactions. Various departments of the government provided responses to the COP28 conference. The highlights of the departments' written reports are compiled here as follows:

Ministry of the Interior: The National Development Council of Taiwan officially announced "Orientation of Taiwan's 2050 Net-Zero Emission Approach and Strategy" on March 30, 2022, **which sets a net zero target for 2050. The content includes setting up Building Energy-efficiency Rating System (BERS), developing near-net-zero building technologies, and improving building energy efficiency by saving 50% of building energy and then using renewable energy to achieve carbon neutrality and zero carbon emissions.** Net-zero building are set out for major developments:

- (1) Improve energy efficiency of new buildings
- (2) Improve energy efficiency of existing buildings
- (3) Improve energy efficiency of home appliances
- (4) Research, development, promotion and application of new technologies and construction methods for energy-saving and low carbon buildings

Ministry of Economic Affairs: To accelerate the industry's net-zero transformation, the Ministry of Economic Affairs has promoted **"Industrial Net-Zero Plan" to provide R&D subsidies to steel, petrochemicals, textiles, paper, cement, electronics among other industries to introduce low-carbon solutions and pivot to net zero by means of process improvement, energy conversion and circular economy.** The Ministry of Economic Affairs will continue to promote adaptation work in the fields of "water resources" and "energy supply" in accordance with the latest international climate adaptation trends and the "National Climate Change Adaptation Action Plan".

Ministry of Environment: Taiwan has revealed the "2050 Net-Zero Emissions Path Blueprint" and the "12 Key Strategic Action Plans for

Source: THE CLIMATE CHANGE PERFORMANCE INDEX, CCPI Ranking 2024

URL: <https://newclimate.org/resources/publications/climate-change-performance-index-2024>



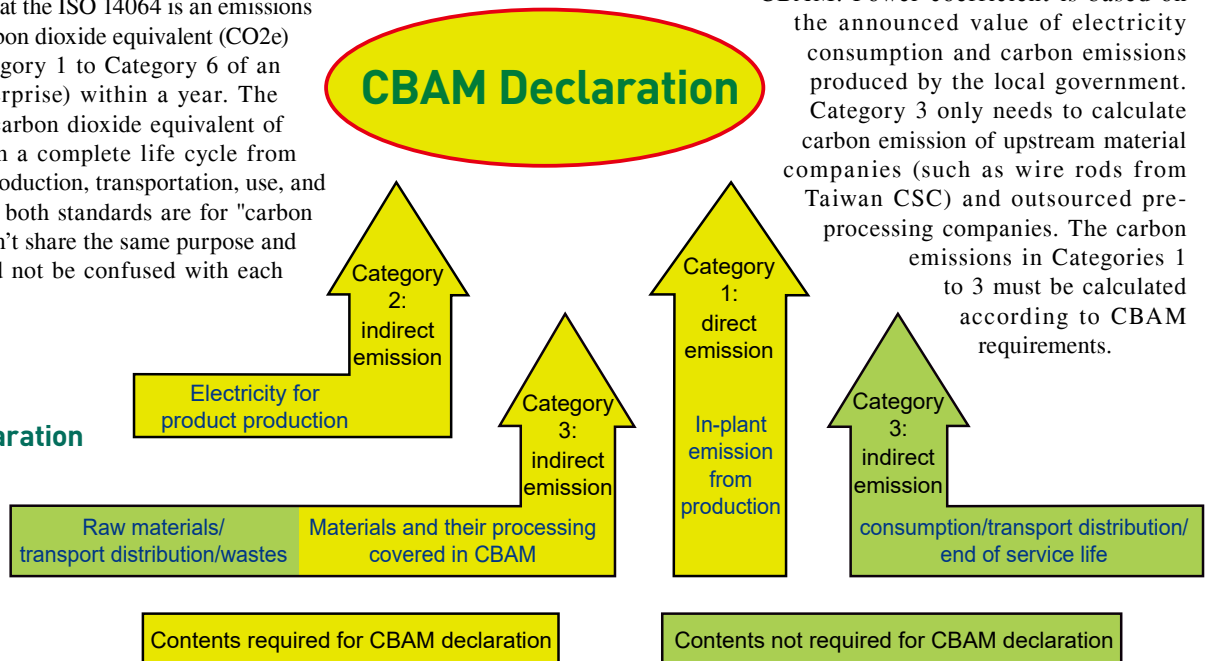
Net-Zero Transformation". It is accelerating transformation in energy, industry, lifestyle, and society, based on technological R&D, and climate laws. **Taiwan is to promote the formulation of carbon pricing system and related sub-laws under the "Climate Change Response Act", monitor the development of international negotiations on the Climate Convention and the Paris Agreement, steadily promote carbon reduction credit offset trading mechanism, and strictly prevent "corporate greenwashing"**. The ongoing "National Climate Change Adaptation Action Plan (2023-2026)" will promote adaptation in these areas: life-sustaining infrastructure, water resources, use of land, coasts and oceans, energy supply and industry, agricultural production and health.

Taiwan is coping with the COP28 agreement through 2050 net-zero emission path, energy conservation in the construction industry, electrical product efficiency improvement, industry net-zero carbon emission plan, low-carbon application plan, climate change response act, carbon pricing system, and carbon reduction credit offset trading mechanism. However, out of the four COP28 resolutions, Taiwan focuses policymaking merely on reducing carbon emissions, leaving a gap with the COP28 resolutions when it comes to strategies on energy generation. The 2024 presidential and legislators election of Taiwan ended with William Lai of the Democratic Progressive Party to be the President-elect of Taiwan and Daniel Han of the KMT Party as President of Legislative Yuan, as well as a congress in which no parties take over half of the congress seats. Will the Taiwanese energy policy be adjusted in the new presidential term? We will have to see about that.

## Differences between CBAM, ISO14064 and ISO14067

The articles "CBAM Regulation in a Nutshell for Fastener Business Owners" and "Navigating the Green Horizon: A brief Exploration of ISO 14064, ISO 14067, and ISO 14068 Certification in Fastener Manufacturing", published in the January 2024 issue (No. 204) of Fastener World Magazine, clearly explain the requirements for carbon inventory and EU CBAM. I would like to add that the ISO 14064 is an emissions inventory of all carbon dioxide equivalent (CO<sub>2</sub>e) ranging from Category 1 to Category 6 of an organization (enterprise) within a year. The ISO 14067 is the carbon dioxide equivalent of a single product in a complete life cycle from material through production, transportation, use, and disposal. Although both standards are for "carbon inventory", they don't share the same purpose and method and should not be confused with each other.

**Figure 2.**  
EU CBAM declaration content chart



What is particularly important is that **the carbon emissions calculated with ISO14064 and ISO14067 cannot be used in CBAM carbon emissions declaration**. The reason is that CBAM is based on EU Emission Trading Scheme (EU ETS), which is the world's first multi-country emissions trading system. It is a climate policy system established by the EU in 2005. The EU ETS allocates emission reduction targets to each EU member state. Countries in the EU ETS must comply with the provisions of the EU Greenhouse Gas Emissions Trading Directive, use the reduction sharing agreement as the goal, and make plans for the allocated greenhouse gas emission. Each member country will then allocate to each enterprise according to the national allocation plan. Each enterprise will meet the requirements for carbon reduction through technological upgrade, transformation and other means, and can sell unused emission credits to other enterprises that have not completed the emission reduction target. The EU ETS is currently the world's largest carbon emissions total control and trading system. It was established in 2005, while the ISO 14067 was established in 2018. The two are 14 years apart, because the EU knew less about greenhouse gas than it did in 2018. Therefore, EU ETS only requires the inventory of three major categories of greenhouse gases, including carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), and perfluorocarbons (PFCs). With the ISO 14067:2018 being enacted, IPCC scientists have expanded their understanding of greenhouse gases to include 7 categories of greenhouse gases. The ISO 14067:2018 clearly stipulates that organizations should use carbon dioxide equivalents (unit: metric tons), to quantify the direct greenhouse gas emissions of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), nitrogen trifluoride (NF<sub>3</sub>), sulfur hexafluoride (SF<sub>6</sub>), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).

In October 2023, the EU CBAM began its trial phase. The EU explained CBAM declaration at a webinar session on the iron and steel sector in October 2023. Refer to **Figure 2**. Category 1 is direct emissions, namely, all emissions related to the production of products declared in the factory for CBAM (only calculating three types of greenhouses, carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), and perfluorocarbons (PFCs)). Category 2 calculates the electricity used by the products declared for CBAM. Power coefficient is based on the announced value of electricity consumption and carbon emissions produced by the local government. Category 3 only needs to calculate carbon emission of upstream material companies (such as wire rods from Taiwan CSC) and outsourced pre-processing companies. The carbon emissions in Categories 1 to 3 must be calculated according to CBAM requirements.



## Carbon Reduction Strategies of Taiwan Fastener Industry

Carbon emissions derived from transportation do not require declaration. Therefore, the largest source of carbon emissions is from electricity in Category 2. The largest electricity consumption is from manufacturing equipment. Taiwan's electricity cost has been cheap for long. Electricity consumption was not the top priority for Taiwanese fastener companies when they purchased equipment in early days. Now, choosing an energy-saving equipment or process has its advantages in carbon emissions. Comparing conventional fastener heat treatment processes using electric heating with the fastener heat treatment process using ammonia as the heating energy, the carbon emissions generated by each kilogram of fasteners will be about 30% to 40% different in CO<sub>2</sub>e. The Paris Agreement requires companies to **move towards a low-carbon economy. The differences between heat treatment processes could be as large as 30% to 40%**, let alone the differences between enterprises when it comes to low carbon competitiveness.

With European and American manufacturers demanding low-carbon products, Taiwanese fastener companies have embarked on carbon inventory. Taiwan began promoting "Guide Plan for Net Zero Pathway 2023-2026" in 2023. All major authorities of the government have begun to make budgets to help companies conduct carbon inventories. I happened to assist several schools and companies in carrying out carbon inventories. I found that **some business owners in Taiwan just thought of speeding up carbon footprints or carbon emissions inventory, but they didn't know if their calculated emissions were competitive compared to competitors.** Particularly, emerging countries now use new equipment, new technologies and new processes, but some Taiwanese fastener companies still use old equipment and old processes. When time arises for these Taiwanese companies to make CBAM declarations, they will have to think twice about whether they will gain orders because they will report much higher emissions than their competitors and EU importers will have to bear with higher CBAM required taxes.

Carbon inventory is only a means, and carbon reduction is the purpose. Before CBAM officially takes effect in 2026, Taiwan fastener industry has two years to actively invest in carbon reduction and implement new low-carbon equipment, technologies and

manufacturing processes. Now, Taiwanese fastener manufacturers trading with EU clients must include the carbon emissions of their products, in addition to negotiating quotations, product specifications, lead times, packaging and shipping methods, which altogether are among the criteria for clients to choose suppliers. On November 29, 2023, the Ministry of Economic Affairs held an electricity price review meeting. It was decided that power dispatch fees and power transfer and distribution fees will rise in 2024. The electricity costs of Taiwanese fastener manufacturers will continue to rise. For business operators, saving electricity and reducing carbon emissions is an urgent priority. **Following COP28, 2024 is a year when Taiwan fastener industry must actively implement carbon reduction actions. It is recommended that carbon reduction planning be carried out first for projects that require CBAM declarations. Only by winning and maintaining EU orders can immediate results be seen.** ■

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