

How companies calculate their carbon footprints

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When it comes to slashing carbon emissions, the onus is often placed on individuals and their carbon footprint. But companies also have a major role to play. In fact, the biggest corporations have accounted for [more than two thirds of global emissions](#) since the start of the Industrial Revolution.

To contribute their fair share of the effort to cut CO₂ emissions, companies now dispose of a potentially powerful tool: internal carbon pricing (ICP), also known as "shadow carbon pricing." First thought up following the Kyoto Protocol in 1997, which laid the foundations for carbon pricing and offsets, shadow [carbon pricing](#) is a voluntary method for companies to estimate the costs of their greenhouse gas emissions to society, even when all or part of their operations are out of the scope of external carbon regulations.

[My research](#) at the EDHEC Risk Climate Impact Institute seeks to test the robustness of these accounting methods in the private sector and its [complex modeling](#).

Influencing future decisions

To come up with a shadow carbon price, companies need to assess both their direct and indirect emissions from their own sources, but also their energy use, supply chain operations and waste management. Direct emissions come from sources owned or controlled by the company such as emissions from combustion in a company's boilers or from its vehicle fleet. Indirect emissions are estimated on the basis of purchased energy such as electricity, heat or cooling. Finally, other indirect emissions in the supply chain are factored in, such as transportation of materials or waste disposal.

Also taken into consideration are current and estimated future carbon prices. This complex process is critical to understand the pattern of carbon prices over the long term, and how they might impact companies' performance in the future. To reach such estimations, the company must assess the [climate policies](#) in place in the countries where it operates and those where it plans to expand. Companies should also factor in potential major political, technological and economic developments that could lead to significant changes in the price of carbon in each of the target

countries.

Only with the information above will companies finally be able to set their internal carbon price. To determine the price for a ton of CO₂, they can use the current market transactions—in Europe, for example, it is known as the [EU Emissions Trading System](#). In other markets, [carbon tax rates can be found in national tax laws](#).

Impact on company valuation

On top of optimizing companies' decision-making processes, this tool also helps companies to improve communication with investors. An increasing number of climate-aware investors are poring over the plans disclosed by companies to deliver on the transition to a low-carbon world, and what firms assume as ICP validates the credibility of the long-term strategy and of corporate actions to successfully compete in a dangerously warm planet. As carbon-related risks can have a significant impact on a company's cash flow, it makes financial sense to integrate this "carbon price" into the company's valuation.

For example, when an energy company has to make a decision regarding a new plant, they can calculate and compare the expected costs of a fossil fuel-based choice versus a renewable energy choice. A baseline valuation that does not consider the future likely increase of carbon prices may easily show that traditional more polluting sources of energy are more convenient. However, when the valuation also includes the future expected evolution of carbon prices, the costs associated to the future [carbon footprint](#) may become so prohibitive that the company would realize the financial convenience of switching to a cleaner source of energy.

This way they can make informed decisions that include the shadow cost of carbon use, improving the quality of financial investments.

Ultimately, carbon risk assessment isn't just an important step in the global fight against climate change, it also helps companies and investors navigate the complex challenges of a rapidly changing business landscape.

A patchwork of regulations

Still, current regulations regarding environmental policies vary widely between countries. As a result, carbon prices ranged from 1 cent to more than \$130 per ton in 2023 ([World Bank](#))—a textbook example, if there ever was one, of how stronger climate policies could spur greener business decisions.

As climate change policies and carbon prices evolve rapidly, companies will increasingly need to [measure their exposure to carbon risks](#). In fact, managing carbon risk should be treated as importantly as any other traditional risk within the company, such as compliance or currency risks.

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