

## The Carbon Pricing of Taiwan Amid International Green Competition

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With the EU's Carbon Border Adjustment Mechanism (CBAM) and the Clean Competition Act and Foreign Pollution Fee Act proposed by the United States, countries are increasingly using carbon border mechanisms to prevent carbon leakage and maintain their industrial competitiveness. As trade agreements include expanding commitments to environmental and sustainable development, the risk of violating these commitments may increase, leading to the expansion of trade barriers. However, carbon border mechanisms cannot guarantee the elimination of carbon leakage, and improper design may undermine the cost-effectiveness of global carbon reduction efforts. While Europe and the United States are engaging in green competition through carbon border mechanisms and subsidies for net-zero technologies, how does Taiwan respond to the impending questions about the carbon pricing system?

Past ex-ante simulations have found leakage rates ranging from 2~54% (Branger and Quirion, 2014a<sup>1</sup>), 10~30% (Carbone and Rivers, 2017<sup>2</sup>), to between -2%~49% (Yu et al., 2021<sup>3</sup>). However, post-hoc studies have concluded that carbon leakage has been very low or even close to zero so far, especially under the European Union Emissions Trading System. Ex-ante studies rely on scenario assumptions and simulations, so leakage rates depend on various factors such as the economic scale of emission-reducing regions, the ambition and design of decarbonization policies, model structures, and key parameters. Leakage rates also depend on the pathways considered in individual studies, such as competitiveness, energy, demand, and technological spillovers (Tan et al., 2019<sup>4</sup>). Post-hoc studies' inability to observe clear evidence of carbon leakage is mostly attributed to low carbon prices during the analysis period and the free allowances enjoyed by emission-intensive trade-exposed (EITE) industries (Branger and Quirion, 2014b<sup>5</sup> ; Naegele and Zaklan, 2019<sup>6</sup>).

Designing CBAM is not a simple task and requires defining several

dimensions: the scope of trade flows covered, sectors, geography and emission coverage, determining the implied emissions, adopting policy mechanisms, adjusting calculation methods, and using generated revenues (Marcu et al., 2020<sup>7</sup>). In addition, potential legal, technical, and diplomatic constraints must be considered (Cosbey et al., 2019<sup>8</sup>; Marcu et al., 2020<sup>9</sup>), balancing environmental and competitiveness benefits. From an economic perspective, whether a border adjustment mechanism can truly prevent carbon leakage and decouple the economy from emissions depends on the degree of the economy's dependence on international trade, the competitiveness of key traded products in international markets, and the elasticity of domestic and foreign product substitution in the domestic market. Therefore, as Europe, the United Kingdom, and the United States each design mechanisms with different objectives, targets, scopes, rates, and offsets, along with the international green technology funding influenced by the Net-Zero Industry Act and the Inflation Reduction Act, the green competitiveness race is in full swing.

2024 marks the first year of Taiwan's carbon pricing. In addition to establishing the Taiwan Carbon Solution Exchange at the end of 2023, Taiwan will also launch a carbon fee system in 2024. After the Paris Agreement and NDCs, Taiwan's high-carbon-intensive products, such as steel and petrochemicals, are gradually moving towards decarbonization and maintaining historically lower production levels. In this context, implementing carbon pricing-related systems in Taiwan (whether through carbon tariffs, domestic carbon fees, or subsidies for net-zero technologies) presents intriguing challenges and impacts on domestic economic development. Faced with the imminent or potential implementation of carbon border adjustment mechanisms by Europe and the United States, how can Taiwan ensure that its domestic carbon pricing level simultaneously supports the transition to net-zero while maintaining economic and trade competitiveness? Under the requirements for localization of production and the incentives for net-zero technology subsidies in Europe and the United States, how should enterprises adjust their international strategic layouts, and how should Taiwan's carbon fee system be adjusted? The first year of carbon pricing is the beginning of a period filled with variables and opportunities.

## Notes:

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