



# WHAT IS INTERNAL CARBON PRICING AND HOW CAN IT HELP ACHIEVE YOUR NET-ZERO GOAL?





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## PREFACE



**Prarthana Borah**  
Director, CDP India



Globally there is a growing consensus among governments and corporates on the vital role of carbon pricing in the transition to a decarbonized economy. For governments, carbon pricing, besides being a source of revenue, is an essential element of climate policy that drives emission reduction.

For the business community, internal carbon pricing (ICP) is a tool that allows for a reduction in emissions as well as directs investments for more efficient and clean technologies. Companies can assess climate-related risks, identify opportunities, prepare for future climate regulations,

and advance corporate sustainability with ICP. For investors, ICP can be used to analyze the potential impact of policy on investments thus enabling the reallocation of investment towards low carbon and climate-resilient activities.

CDP, with data collected every year since 2014, is the largest repository of information on how ICP is used and viewed by companies around the world. In 2021, globally 1,077 companies reported using an ICP, and 1,601 reported that they plan to use an ICP in the next two years. In India specifically, 31 companies have incorporated ICP, and 54 companies are planning to adopt ICP in the next two years. The total number of companies that already use or plan to adopt ICP in the next two years stood at 85, which is a 50% increase from 2020 company numbers. CDP data also indicate a correlation between the companies putting a price on carbon and those taking other strategic actions to integrate climate change issues into their business strategy to reduce risk, such as by setting a Science-Based Target or sourcing more energy from renewables.

In the absence of an obvious carbon pricing mechanism in India ICP is a preparatory tool that can help companies prepare to assess risks, anticipate future regulations, and demonstrate management of risk to shareholders. At present, most organizations are voluntarily and internally pricing carbon which affects key decisions on the fuel purchase, electricity mix, and so on. It is therefore timely to assess the impact of policy action, evaluate potential opportunities, and effectively engage to facilitate the use of ICP.

ICP can serve as an important risk-mitigation tool with multiple benefits beyond the company's operations, customers, and communities. As companies are taking leadership on climate action, ICP combined with other approaches can help advance the low-carbon transition. As our data shows, momentum for carbon pricing is building in India. To sustain this momentum exchange of knowledge, and experiences and working more proactively with one another to engage with policymakers and stakeholders to accelerate ambition is the need of the hour.



## INTRODUCTION

Carbon pricing is an approach to reduce greenhouse gas (GHG) emissions by using market mechanisms to pass the cost of emissions onto emitters<sup>1</sup>, usually by pricing the carbon dioxide equivalent (CO<sub>2</sub>e) emitted. A carbon price works as an economic signal to polluters, and based on economic incentives, allows them to decide to either transform their activities, operate more sustainably and lower their emissions, or continue emitting and paying for their emissions.

The Paris Agreement<sup>2</sup> recognizes, in paragraph 136, the “important role of providing incentives for emission reduction activities, including tools, such as domestic policies and carbon pricing”. Carbon pricing sets a tune for framing policies for both investors and key global frameworks. It has emerged as a key policy mechanism to curb and mitigate the dangerous impacts of greenhouse gas pollution and drive investments towards cleaner, more efficient alternatives. The number of jurisdictions with carbon pricing policies is rising every year, with over 60 carbon pricing initiatives in place or scheduled by governments and regulators in 2021. There is growing consensus that carbon pricing is a very flexible and cost-effective approach to mitigating the impacts of climate change. Momentum is expected to continue as the international community acts to implement the Paris Agreement.

Putting a price on carbon is a vital tool in the arsenal of measures utilized to achieve the goals of the Paris Agreement and reach net-zero by 2050. Article 6 of the Paris Agreement rulebook on the international cooperation through carbon markets, which was finalized at the UN climate talks at COP26, increased interest in internal carbon pricing (ICP) and means to drive innovation, investment, and economic growth. ICP is widely recognized as a strategy for corporations to significantly curb emissions, manage climate-related business risks, and finance decarbonization actions. Over the last five years, companies have gradually introduced ICP. The unprecedented commitments from the private sector to reach net-zero has spurred a great enthusiasm to understand how to use carbon pricing measures, in particular the role of ICP and engagement in voluntary and compliance markets in emerging countries, including India.

<sup>1</sup> <https://www.carbonpricingleadership.org/what>

<sup>2</sup> [https://unfccc.int/sites/default/files/resource/parisagreement\\_publication.pdf](https://unfccc.int/sites/default/files/resource/parisagreement_publication.pdf)



There are two forms of carbon pricing – external and internal.

**External** carbon pricing usually consists of:

- ▼ Emissions Trading Scheme (ETS): ETS caps the total level of emissions pertaining to greenhouse gas (GHG). It allows those industries with low emissions to sell their extra allowances to larger emitters. This way it acts like a cap-and-trade system.
- ▼ Carbon taxes: CO<sub>2</sub> emissions can also be priced implicitly by government policies that encourage emissions reductions, such as energy efficiency standards and renewable energy subsidies. This sets a price directly on carbon by defining a tax rate on GHG

emissions or – more commonly – on the carbon content of fossil fuels. For example, the excise duty on petrol and diesel in India is an implicit carbon tax.

Companies can set an **internal** carbon price (ICP) voluntarily to value the cost of a unit of CO<sub>2</sub> emission. This price varies depending upon the trade regions and individual company’s objectives. ICP is a strategic planning tool that when implemented correctly can help organizations in the transition to a low-carbon economy, as the fees collected can have a real impact on business operations and related decision-making. Corporations have been using ICP as a strategic planning tool to manage climate-related business risks and prepare for the transition to a low-carbon economy.

should consider their longer-term strategies and most efficient allocation of capital in order to transition to a low-carbon economy and experience high returns at the same time.

At the request of the G20 Finance Ministers and Central Bank Governors, the Financial Stability Board (FSB) and its chair Mark Carney established the industry-led Task Force on Climate-related Financial Disclosures (TCFD or Task Force) in 2015. This was in response to increasing demands from investors, lenders,

insurers, regulators, policy makers, and other stakeholders in the financial markets for decision-useful, climate-related information. Inadequate information about risks can lead to mispricing of assets and misallocation of capital that can potentially lead to concerns about the stability of financial markets, which can be vulnerable to abrupt corrections. Chaired by Michael Bloomberg, the TCFD’s objective was to formulate a set of recommendations to help organizations to understand and disclose their exposure to climate-related issues.

The TCFD defines an ICP as “an internally developed estimated cost of carbon emissions, which can be used as a planning tool to help identify revenue opportunities and risks, as an incentive to drive energy efficiencies to reduce costs, and to guide capital investment decisions.”<sup>4</sup>

By attributing a monetary value to climate risks, and translating them into a uniform metric, financial decision-makers within a company can make the low-carbon transition an integral part of their business strategy. Companies can reveal hidden opportunities, such as:

- ▼ Identifying which business areas are most exposed to producing carbon emissions;
- ▼ Setting material carbon reduction targets (and monitor progress);
- ▼ Incentivizing business units to decrease carbon exposure by tying a carbon price to unit budget;
- ▼ Reallocating the internalized carbon “revenues” into new, green business lines, and
- ▼ Supporting banks/financial institutions in their portfolio-lending decision-making process.

## THE TCFD AND ICP

Climate change poses both risks and opportunities for business, now and in the future. In December 2019, the Bank of England Governor Mark Carney noted that “changes in

climate policies, new technologies and growing physical risks will prompt reassessments of the values of virtually every financial asset.”<sup>3</sup> Companies and providers of capital, therefore,

According to TCFD, carbon pricing is one key metric for scenario analysis and when disclosing on ICP, the TCFD recommends that companies should disclose the following<sup>5</sup>:

- ▼ Assumptions made about how carbon price(s) would develop over time (within tax and/or emissions trading frameworks);
- ▼ Geographic scope of implementation;
- ▼ Whether the carbon price would apply only at the margin or as a base cost;
- ▼ Whether the price is applied to specific economic sectors or across the whole economy, and in what regions;
- ▼ Whether a common carbon price is used (at multiple points in time) or differentiated prices; and

▼ Assumptions about scope and modality of a CO<sub>2</sub> price via tax or trading scheme.

$$\text{Price on carbon } (\$/\text{tCO}_2\text{e}) = \frac{\text{yearly funding required for initiatives } (\$)}{\text{annual GHG emissions in boundary } (\text{tCO}_2\text{e})}$$

Source: Carbon pricing: Seven things to consider when establishing a carbon pricing program<sup>6</sup>

Currently India has not defined any external carbon price, nor has it given any carbon pricing signals through proposed policies. While the cess on coal has been acknowledged as a form of carbon tax in the past, the proceeds of the fund have not been deployed for carbon mitigation, essentially removing any climate co-benefits. There has been no national carbon pricing regulation push, yet ICP uptake by leading companies has been spurred by

<sup>4</sup> Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures, The Taskforce on Climate related Financial Disclosures, June 2017, page 63  
<sup>5</sup> <https://www.tcfddhub.org/scenario-analysis/>  
<sup>6</sup> [http://cdn.wsp-pb.com/jg8fkm/seven\\_things\\_carbon\\_pricing\\_whitepaper\\_can\\_1.pdf](http://cdn.wsp-pb.com/jg8fkm/seven_things_carbon_pricing_whitepaper_can_1.pdf)

voluntary adoption as well as implicit pricing policies at the government level. A lot of initiative is also being taken at a subnational level in India.

Mumbai recently announced its target to reach net-zero by 2050<sup>7</sup>, putting it two decades ahead of India's net-zero target.

Type of ICP	Shadow price	Carbon fee	Implicit price	Internal trading
<b>Description</b>	Hypothetical cost of carbon emissions.	A per-unit fee based on the amount of GHG the company emits (eg ₹ 700 per tCO <sub>2</sub> e).	Helps quantify the capital investments required to meet climate-related targets.	Allows business units within a company to trade their allocated carbon credits based on respective emissions.
<b>Objectives/usage</b>	<p>The most common form of ICP, a shadow price helps organisations better understand the impacts of climate-related risks such as technological shifts or future regulations. It can help a company with both risk management as well as internal strategic planning.</p> <p>It allows companies to model or test how a range of carbon prices affect their divisions, capital investments and other planned projects.</p>	<p>Putting a fee on carbon helps create an actual pool of funds, generating a revenue stream to help pave the way for greener projects and further R&amp;D.</p> <p>This prepares a company for a carbon-resilient world. This tool has the ability to encourage a business to transform into an environmental leader.</p> <p>It allows for the creation of internal funds to invest into energy efficiency or renewable energy projects in order to cut energy costs.</p>	<p>An implicit price helps companies understand their initial carbon footprint and is also used as a benchmark to implement a more strategic internal price.</p>	<p>Internal trading helps create awareness. It allows companies to prepare for stringent forms such as shadow prices or internal fees.</p>

<sup>7</sup> <https://theprint.in/india/mumbai-announces-net-zero-roadmap-with-2050-in-sight-1st-south-asian-city-to-set-such-timeline/872292/>

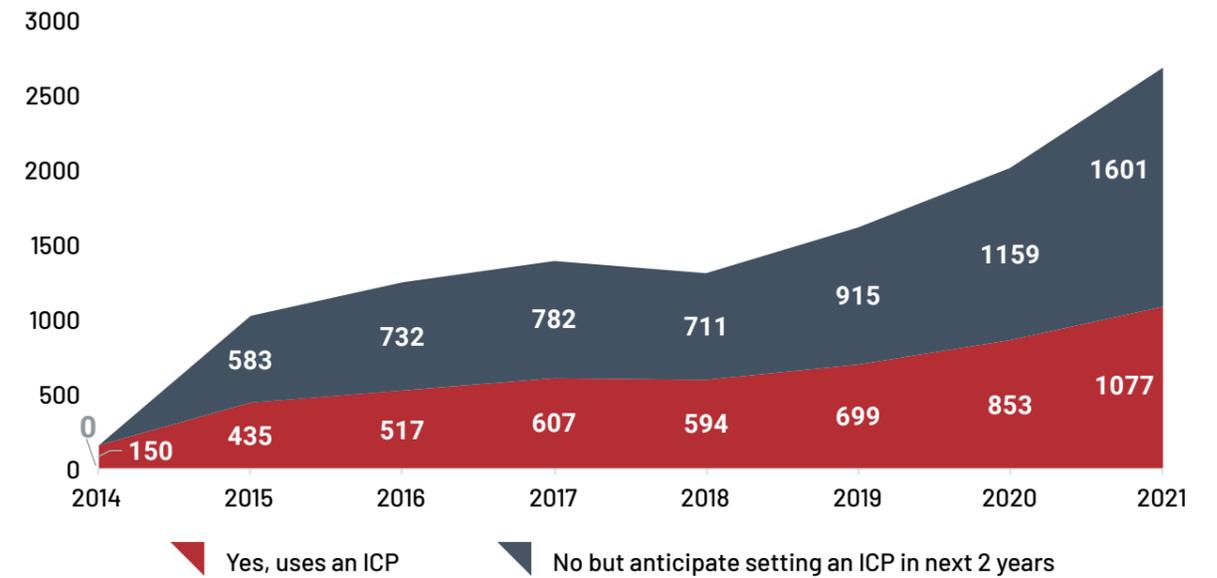
Type of ICP	Shadow price	Carbon fee	Implicit price	Internal trading
	It is similar to forecasting with a range of energy prices.	It also builds awareness of the importance of emission reductions within different business units.		
<b>Method</b>	<p>An additional criterion is introduced in investment analysis during the calculation of the internal rate of return (IRR).</p> <p>The additional criterion is the carbon value which is incorporated into each investment decision and applied to resulting GHG emissions.</p> <p>This carbon price is assumed the same way assumptions are made about exchange rates or commodity prices.</p>	<p>It is implemented by voluntarily adding a cost to GHG emissions in relation to operational costs.</p> <p>It increases the operating expenses (OPEX). There are short-term emissions reductions.</p> <p>Transfers of actual funds within the company are done through two mechanisms.</p> <p>First, by offsetting GHG emissions by purchasing offset credits externally. Second, by providing internal financing for emission reduction projects, low-carbon products &amp; services and R&amp;D. The carbon fee also provides monetary incentives for pro-environment initiatives/activities.</p>	<p>Some companies with emissions reduction or renewable energy targets calculate their 'implicit carbon price' by dividing the cost of abatement/procurement by the tonnes of CO<sub>2</sub>e abated.</p>	<p>Trading is driven by the allocation of a fixed number of carbon dioxide emission 'allowances' for individual business units, with each allowance equivalent to 1 metric tCO<sub>2</sub>.</p> <p>If business units exceed their cap, they must purchase additional allowances to offset their excess emissions.</p> <p>Where business units under-emit, they may sell allowances. Business units may also choose to invest in carbon offsets outside their own units in order to sell on the internal trading scheme.<sup>8</sup></p>



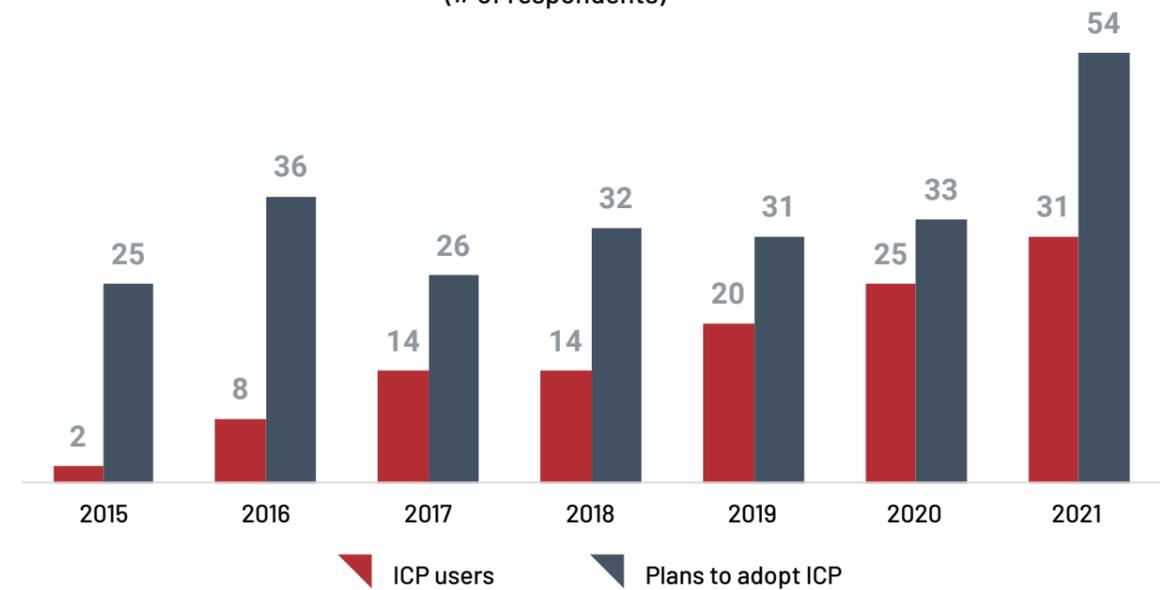
For financial institutions, ICP can help them in assessing carbon risks, identifying opportunities to shift capital from high-carbon to low-carbon investments and lending, decarbonise their portfolios, and increase their resilience in a low-carbon transition. Moreover, ICP is a tool to assess the materiality of the hidden carbon risks and opportunities in finance, such as the impacts on fair value and cash flow of assets and companies. However, whilst ICP can help create a proxy for climate transition risk management, and estimate carbon exposure of their portfolios, it is imperative to recognize that carbon pricing is the first step and financial institutions must develop a robust transition risk framework that goes beyond implementing a carbon price.

CDP is the largest repository of information on how ICP or corporate exposure to carbon pricing regulations is used and viewed by companies all around the world, with data collected every year since 2014. In 2021, globally 1,077 companies reported using an ICP and 1,601 reported that they plan to use an ICP in the next two years. In India specifically, 31 companies have incorporated ICP (a 25% increase from 2020), and 54 companies are planning to adopt ICP in the next two years (up 63% from 2020). This brings the total number of companies that already use or plan to adopt ICP in the next two years at 85, about a 50% increase compared to 2020.

Growth of ICP in CDP annual corporate disclosures



ICP adoption trends in India (# of respondents)



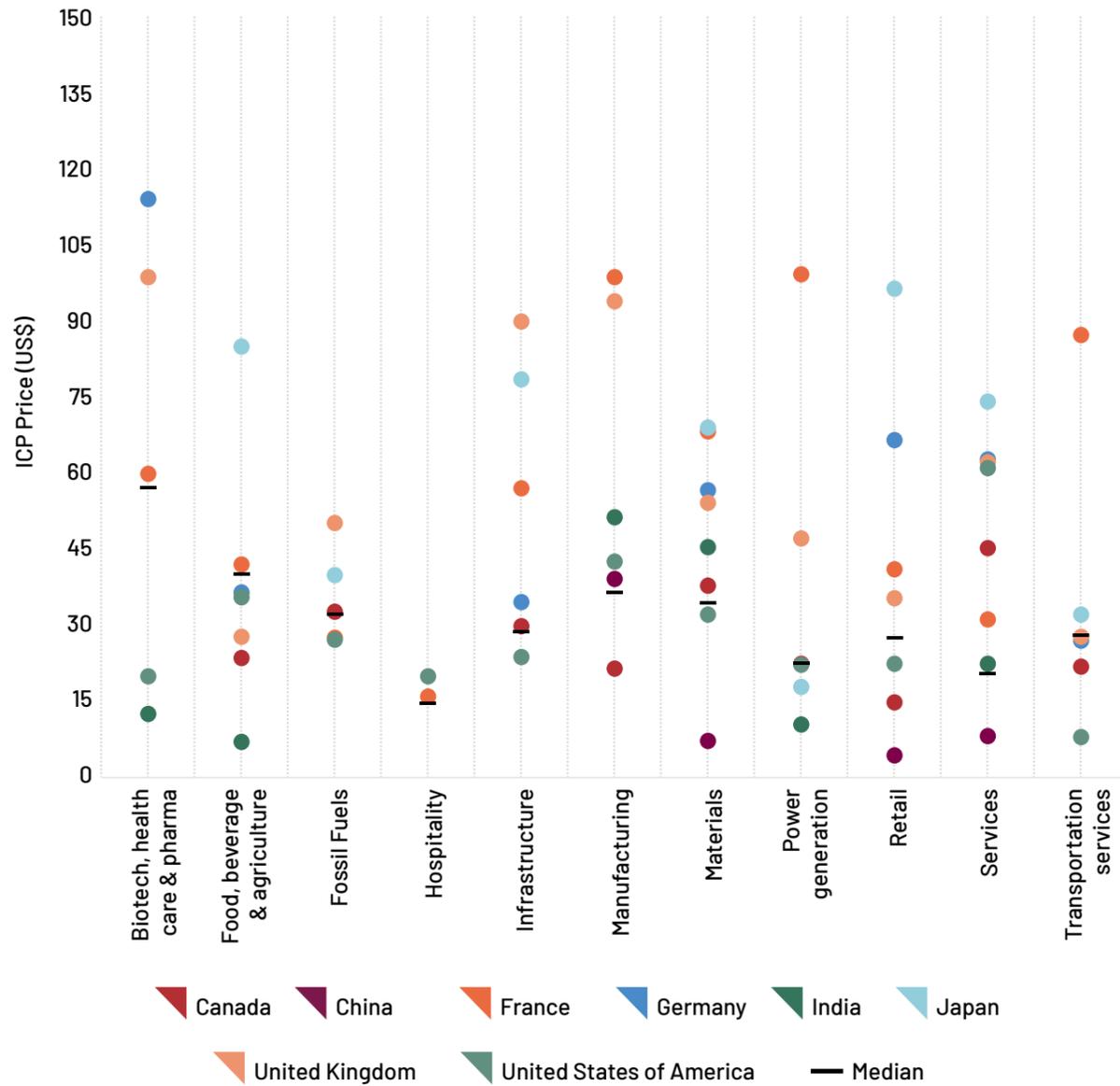
The below graph shows the sectoral distribution of ICP across the globe as per CDP's 2021 data. On average, the biotech, healthcare & pharma sector has the highest ICP across all sectors at US\$57, and the lowest price (by average) is

used by the hospitality sector. A closer look at the data shows that company's threshold for per metric tonne of carbon varies from region to region as well. For companies in Japan, for instance, the median internal charge is US\$76

per metric ton, while in India the median is US\$17. This is not necessarily surprising, as there is currently no formal, defined standard for pricing carbon emissions. Companies are therefore selecting values that are most useful within their own business contexts and regions.

In India, the materials sector uses the highest ICP at US\$51, and this is attributed mostly to the cement sector. Out of the 1,077 companies that use an ICP, 14% of them are in Japan, 13% in USA, and only 3% in India.

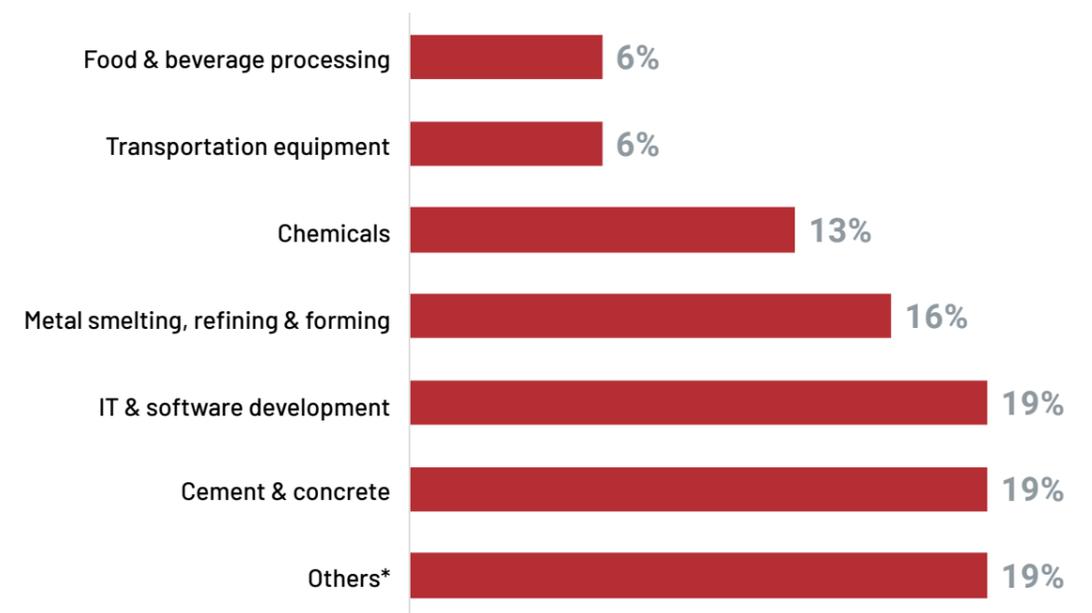
Sectoral distribution of ICP across different countries



A sectoral analysis of the data finds two leading sectors committing to ICP, i.e. cement & concrete and IT & software development. High emission intensity sector companies are now committing to the SBTi and moving towards aligning emissions in line with 1.5°C; an ICP in

such cases can be effectively used as a tool for mitigating climate risks and achieving the greater goal of a SBT or a net-zero target. It helps companies build their internal capacity and measure their progress.

Sectoral analysis of ICP users (% of respondents, N=31)

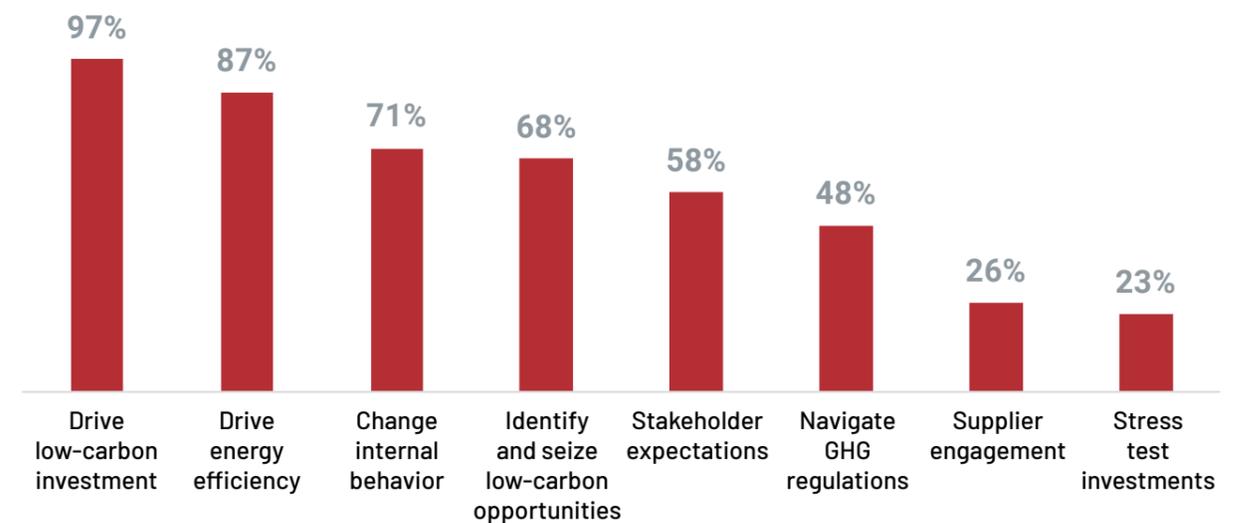


\* Others include textiles and fabric goods, biotech & pharma, thermal power generation, electrical & electronic equipment, renewable power generation and plastic product manufacturing sectors

CDP believes the ICP objectives, the GHG emissions in scope, type of price, variance used, its impact and implications are all vital disclosure requirements. An internal carbon price can be used by companies to achieve many objectives. Overall, most companies

use ICP to achieve one or more of four key objectives: driving low-carbon investment, driving energy efficiency, changing internal behaviour, and identifying and seizing low-carbon opportunities.

Objectives for using ICP (% of respondents, N=31)



# SCIENCE-BASED TARGETS AND ICP

For preventing the worst impacts of climate change and future-proof business growth, science-based targets (SBTs) provide a clearly defined pathway for companies to reduce GHG emissions.

Targets are considered 'science-based' if they are in line with the latest climate science and projected to meet the goals of the Paris Agreement – limiting global warming to well-below 2°C above pre-industrial levels, and pursuing efforts to limit warming to 1.5°C.

SBTs provide companies with a clearly defined pathway to future-proof growth by specifying how much and how quickly they need to reduce their GHG emissions.

Science-based target setting can set the tune for future-proof growth, saves money, provides resilience against regulation, boosts investor confidence, and spurs innovation and competitiveness.

It also demonstrates concrete sustainability commitments to increasingly conscious consumers. Companies going through the target validation process benefit from detailed feedback and support from the SBTi's technical experts.

Its value is obvious as businesses who sign the SBTi commitment letter are immediately recognized as "Committed" on the SBTi website, as well as the CDP, UN Global Compact and We Mean Business websites.

The SBTi and TCFD are interconnected, growing initiatives which place emphasis on target setting and science-based validation. Organizations are expected to disclose the following information:

- ▼ Type of targets: whether the target is absolute, or intensity based
- ▼ Time frame: SBTs should cover a period of five to 10 years from the date the target is submitted to the SBTi for validation
- ▼ Key performance indicators used to assess progress against targets: annual reporting on progress and initiatives towards meeting the SBTs
- ▼ Approaches for calculating targets, selected from the several approaches accepted by the SBTi.

By integrating ICP into ambitious targets, companies can achieve greater emissions reduction. SBTs empower companies to engage internal teams with a common data driven goal and integrate their carbon reduction strategies with other business objectives<sup>9</sup>. A step that organizations can take to implement TCFD recommendations as well as achieve their SBTs is putting an internal price on carbon. It is observed that having an ICP can enhance an organization's competitiveness.<sup>10</sup> An ICP can also be used by organizations in internal business decision-making, to essentially perform their own cost-benefit analysis of specific projects using their own carbon price. Within companies, carbon pricing can drive innovation and improvements. An internal fee can help generate funds for investment in further research and development and adopting greener technologies. ICP at a price level that would align investments with net-zero trajectories can also be used for scenario analyses to assess risks and opportunities of investment decisions.<sup>11</sup> It can be used as a tool to drive the internal shifts that are required to align the company and achieve high, ambitious targets.



<sup>9</sup> Science-Based Targets: How Aligning Carbon Reduction Targets With Climate Science Can Drive Business Growth, S&P Dow Jones Indices. 2017

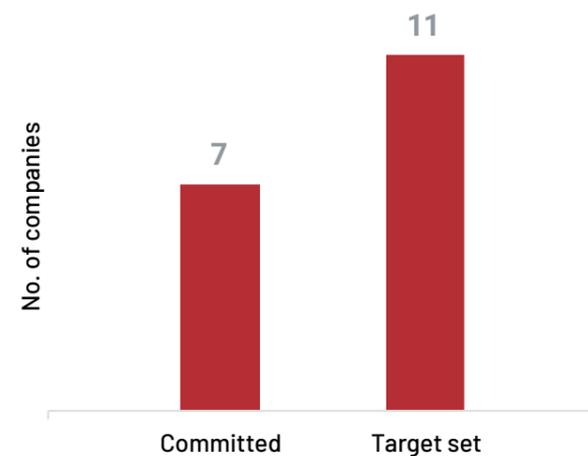
<sup>10</sup> <https://www.greenbiz.com/article/managing-climate-risk-carbon-pricing-and-science-based-targets>

<sup>11</sup> [https://static1.squarespace.com/static/54ff9c5ce4b0a53deccfb4c/t/614b3a242b48a65e02ccc978/1632320041214/CPLC+\\_NetZero\\_Report.pdf](https://static1.squarespace.com/static/54ff9c5ce4b0a53deccfb4c/t/614b3a242b48a65e02ccc978/1632320041214/CPLC+_NetZero_Report.pdf)

Being the world's first net-zero standard for corporates, the SBTi's Corporate Net-Zero Standard gives business leaders clarity and confidence about their near and long-term targets being aligned with climate science - helping to ensure a habitable planet for all that is aligned with the ambitious Paris Agreement. Top Indian corporates such as Tata, Reliance, Mahindra, ITC, ACC, Adani, and Dalmia Cement have joined hands with the Indian government to support India towards the path of lower greenhouse gas emissions. Other companies that signed the joint Declaration of the Private Sector on Climate Change with the Ministry of Environment, Forests, and Climate Change (MoEFCC) include Ambuja Cements, Arcelor Mittal, Nippon Steel, Essar Oil & Gas Exploration & Production, JSW Group, Sun Pharma and Vedanta Ltd.

CDP data indicates a correlation between the companies putting a price on carbon and those taking other strategic actions to integrate climate change issues into their business strategy to reduce risk, such as by setting a SBT or sourcing more energy from renewables. Out of the 31 companies that have an ICP in place, 18 companies have set ambitious targets and opted for SBTi. The below graph shows that seven companies have committed to the SBTi and 11 companies have their targets validated by the SBTi.

Companies with an ICP and SBTi target



Article 2.1c of the Paris Agreement emphasizes the commitment towards 'making finance flows consistent with a pathway towards low GHG emissions and climate-resilient development'.

The low-carbon transition needs financial flows to be directed towards low-capital investments, R&D, and low-carbon technologies. Without aligning finance with climate goals, mitigation and adaptation cannot be achieved at the required scale either by countries or by organizations.

In a country like India where there is no explicit carbon pricing mechanism, and where the corporate sector is waiting for a carbon pricing signal from the government, an ICP can play very important role as a strong preparatory tool to assess their risk exposure, future-proof their assets and investments against regulatory risk and demonstrate management of risk to shareholders.

As a rapidly growing economy which is among the most vulnerable to the ravages of climate change<sup>12</sup>, India needs to pay sustained attention to arresting this issue.

China, which is fast emerging as the global leader on environment and climate matters<sup>13</sup>, saw a near doubling for corporate action on carbon pricing after it announced its ETS. The Indian market awaits a similar signal from the government.

This will spur the corporate sector to internalize carbon risk and prepare to aggressively compete in a carbon-constrained world.

<sup>12</sup> <https://timesofindia.indiatimes.com/home/environment/global-warming/india-most-vulnerable-country-to-climate-change-hsbc-report/articleshow/63374918.cms>  
<sup>13</sup> <https://www.independent.co.uk/news/world/asia/china-national-peoples-congress-economic-growth-target-smog-make-sky-blue-a7612041.html>

## CASE STUDIES



**JSW Energy** – JSW Energy has adopted a shadow price of US\$ 10-12 per tCO<sub>2</sub>e and has committed to the SBTi to reduce its specific GHG footprint to 0.215 tCO<sub>2</sub>e/MWh by 2030 and to achieve net-zero by 2050. ICP provides the required leverage for low-carbon investments for the company, by calculating the impact levels of the same emissions in the future, as impact will significantly accumulate over time. For example, with emission levels equivalent to those in 2020-21, by 2030 JSW Energy would have an additional impact of around INR 2500 Crore, when compared to the emission levels at its SBTi target footprint.

Read more at <https://www.cdp.net/en/articles/companies/jsw-energys-internal-carbon-pricing-journey>



**Mahindra & Mahindra Ltd.** – Since 2016, Mahindra and Mahindra Ltd. has consistently priced its carbon at US\$10. Initially, the company's goal was to reduce its GHG emissions by 25% per unit of output by 2019, which it achieved successfully. However, it may consider revising this price further, given their commitments under the science-based targets initiative and their ambitious goal to achieve carbon neutrality by 2040. Mahindra & Mahindra Ltd. started the price determination process by mapping its investments towards emission reduction activities, such as upscaling renewable energy and improving energy efficiency with the company's overall emissions performance

over previous years. It further mapped the initial ratio of annual green investments compared to overall emissions.

Read more at <https://www.cdp.net/en/articles/companies/mahindra-and-mahindra-ltd-and-sustainability-internal-carbon-pricing-as-means-to-achieve-targets-set-under-sbti>



**Tech Mahindra** – The company has adopted a hybrid approach, incorporating an implicit and shadow price of US \$9 per ton of CO<sub>2</sub>e with a tax on business units proportional to the resources allocated in the projects. This ICP is the total capital expenditure for green initiatives divided by emissions. Tech Mahindra identified ICP as an excellent tool to effectively reduce emissions, mitigate environmental risks, source investments towards decarbonization, and drive R&D and innovation. It has built an ICP tool for its facilities, finance and procurement teams, to increase green investments and allocate funds towards activities that build resilience to climate change risks.

Read more at <https://www.cdp.net/en/articles/companies/tech-mahindra-uses-icp-as-a-tool-for-rapid-decarbonization>



**UltraTech Cement Limited** – UltraTech Cement has set an ambitious target to reduce scope 1 GHG emissions by 27% per ton of cementitious material by 2017 base year. UltraTech is also committed to reducing scope 2 GHG emissions by 69% per ton of cementitious material within the same time frame. In its deployment of ICP, UltraTech has discovered that it is an excellent tool for accelerating decarbonization across the value chain and enabling this transition within the company. When internalising the price of its carbon, of the three pricing methods available, UltraTech chose to go with a Shadow Carbon Price of US\$10. To arrive at an ICP, UltraTech developed three scenarios, determined a carbon price for each one of them and then selected the one most aligned with its overall climate goals. While the company did consider the introduction of Emission Trading Scheme (ETS) and Science Based Targets Initiative (SBTi) scenarios, the Proactive National Regulatory Scenario was finally used for calculating their ICP. UltraTech expects the ICP it has adopted to drive investments in low carbon technologies and products.

Read more at <https://www.cdp.net/en/articles/companies/ultratech-and-sustainability-reducing-emissions-through-internal-carbon-pricing>





## **CREDITS**

### **RESEARCH & COMPILATION**

Divya Varma  
Pratik Sanadhya

### **REVIEW**

Carbon Pricing Leadership Coalition  
Koushik Chatterjee, CDP India Board Member;  
Executive Director & Chief Financial Officer, Tata Steel

### **DESIGNING**

Ranjana DG Chandra

### **DIRECTION**

Prarthana Borah, Director, CDP India

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