

Corporate Internal Carbon Pricing: Global Trends and Challenges

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SYNOPSIS

With global growth in the deployment of mandatory carbon pricing schemes, such as carbon taxing or emissions trading systems, more and more companies are using internal carbon prices to coordinate their investment decision-making. Given that the roles of the private sector in tackling climate change will be strengthened and carbon pricing will be more prevalent, internal carbon pricing is expected to expand among companies. This policy brief reviews the global trends in internal carbon pricing based on the review of the CDP's available reports and data (2015-2020) and discusses the opportunities and challenges of internal carbon pricing.

KEY POINTS

- Between 2015 and 2020, the number of companies that use or plan to adopt internal carbon pricing in the next two years increased approximately twofold from 1,018 companies to 2,012 companies, with growth in almost all regions and industrial sectors.
- Globally, internal carbon prices ranged from USD 0.01/tCO_{2e} to USD 908.85/tCO_{2e} in 2017, while the median price was USD 25/tCO_{2e} in 2020.
- Adoption of internal carbon pricing will continue to expand due to companies' increased interest in climate change and the expansion of mandatory carbon pricing schemes.
- Challenges and uncertainties still exist regarding the effectiveness of internal carbon pricing, such as insufficient adoption rates, low price levels and the companies' preference for a shadow price and an implicit price.

INTRODUCTION

As efforts to combat climate change expand at various levels, carbon pricing has become a critical greenhouse gas (GHG) emissions mitigation tool, not only in international climate negotiations and national politics but also in the private sector. The launch of the EU Emissions Trading System (ETS) and emphasis on environmental, social and governance (ESG) standards drove the private sector to take more ambitious attitudes towards climate change and carbon pricing over the past decade. In 2014, more than a thousand companies and investors announced their joint support for carbon pricing at the UN Secretary-General's Climate Leadership Summit. Moreover, corporate carbon pricing has been encouraged by global initiatives, including the

World Bank's Carbon Pricing Leadership Coalition (CPLC) and Caring for Climate, launched by the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Global Compact (UNGC), and the United Nations Environment Programme (UNEP).

An increasing number of companies are setting their own carbon prices and using them in corporate decision-making. This is called internal carbon pricing (ICP). ICP refers to a company's practice to voluntarily assign a precise monetary value to carbon generated in its business operations. This ICP is then factored into project or investment evaluations. In doing so, ICP aims at reducing a company's direct and indirect GHG emissions

by internalising the cost of the company's GHG emissions. Given that the roles of the private sector in tackling climate change will be strengthened and carbon pricing will be more prevalent, ICP is expected to expand among companies.

With this background, this policy brief discusses the opportunities and challenges around ICP based on examining global adoption trends and experiences. To this end, the available reports and data published by the CDP (formerly the Carbon Disclosure Project) between 2015 and 2021 are reviewed. The CDP is a global initiative surveying self-reported corporate carbon management and pricing strategies. However, selected reports and data are not publicly available after 2017, as such only reports published in 2015, 2016, 2017, and 2021 are reviewed in this policy brief.

ANALYSIS

Companies Implementing or Planning ICP

In 2020, 2,012 companies reported they were either using ICP (853 companies) or planned to adopt it in the next two years (1,159 companies). These numbers represent an effective doubling of companies compared with 2015. The numbers of companies reporting their use of ICP each year were 435 (2015), 517 (2016), 607 (2017), 594 (2018), 699 (2019) and 853 (2020). The numbers of companies planning to use ICP were 583 (2015), 732 (2016), 782 (2017), 711 (2018), 915 (2019) and 1,159 (2020) respectively.

Asian and European companies notably led this growth. Over the last three years (2018-2020), companies in Asia and Europe presented the largest growth in terms of increasing numbers of companies implementing or planning ICP (341 companies in Asia and 228 companies in Europe) and also in terms of the rate of growth (75.3% and 52.7%). North America, Latin America, and Oceania showed 36.0%, 37.3%, and 45.2% increases, respectively. By contrast, companies implementing or planning ICP decreased in Africa from 44 companies in 2018 to 43 companies in 2020. However, this decrease may be due to the inconsistent reporting frequency, which is easily observed in the CDP data. In other words, the companies that had informed their ICP information might not

respond to the CDP's questionnaire in the following year.

The Materials sector had the largest number of companies already adopting or planning to adopt ICP (251 companies), followed by Industrials (242), Consumer Discretionary (210), Consumer Staples (158), Financials (147), Utilities (93), Energy (61), Telecommunication Services (48), and Health Care (35), in 2017. In terms of the share of companies adopting ICP, companies in the Energy and Utilities sectors tended to be more engaged in adopting or planning to adopt ICP (71% of utility companies and 67% of energy companies in 2020). Other sectors' adoption rates ranged from 27% to 52%. Higher adoption rates in the Utilities and Energy sectors are not surprising because many fossil fuels and electric power companies have adopted ICP due to their immediate and central role in decarbonisation.

Key Motivations for Using ICP

Companies are expected to adopt ICP due to its several benefits. First, ICP can function as a climate-risk management tool to minimise the physical, regulatory and financial risks posed by climate change. It works as a key metric for measuring and assessing the impacts of physical and regulatory risks and as a hedge against future energy price increases and tougher carbon regulations. Second, ICP helps companies meet their GHG emissions reduction targets. It facilitates companies in identifying low-carbon business opportunities and shifting capital investments to low-carbon options by incorporating climate change issues into their decision-making process and simultaneously building internal awareness about climate change. Third, ICP can help companies gain early-mover reputational and economic advantages. Adopting companies can better attract environmentally aware investors and consumers by signalling that the company is doing its bit to avoid dangerous climate change.

The CDP's reports disclose such motivations are found in the real world. Most companies adopted ICP for multiple purposes rather than for a single purpose. In 2020, the most popular objectives were to drive low-carbon investment, to drive energy efficiency, and to change internal behaviour. Meanwhile, the

regulatory risk was a key driver in adopting ICP in certain countries. The companies that did not expect GHG emissions regulations, such as mandatory carbon pricing, tended to adopt ICP for behavioural change and stakeholders' satisfaction. On the other hand, the companies facing the regulations tended to adopt ICP to navigate GHG regulations. Furthermore, the CDP reported that the companies in the latter group are five times more likely to adopt ICP than those in the former group. Therefore, mandatory carbon pricing works as one of the significant determinants of the companies' adoption of ICP.

Types of Internal Carbon Price

Internal carbon prices are generally classified into internal fee/tax, shadow price, and implicit price. While an internal fee mechanism generates revenue by placing actual monetary values on emissions and charging those costs to operational expenditures, a shadow price and an implicit price do not imply actual financial transactions. A shadow price is a hypothetical price assigned to carbon emissions in order to support strategic investment decision-making by revealing hidden climate-related risks and opportunities. An implicit price is a company's estimated marginal abatement cost including the compliance cost with regulations. A shadow price was the most popular internal carbon price type in the real world. In 2020, 50.8% of companies adopting ICP used shadow prices. Implicit prices and internal fees accounted for 19.3% and 15.0%, respectively.

Ranges of Internal Carbon Price

The internal carbon prices of companies vary widely because no global standard for carbon price exists and each company selects its own price based on its business context. Globally, the internal carbon prices were USD 0.95-357.37 per metric tonne of carbon dioxide equivalent (tCO₂e) in 2015, USD 0.28-893.29/tCO₂e in 2016, and USD 0.01-908.85/tCO₂e in 2017. The median and mean prices of each year were USD 22.6/tCO₂e and USD 34.1/tCO₂e in 2015, USD 22.97/tCO₂e and USD 36.7/tCO₂e in 2016, and USD 22/tCO₂e and USD 33.7/tCO₂e in 2017. In 2020, the median price increased to USD 25/tCO₂e.

Companies in Asia, Europe, and North America had higher internal carbon prices than companies in Africa and Latin America. While the median prices of African and Latin American companies were USD 9.26/tCO₂e and USD 5/tCO₂e in 2017 and USD 8/tCO₂e respectively in 2020, those of companies in the other regions were USD 15-32.15/tCO₂e in 2017 and USD 23-28/tCO₂e in 2020. This suggests that companies located in jurisdictions with mandatory carbon pricing schemes are more likely to have higher internal carbon prices. Out of 65 mandatory carbon pricing schemes in effect around the world, 56 schemes are implemented in Asia, Europe, and North America. Thus, for the companies in these regions, putting a price on carbon should be an inevitable choice.

The variance in median prices among the sectors has decreased. The spread of median prices by industrial sector ranged from USD 7.85 (Information Technology) to USD 40/tCO₂e (Energy) in 2015, but those in 2020 ranged from USD 16/tCO₂e (Consumer Discretionary) to USD 43/tCO₂e (Health Care).

Opportunities and Challenges

The number of companies adopting ICP is expected to keep growing. As many companies have pledged their efforts to reduce GHG emissions, they would seek various tools to support their climate change strategies, and ICP can be an attractive option for them. Besides industries, ICP is rapidly spreading in the financial sector as a tool for climate stress testing and evaluating investment decisions. Moreover, given that there is a positive correlation between the implementation of mandatory carbon pricing schemes and the use of ICP, the global expansion of carbon tax and ETS would accelerate the companies' adoption of ICP.

However, several challenges and uncertainties still exist regarding the effectiveness of ICP. First, despite the considerable increase in ICP adoption, the share of companies setting internal carbon prices is still low. In the 2020 CDP climate questionnaire, 41.5% of respondents used or planned to adopt ICP. It means almost 60% of companies do not yet have a plan for ICP. Furthermore, considering that many companies did not respond to the CDP's questionnaire, the adoption rates may

be far lower. Companies may be reluctant to adopt ICP for the following reasons. Some companies think the GHG emissions reduction policies would not significantly affect their cash flows because they are not carbon-intensive companies. Besides, some companies, particularly small and medium-sized enterprises (SMEs), do not adopt ICP because of a lack of capacity to assess and realise how to deal with potential climate-related risks.

Second, the price levels are lower than expected to achieve the global climate goal. The CPLC concluded the carbon price level should reach USD 40-80/tCO_{2e} by 2020 and USD 50-100/tCO_{2e} by 2030 in order to limit global warming well below 1.5-2°C in the *Report of the High-Level Commission on Carbon Prices*, published in 2017. However, the review of global internal carbon prices shows that the price ranges were USD 0.01-908.85/tCO_{2e} in 2017, and the median prices were USD 22/tCO_{2e} in 2017 and USD 25/tCO_{2e} in 2020. Although the current internal carbon price levels are higher than explicit carbon prices under the mandatory carbon pricing schemes around the world (USD 0.08-137.24/tCO_{2e} in 2021), they still do not reach the expected levels needed to avoid irreversible climate change. These low prices imply a gap between companies' awareness of climate risks and their practices in coping with such threats.

Third, although a growing level of anecdotal evidence promotes the effectiveness of ICP at the corporate level, scientific empirical analyses identifying the relationship between ICP and the company's GHG emissions reductions remain inconclusive. In addition, the companies' preference for a shadow price and an implicit price over an internal fee may undermine the potential effectiveness of ICP. While an internal fee affects the company immediately upon its adoption by generating costs, a shadow price and an implicit price tend to affect the business in the future and not drive the near-term GHG emissions reduction.

CONCLUSION

Given its advantages and benefits, ICP needs to be encouraged. The government may support the adoption of ICP in collaboration with the private sector and NGOs. The government and large companies may develop and showcase

the best practices of ICP. It will facilitate the learning of SMEs interested in ICP but could not adopt it owing to the lack of capacity and provide large companies with an opportunity to promote their environmental contributions to the public. Also, the government and NGOs may create consumer pressure for corporate sustainability. Lastly, it is required to consider how to raise the effectiveness of ICP in combination with other corporate sustainability tools and measures.

WHAT TO LOOK OUT FOR

- Continuous monitoring of ICP trends
- GHG emissions reduction of companies using ICP
- Impacts of increase in Singapore's carbon tax rates on the adoption of ICP among companies in Singapore

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