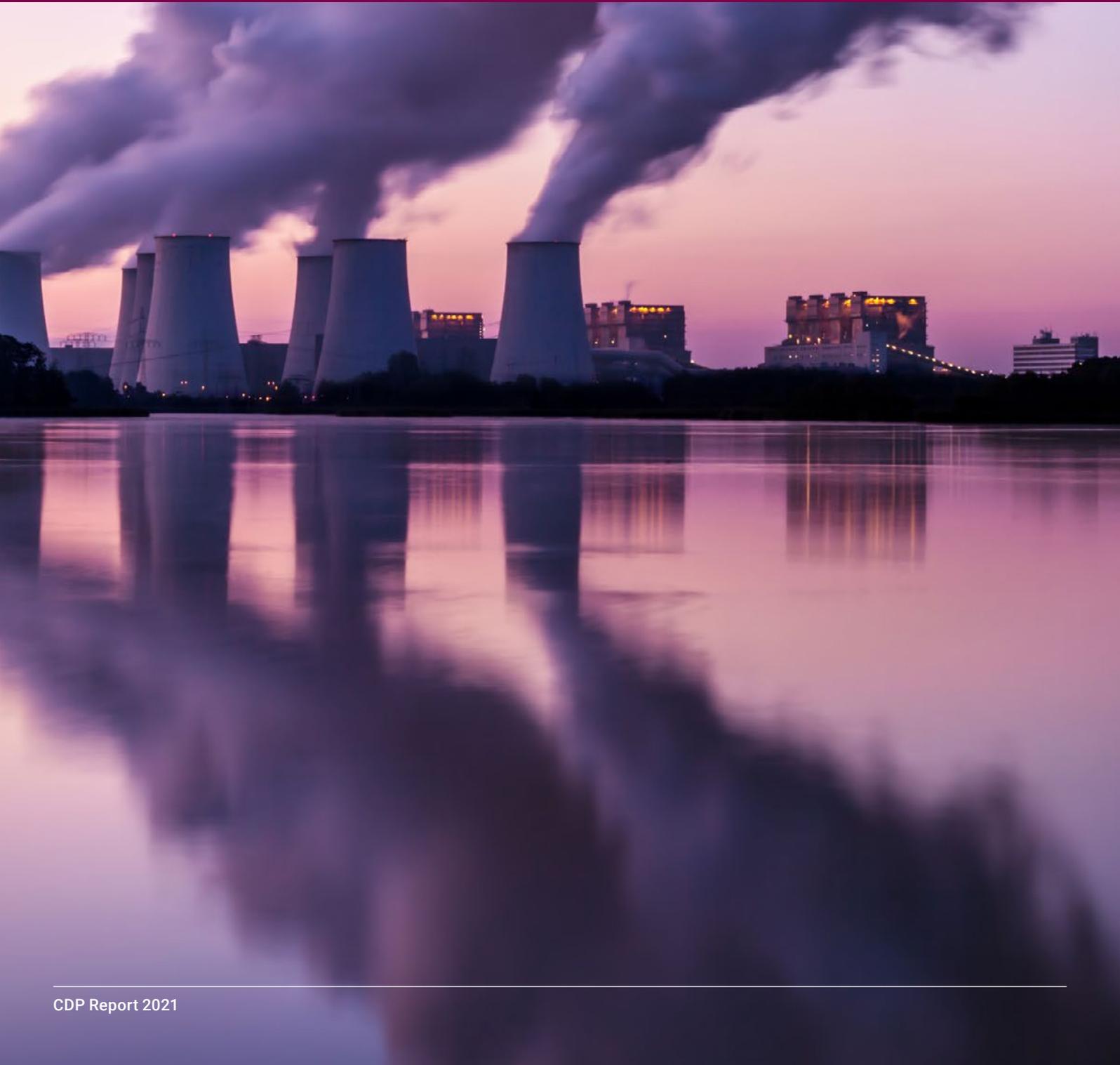


PUTTING A PRICE ON CARBON

The state of internal carbon pricing by
corporates globally



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ABOUT THE REPORT

This report provides an update on corporate use of internal carbon pricing globally and developments in carbon pricing regulation, informed by over 5,900 corporate disclosures to CDP in 2020

This incorporates relevant information derived from recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), with which the annual CDP investor request for disclosure information is aligned. The last CDP report on this subject was published in 2017.

CDP is the largest repository of information on how carbon pricing is viewed and used by public companies, with data collected every year since 2014. In 2020, CDP collected carbon pricing data from over 5,900 companies, which is explored in this report.

Over

5,900

companies reported
carbon pricing data to
CDP in 2020

KEY FINDINGS

1 CDP's latest data from 2020 shows an 80% increase in the number of companies planning or using an internal carbon price in just five years

With more than 2,000 companies now disclosing current or planned use of internal carbon pricing to CDP. The combined market capitalization of these companies now exceeds US\$27 trillion, a significant increase from \$7 trillion at the time of CDP's most recent report in 2017.

2 Nearly half (226) of the world's 500 biggest companies by market capitalization

are now putting a price on carbon or planning to do so within the next two years, more than doubling the number from our last report in 2017.

3 11 of the 13 industries included in the analysis reported an increase in the share of companies using or planning internal carbon pricing between 2019 and 2020:

- ▼ The highest growth in this respect was in financial services, which increased 6.2% year on year
- ▼ The power and fossil fuel industries have consistently had the highest proportion of companies currently using or planning to use an internal carbon price since 2018. Likewise, power and fossil fuel companies are also the most regulated industries based on CDP data.
- ▼ The manufacturing industry accounted for over one third of all companies disclosing the use or planned use of an internal carbon price in 2020. However, despite strong growth, in 2020 only 29% of manufacturing companies currently price or expect to price carbon in the next two years, the third lowest rate amongst industries and falls short of the overall average.

4 Almost all regions reported an increase in the number of companies setting a carbon price or planning to price carbon since 2018

Asia saw the largest absolute increase in the total number of companies using an internal carbon price or planning to use a price. European domiciled companies ranked second, and North America ranked third. Despite the lowest number of companies coming from Africa, this region has the highest proportion using or planning to use, primarily driven by the tax in South Africa.

5 Overall, most companies use internal carbon pricing to achieve one or more of three key objectives

The most commonly cited reasons were driving low-carbon investment, driving energy efficiency, and changing internal behavior, while identify and seize low-carbon opportunities, navigate GHG regulations and stress test investments were also flagged as objectives by companies.

6 Internal carbon pricing goes hand in hand with emissions reduction activities

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 as a means to reduce risk, such as by setting a science-based target (SBT) or sourcing more energy from renewables.

7 Shadow pricing is the most common type of internal carbon price

5 in 10 companies disclosed the use of a shadow price in 2020 and has consistently been the most common type of price utilized since CDP started requesting information on internal carbon pricing. In 2020, 90% of companies with an internal carbon price disclosed that it covered their direct (scope 1) emissions.

8 CDP's analysis found that the median internal carbon price disclosed by companies in 2020 was US\$25 per metric ton of CO₂e

However, with more countries bringing in carbon pricing regulation, and carbon prices soaring to all-time highs in the EU emissions trading scheme (EU ETS) this year (rising to over €40 / US\$44.80 in March), it is clear that corporations need to up the carbon prices they are currently accounting for internally.

9 CDP data also suggests that more than double the number of companies use evolutionary prices which adjust over time in comparison to static prices

This suggests that corporates worldwide may be preparing for greater risks from their carbon emissions in the years to come.

10 Companies increasingly report their exposure to carbon pricing regulation systems

1,113 companies disclosed to CDP that they are subject to carbon regulations, and an additional 717 companies expect such regulation within the next three years. 425 companies disclosing to CDP identify being exposed to the EU ETS, the most common system identified by companies, a 5% increase since 2019. Japan's carbon tax was the second most reported regulation companies disclosed being subjected to. The fastest growing regulation by percentage is the South Africa carbon tax – implemented in 2019, 46 companies disclosed their exposure to the carbon tax, a 318% increase in comparison to 2019. There is a direct correlation between this and the proportion of companies using or planning to use an internal carbon price.

11 Companies can use an internal carbon price to plan for carbon pricing regulation

Companies that expect carbon pricing regulation are five times more likely to use an internal price on carbon than companies that do not. In contrast, over 3,000 companies disclosed to CDP that they do not expect to face regulation on the price of emissions within three years and do not foresee such regulation as a substantive risk – of which just 14% use or plan to implement an internal carbon price within two years.

12 A surprising number of companies are not disclosing current or impending carbon regulation as a substantive risk to their investors

Despite 1,830 companies disclosing that they currently face or expect carbon pricing regulation, 60% (over 1,100) of these companies did not identify this regulation as a substantive risk to their stakeholders in their CDP disclosure – highlighting a potential gap in information that investors should explore.

INTERNAL CARBON PRICING

CDP's latest data on internal carbon pricing from 2020 shows continued growth worldwide. Since 2018, we have seen a 43% increase with 853 companies now disclosing that they currently use an internal price on carbon.

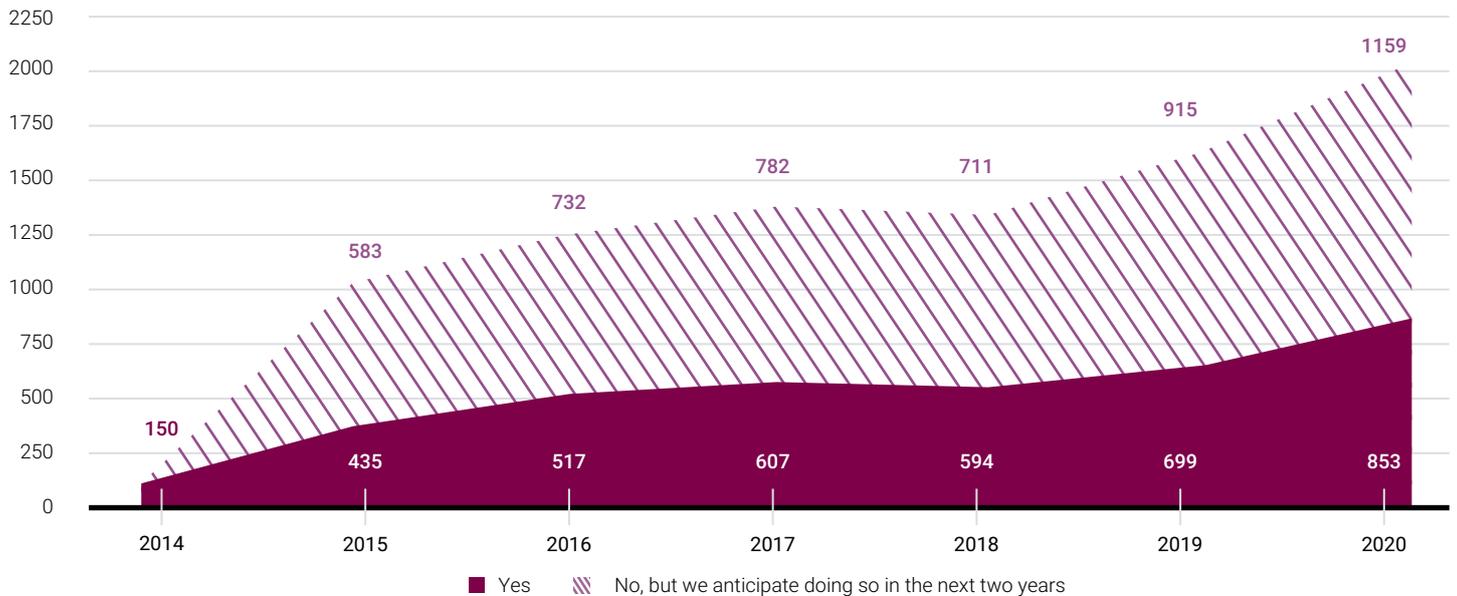
The number of companies disclosing plans to implement within two years has increased 63% year on year over the same period, now totaling 1,159. Combined, more than one third of companies that responded to CDP's internal carbon pricing questions in 2020 are either currently or planning to use an internal price on carbon, an increase of 2.8% from 2018 and 11% since 2015¹.

The first report CDP published on internal carbon pricing in 2014 revealed that 150 companies across the world were employing this

tool to assess and manage carbon-related risks. CDP's latest data from 2020 shows an 80% increase in just five years, with more than 2,000 companies now disclosing current or planned use of internal carbon pricing to CDP. The combined market capitalization of these companies now exceeds US\$27 trillion³, a significant increase from US\$7trillion at the time of CDP's most recent report in 2017.

There are now more than 225 of the 500 biggest companies by market cap⁴ putting a price on carbon or planning to do so within the next two years, more than doubling the number from 2017.

Growth of internal carbon pricing



Internal carbon pricing by numbers: 2020



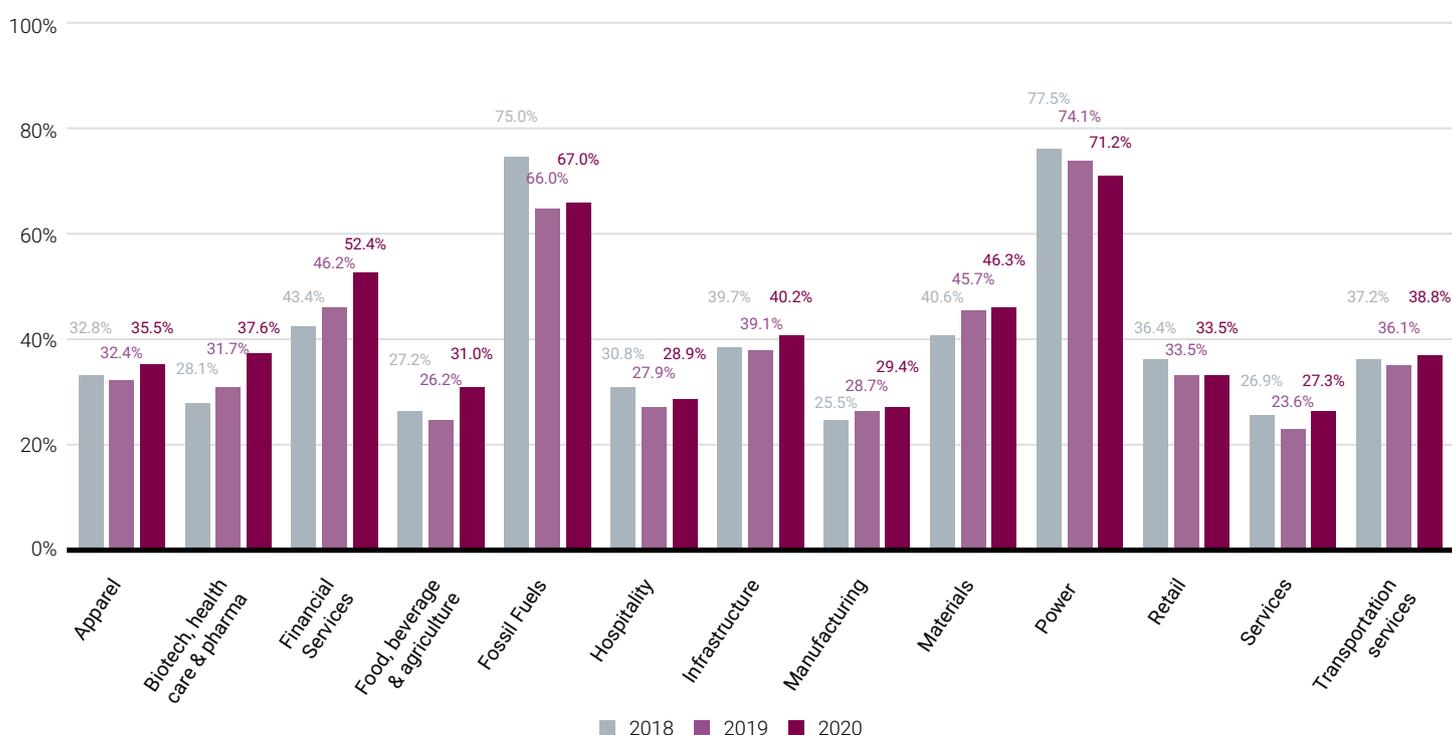
1. CDP's climate change questionnaire was updated in 2018 to incorporate a specific module on carbon pricing. The carbon pricing questions were included only in the full questionnaire, which significantly changed the sample size of companies receiving the question between 2017 and 2018
2. Note that CDP's 2014 data did not include companies planning to implement carbon pricing
3. According to Bloomberg financial data. Note that more than 100 companies are excluded due to data availability
4. The top 500 companies in the FTSE Global All Cap Index

Carbon pricing activity by industry

11 of the 13 industries included in the analysis experienced an increase in the share of companies using or planning internal carbon pricing between 2019 and 2020. The highest growth in this respect was in financial services, which increased 6.2% year on year. This is a notable shift from 2018 to 2019 where only 4 of the 13 industries saw a percentage increase.

Despite the power industry seeing a decline between 2019 and 2020, it has consistently had the highest proportion of companies currently using or planning use of internal carbon pricing since 2018. In 2020, over two thirds of power companies that were asked⁵ about their use of carbon pricing are currently using or planning to adopt an internal carbon price within two years. Over two thirds of fossil fuel companies stated the same. The industry average was 36%.

Share of companies pricing or planning to price carbon: 2018-2020



In 2020, **manufacturing** accounted for **over one third** of all companies disclosing on their internal carbon pricing activity

The manufacturing industry has by far the largest group of companies responding to CDP's climate change questionnaire. In 2020, manufacturing accounted for over one third of all companies disclosing on their internal carbon pricing activity with 605 companies disclosing that they are currently using, or plan to use an internal carbon price in the next two years. The total number of companies in the manufacturing industry planning or currently using an internal carbon price has seen a strong year on year increase since 2018. From 2018 to 2019 the number of manufacturing companies planning or using an internal price on carbon grew 58%, with a further 31% of growth in 2020.

The manufacturing industry also experienced the highest absolute growth year on year, with 167 more companies planning or using an internal carbon price in 2019 compared to 2018, and a further 144 companies doing so in 2020. Overall, the industry accounted for nearly 40% of all total growth from 2018 to 2020.

Despite this positive growth, there is still much room to grow: in 2020 only 29% of manufacturing companies currently price or expect to price carbon within the next two years, which is the third lowest rate among industries and falls short of the overall average.

5. Not all the companies that respond to CDP's climate change questionnaire receive the full questionnaire. Companies using the minimum tier questionnaire do not receive the carbon pricing module questions. In 2020, 5,927 companies disclosed to the full CDP climate change questionnaire

Carbon pricing activity by region

796
Asian companies
are using or
planning an
internal price on
carbon in 2020

661
European
companies
are pricing in 2019
or planning to do
so within two years

All regions except Africa experienced an increase in the total number of companies pricing or planning to price carbon since 2018, with Latin America showing the smallest (3.4%) and Oceania showing the greatest percentage (45%) increases.

The most notable growth comes from Asia which has continued its rapid growth as previously demonstrated in CDP's report from 2017. The region ranked first among all regions with 796 companies using or planning an internal price on carbon in 2020. In China, the total number of companies using or planning an internal price on carbon increased by over 27% since 2019.

Internal carbon pricing increased 39.5% in Europe since 2019. Leading among individual countries are the UK, France, Germany, Spain, and Italy. In total, 661 European companies are pricing in 2020 or planning to do so within two years.

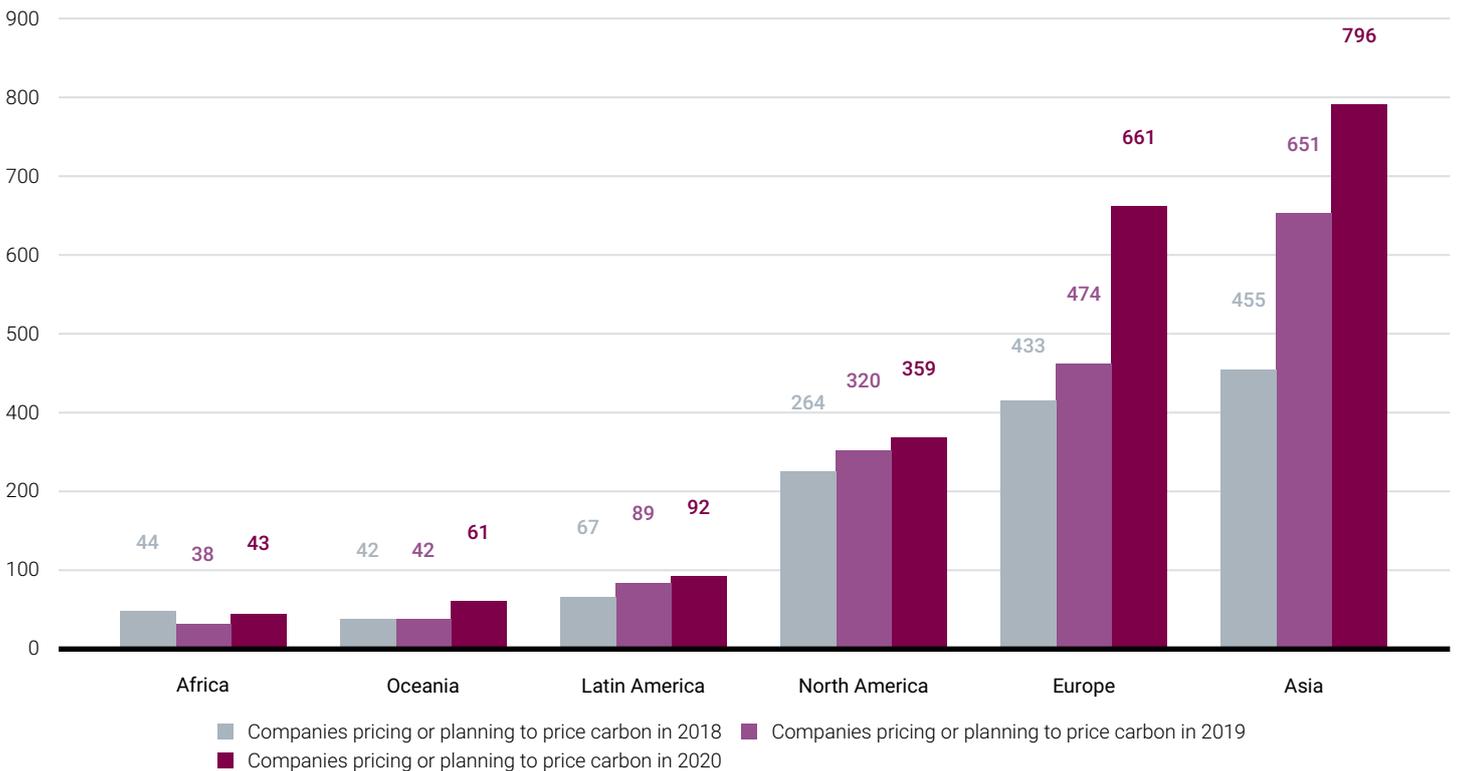
North America ranks third, with corporates based in the United States (U.S.) making up over 73% of all North American companies using or planning an internal carbon price in 2020. It is worth noting

that the U.S. saw the second highest absolute number of companies using or planning an internal carbon price, behind only China. However, with companies based in the U.S. being the largest overall proportion of companies reporting to CDP, we see much room for improvement in their implementation of an internal carbon price as only 20% of companies there currently use or intend to set an internal carbon price.

Africa, the smallest proportion of the sample by region saw a 14% drop between 2018 and 2019, but a rise back to just short of 2018 levels in 2020 – the drop in African companies using or planning an internal carbon price was due to companies no longer responding to CDP rather than a change in the implementation of an internal carbon price. Notably however, 59% of companies headquartered in South Africa reported the use or planned use of a price on carbon - the highest proportion of any country⁶.

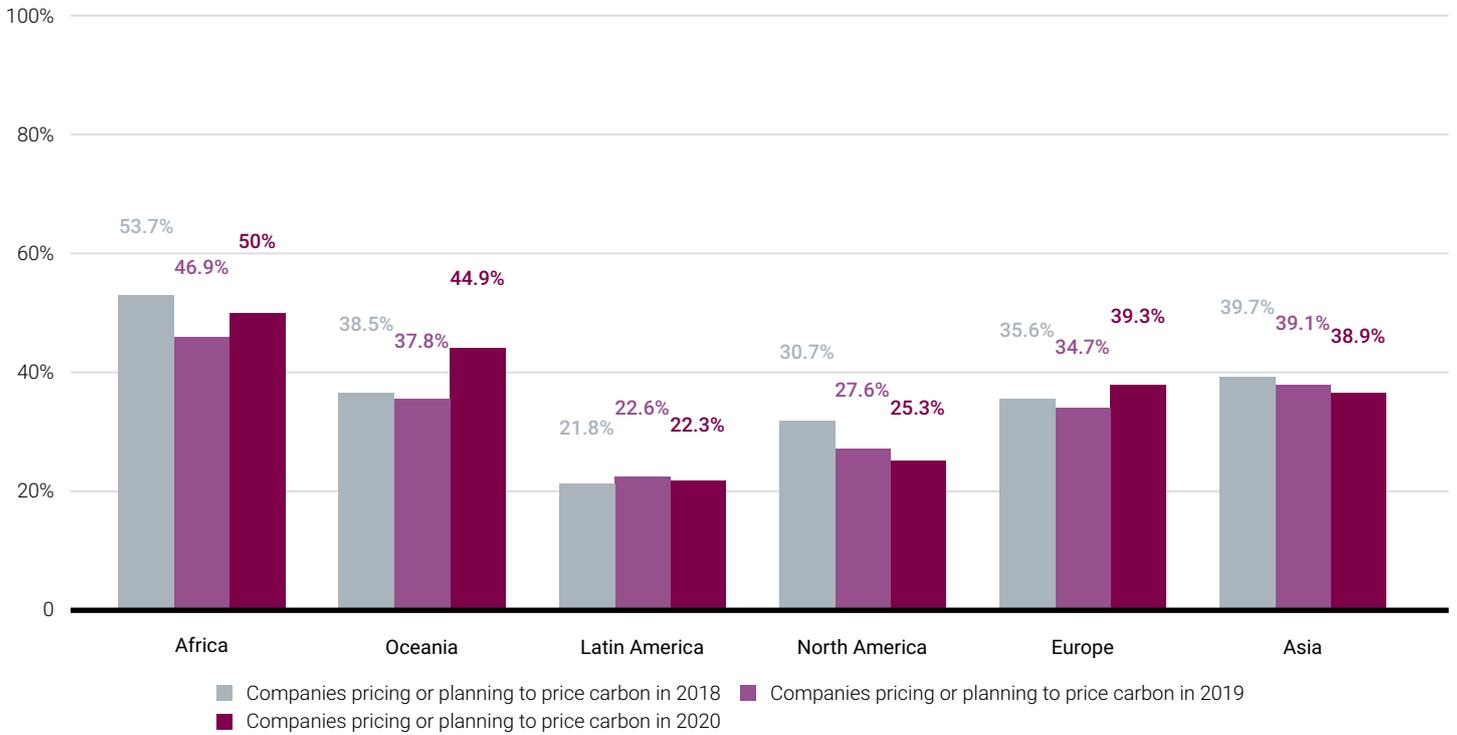
France, Taiwan and Turkey all saw over half of responding companies disclosing the use, or planned implementation of an internal carbon price.

Growth of internal carbon pricing by region: 2018-2020



6. Only countries with 50 or more companies receiving CDP's full climate change questionnaire were included in these statistics

Share of companies using or planning to price carbon: 2018-2020

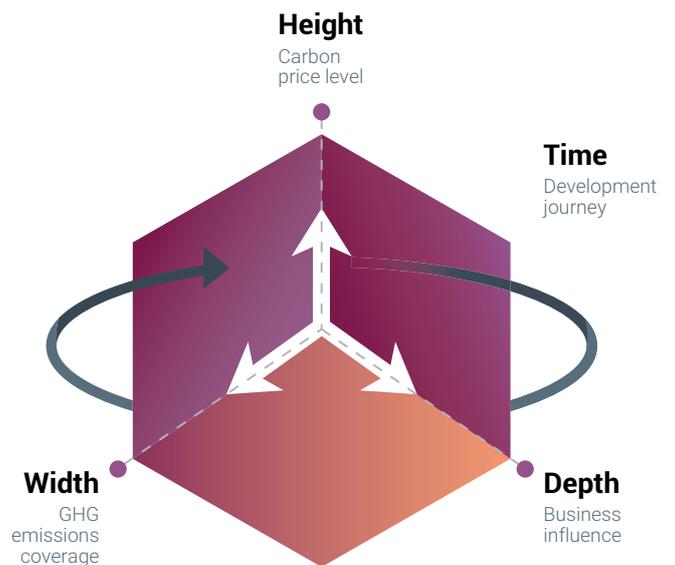


THE PRICE ITSELF

THE DIMENSIONS OF AN EFFECTIVE INTERNAL CARBON PRICE

In implementing an effective internal carbon price, four dimensions⁷ should be considered: price level (height), GHG emissions coverage (width), influence (depth), and time. All the decisions a company will take in each of these dimensions will flow from the objective(s) they are seeking to achieve in implementing this tool. The impact of this tool should also be regularly reviewed and evaluated to improve over time.

In the following section we will explore key considerations a company needs to explore to develop an effective internal carbon price.



7. How-to guide to corporate internal carbon pricing: CDP & Navigant - <https://www.cdp.net/en/reports/downloads/2740>
 Internal carbon pricing for low-carbon finance: CDP & Navigant - <https://www.cdp.net/en/reports/downloads/4655>

THE PRICE ITSELF

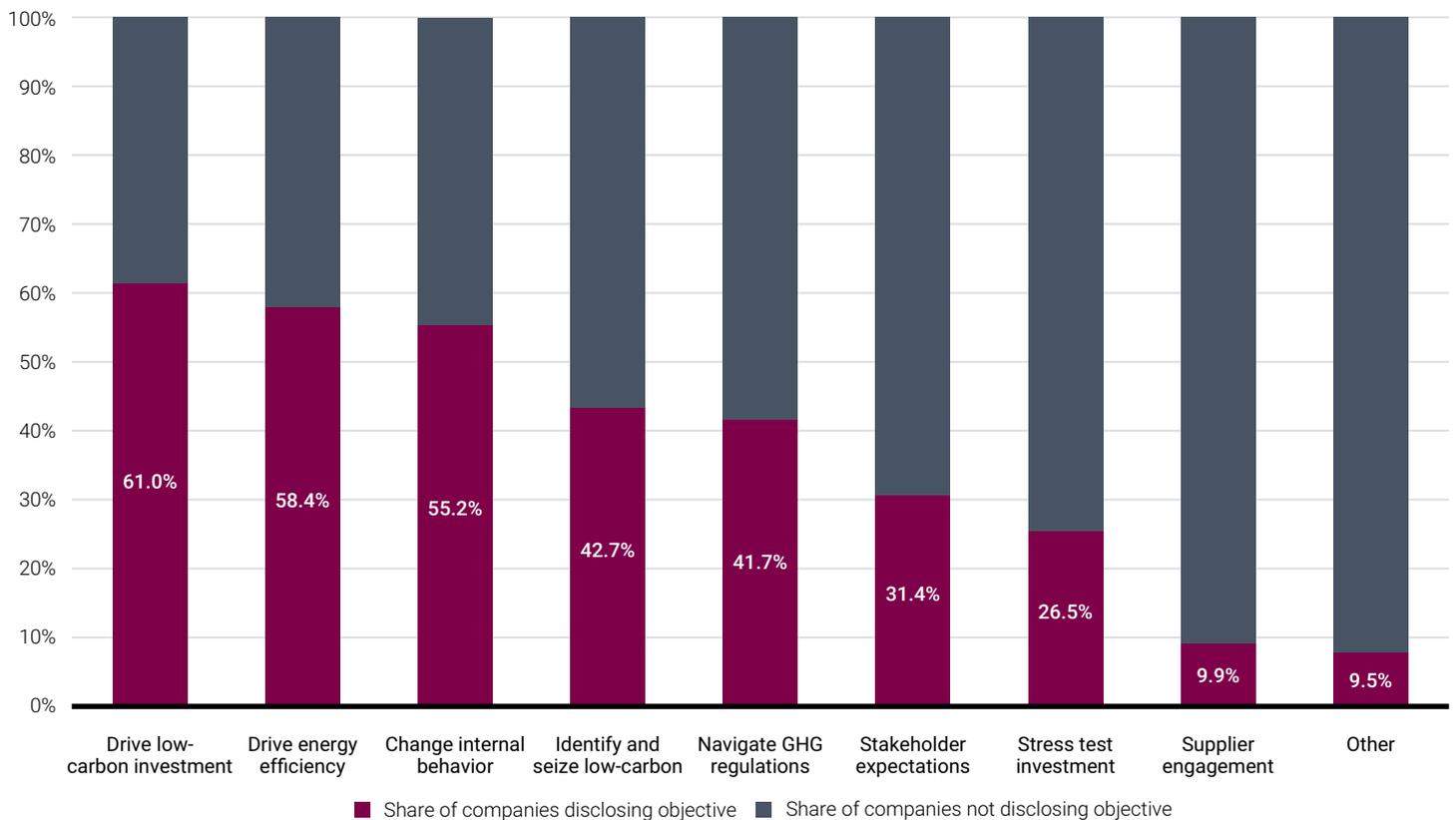
OBJECTIVES OF INTERNAL CARBON PRICING

An internal carbon price can be used by companies to achieve many objectives. In fact, over six in every ten companies that use internal carbon pricing cited three or more objectives. Though there is a clear relationship between using an internal price on carbon and preparing for potential regulation, companies that implement internal carbon pricing also do so for other reasons.

Overall, most companies use internal carbon pricing to achieve one or more of three key objectives: driving low-carbon investment, driving energy efficiency, and changing internal behavior.

CDP data shows only a small number of companies using an internal carbon price for supplier engagement.

Objectives for internal carbon pricing: 2020



Corporate climate disclosures from 2020 reveal several trends related to the objectives of internal carbon pricing. Driving low-carbon investment is the most cited objective by companies currently pricing carbon, with 60% of all respondents to CDP's carbon pricing questions explicitly mentioning it as an objective. This marks a 15% increase in comparison to 2019



for each large investment, two business cases have to be presented. One with an internal carbon price of 50 €/t CO₂e, and one with the real carbon price (which tends to be much lower or even zero depending on the region).

[Koninklijke DSM's climate change disclosure notes](#)



The second most cited objective is to drive energy efficiency. 58% of responders highlighted energy efficiency, a 40% increase in comparison to 2019. French automobile manufacturer **Renault**, for example, has used its internal carbon price to **[shift] investments toward energy efficiency measures and product offerings and to promote investment in energy efficiency [at its] manufacturing plants.**

Changing internal behavior is cited as an objective in more than half of all companies, but many company disclosures lack explicit references to how they are tackling this, or its impact. However, India based **Tata Consumer Products** observed that **behavioral change at the manager level [as] managers are now aware of [the] cost [of] carbon, energy or fuel costs.**

Companies also mentioned renewable energy in 18% of all responses. Korean electronics firm Samsung stated in its disclosure:

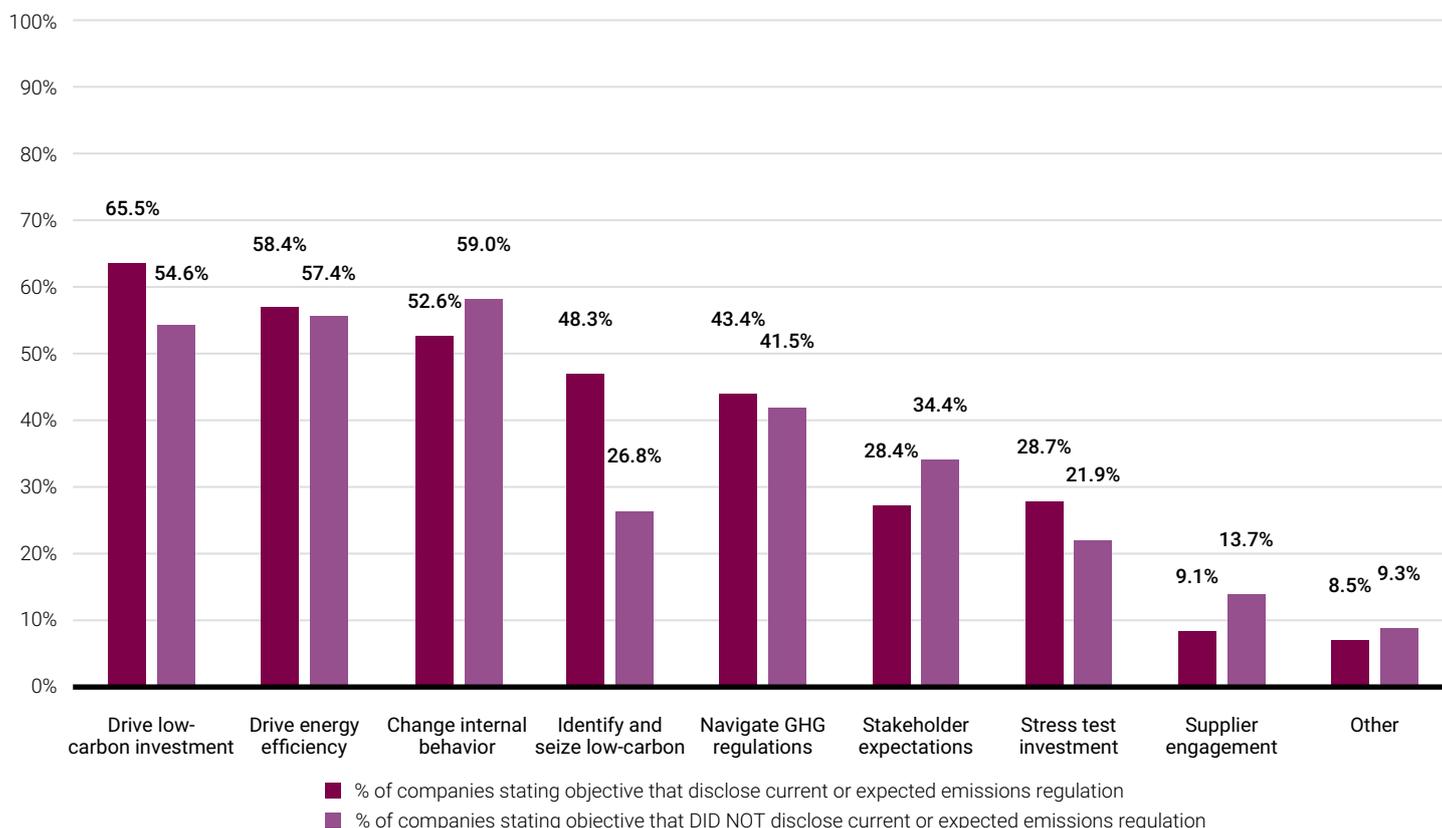
When reviewing the installation of on-site solar PV, we have reviewed the internal carbon price in calculating the payback period. In this case, the payback period reflecting the internal carbon price was shorter than the calculation of the power saving cost, which had a positive effect on the policy decision.

Samsung, Korean electronics firm

However, we see a shift in the objectives disclosed based on whether a company identifies that it faces or expects emissions regulation, or if it does not. While the top three objectives remain the same, the rates at which they are disclosed differ. Companies that do not face

or expect regulation are more likely to use internal carbon pricing to change internal behavior, meet stakeholder expectations and engage suppliers. Understandably, they are much less likely to use an internal carbon price to navigate GHG regulations.

Objectives for internal carbon pricing based on current or expected emissions regulation: 2020



THE PRICE ITSELF

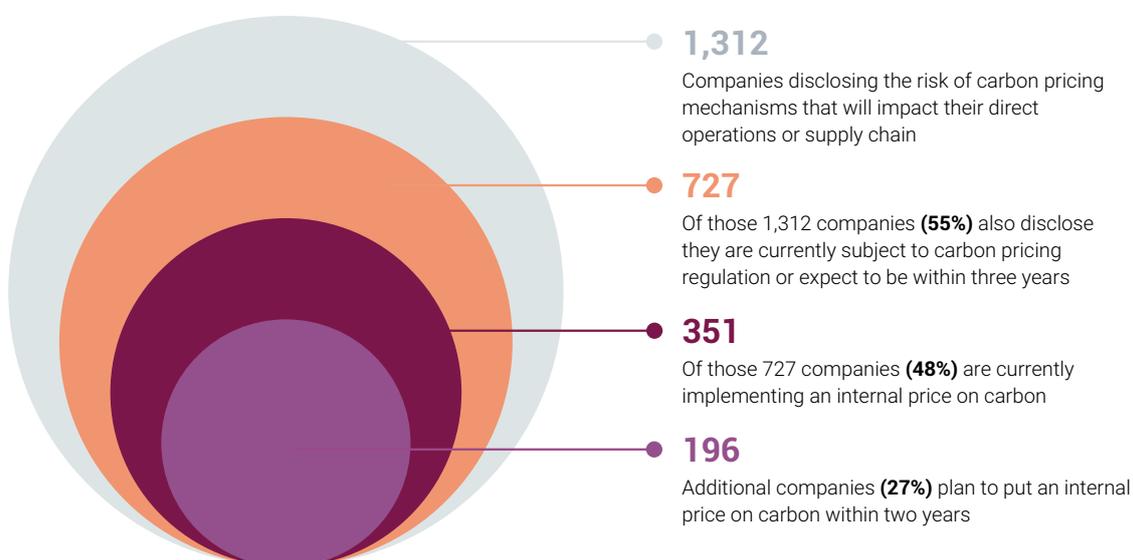
USING AN INTERNAL CARBON PRICE TO MANAGE RISK

Internal carbon pricing is used by companies to address the external risk of an increase in the price of emissions. This is most clear among the group of companies that both identify the external risk of their emissions being priced and already face related regulations or expect to within three years: 75% of these 727 companies already are or plan to use internal carbon pricing within two years.

This more than doubles the rate of 33% of current or planned internal carbon pricing use among the 5,900+ companies who received the question in 2020 regardless of what risks they identified.

More than 41% of all companies currently implementing internal carbon pricing disclosed to CDP that one objective of the price is to

“navigate GHG regulations.” While emissions regulations comprise more than a price on GHGs, this further illustrates the use of internal carbon pricing to prepare for and manage regulation on emissions prices.



EFFECTIVENESS OF A PRICE

Implementing an internal carbon price into corporate strategy and the decision-making process should not be the end goal for a business - it is critical to evaluate the ultimate impact of carbon pricing.

The evaluation of the impact of carbon pricing should relate directly to the objectives of the price as initially applied. For example, companies should ask: have our low-carbon investment or energy efficiency investments increased? Have we successfully changed internal behavior? If so, how? If not, how can we adapt our strategy the next time around?

Crucially, effectiveness in achieving business objectives through internal carbon pricing is not guaranteed based on a successful one-off evaluation. Pricing must be consistently monitored and adapted in line with external as well as internal developments. Even if pricing has succeeded in facilitating objectives, companies should consider how

they want to evolve their objectives and perhaps increase ambition for what they aim to achieve.

CDP data indicates a clear correlation between the companies putting a price on carbon and those taking other strategic actions to integrate climate change issues into their business strategy as a means to reduce risk.

For example, a higher percentage of companies currently implementing an internal carbon price have adopted a science-based target, set at least one emissions reduction target covering 100% of emissions in scope⁸, source more of their energy from renewables, and have identified climate-related opportunities. Furthermore, over 86% of companies in CDP's 2020 corporate A List⁹ for climate change are already pricing carbon internally or plan to do so within two years.

8. Companies implement internal carbon prices to help address strategic objectives and priorities. In reflection of this, different GHG emissions are in scope (direct, scope 1 emissions, indirect scope 2, and/or scope 3 emissions)

9. CDP's A List showcases the companies leading on environmental transparency and action, based on their annual disclosure through CDP's climate change questionnaires. Thousands of companies disclose through CDP at the request of investors and corporate buyers

Correlation between internal carbon pricing and other climate actions: 2020

Action	2018			2019			2020		
	Companies (%) taking action that are currently using ICP ¹⁰	Companies (%) taking action that are planning to implement an ICP within two years	Companies (%) taking action that are not planning to use an ICP	Companies (%) taking action that are currently using ICP	Companies (%) taking action that are planning to implement an ICP within two years	Companies (%) taking action that are not planning to use an ICP	Companies (%) taking action that are currently using ICP	Companies (%) taking action that are planning to implement an ICP within two years	Companies (%) taking action that are not planning to use an ICP
Companies in group	594	711	2,681	699	915	3,071	853	1,159	3,573
Adopt a target approved by the Science-Based Targets initiative (SBTi)	67 (11.3%)	33 (4.6%)	25 (0.9%)	109 (15.6%)	51 (5.7%)	49 (1.6%)	209 (24.5%)	130 (11.2%)	93 (2.6%)
Use dedicated R&D funding as a method to drive investment in emissions reduction activities	144 (24.2%)	117 (16.5%)	136 (5.1%)	178 (25.5%)	121 (13.2%)	157 (5.1%)	230 (27.0%)	157 (13.6%)	176 (4.9%)
Set an absolute emissions reduction target that cover 100 percent of emissions in scope	269 (45.3%)	243 (34.2%)	516 (19.2%)	318 (45.5%)	245 (26.8%)	245 (7.9%)	488 (57.2%)	426 (36.8%)	716 (20%)
Renewable energy procurement as share of total	16.2%	14.9%	14.1%	17.7%	16.8%	14.0%	19.5%	19.3%	18.5%
Identify any climate-related opportunities that can be financially realized	551 (92.8%)	590 (83.0%)	1,606 (59.9%)	666 (95.3%)	757 (82.7%)	1,804 (58.7%)	810 (95.0%)	949 (81.9%)	2,151 (60.2%)
Identify climate-related opportunities related to development and/or expansion of low-emission goods and services	298 (50.2%)	252 (35.4%)	551 (20.6%)	385 (55.1%)	299 (32.7%)	590 (19.2%)	447 (52.4%)	380 (32.8%)	667 (18.7%)
Identify climate-related opportunities related to development of new products and services through R&D and innovation	135 (22.7%)	127 (12.9%)	298 (11.1%)	164 (23.9%)	155 (17.0%)	337 (11.0%)	218 (25.6%)	206 (17.8%)	389 (10.9%)
Develop low-carbon products	320 (53.9%)	273 (38.4%)	531 (19.8%)	390 (55.8%)	358 (39.1%)	615 (20%)	491 (57.6%)	435 (37.5%)	763 (21.6%)
Verify Scope 1 emissions via third-party mechanism	533 (89.8%)	471 (66.8%)	948 (36.3%)	632 (90.4%)	501 (54.8%)	980 (31.9%)	759 (89.1%)	604 (52.1%)	997 (27.9%)
Integrate climate-related issues into business strategy	591 (99.5%)	670 (94.2%)	2,064 (77.0%)	696 (99.6%)	875 (95.6%)	2,329 (75.7%)	843 (98.9%)	1114 (96.1%)	2,778 (77.8%)

10. Internal carbon pricing (ICP)

THE PRICE ITSELF

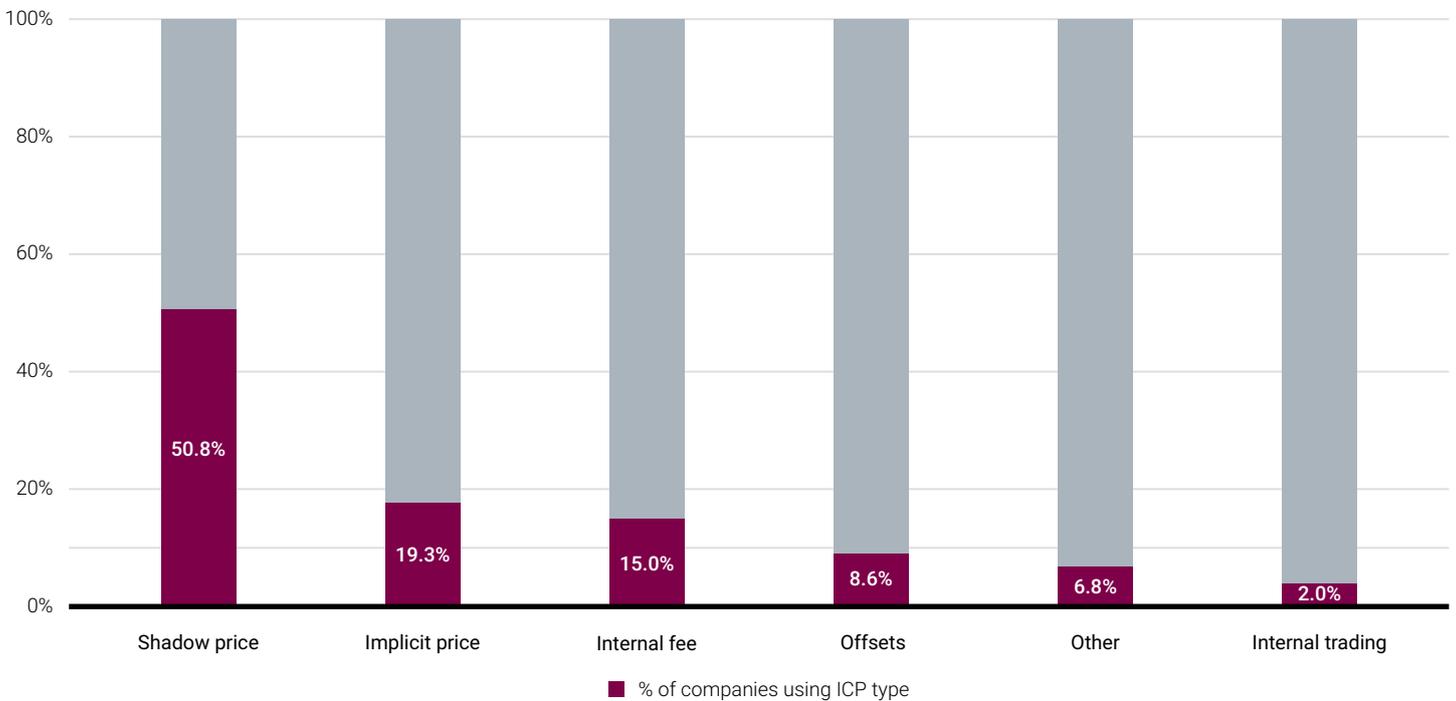
TYPE OF PRICE AND BUSINESS INFLUENCE (DEPTH)

When implementing an internal carbon price, a company must decide the type it intends to use, and the degree of influence it will have on its decision making. Critically, the way in which the shadow price is used impacts the influence the price has.

Its degree of influence can range from being included qualitatively, embedded in cost calculations as a financial indicator, or being a criteria in business decisions, with the latter of course showing the strongest level of influence. A shadow price is the most common type disclosed

through CDP, with 5 in 10 companies that disclosed an internal carbon price in 2020 using shadow pricing. This has consistently been the most common type of price utilized since CDP started requesting information on internal carbon pricing from companies.

Types of internal carbon price used: 2020



Each type of price can be used to drive impact in an organisation. For example, a shadow price mechanism can be used in investment decisions, but no actual financial flows are generated – a shadow price is most commonly used in CAPEX decisions but can also be used in R&D and procurement decisions. On the other hand,

an internal fee mechanism approach will result in actual financial flows by imposing an internal fee on GHG emissions which can be applied to operational decisions – the revenue from the fee can then be used to establish a low-carbon fund or be re-distributed in the company. An example of this practice can be seen at Microsoft.



Our fee is paid by each division in our business based on its carbon emissions, and the funds are used to pay for sustainability improvements. By charging business groups based on the emissions they generate, we help to drive efficiency initiatives and innovation across our business. The carbon fee affects investment decisions by providing an incentive, the financial justification, and in some cases the funds for climate-related energy and technology innovation. The fee also helps drive culture change by raising internal awareness of the environmental implications of our business and establishing an expectation for environmental and climate responsibility within the company.

Microsoft



THE PRICE ITSELF

HEIGHT OF PRICE

Companies that disclosed figures greater than

US\$200

identified that they were using an implicit carbon price in 2020

After sufficient data cleaning and converting to US\$, our analysis identifies the median price disclosed by companies in 2020 as US\$25 per metric ton of carbon dioxide equivalent (CO₂e).

Please see the annex at the end of this report for detailed information on the prices disclosed to CDP broken down by industry, region, GHGs in scope and price type.

In 2020, a significant proportion of companies that disclosed figures greater than US\$200 identified that they were using an implicit carbon price. An implicit price is calculated retroactively and is based on how much it costs a company to implement projects linked to

emissions reductions such as the purchasing of renewable energy or energy efficiency projects. Unfortunately, a large proportion of companies disclosing these higher figures did not provide sufficient quantitative information to validate the figures and so were excluded from the analysis.



THE PRICE ITSELF

VARIANCE OF PRICE

Many companies use different prices in different circumstances i.e. the price varies by characteristics of the business unit to which it is applied (e.g. geographic location, risk exposure) and it may evolve over time – what is known as variance.

Variance reflects the idea that the application of internal carbon pricing is unique to each business. For example, uniform pricing reflects a single price applied throughout the business while differentiated pricing may vary based on geographic location, business unit or decision type, taking into account the specific needs of each.

CDP data suggests that a greater number of companies reporting on variance use a uniform price as opposed to a differentiated or variable price. 17.7% of disclosing companies with usable responses¹¹ mentioned using uniform pricing, compared to 6.8% of companies explicitly stating a differentiated pricing strategy.

Danone, the French food and beverage company has implemented an ambitious static and uniform price and notes in its disclosure:



The internal price of carbon implemented by Danone [...] is uniform and static, meaning a single price is applied throughout the company independent of geography and business unit, and constant over time. Danone updated its internal price of carbon and decided to set it at a relatively high level, 35€/t to internalize potential future costs of carbon in [the] long term. It enables the management to arbitrate between different options, to choose the most virtuous and efficient ones to achieve the goals of Danone's Climate Policy.

Danone, French food and beverage company



Rather than establishing a company-wide price on carbon, Sony Corporation uses a differentiated price which is **“decided and reviewed separately for each business unit, according to their business condition and status, such as the degree of environmental impact, energy pricing, business size, budget and management status.”**

CDP data also indicates a trend towards evolutionary pricing, which adjusts over time compared to static pricing which remains constant. More than double the number of companies explicitly disclosed an evolutionary price compared to those disclosing a static or constant price. This suggests that companies are preparing for increased carbon-related risks over time.

In its 2020 climate change disclosure to CDP, Delta airlines stated the use of



Evolutionary pricing that assumes the cost of carbon increases with time. Various sources are used to do sensitivity analysis around this: published information on future cost of carbon (IEA), analysis on supply and demand of offsets or other instruments.

Delta Airlines



11. Some companies do not provide sufficient information in the disclosure to categorise their price according to its variance

THE PRICE ITSELF

GHG EMISSIONS COVERAGE

In 2020, nearly

90%

of companies

with an internal carbon price disclosed direct (scope 1) emissions being covered



The width of an effective carbon price is based on the GHG emissions covered by the internal carbon price. Best practice in GHG coverage means that there should be a value chain approach, growing to cover all material sources of GHG emissions.

Since CDP first started asking companies to disclose on their use of internal carbon pricing, we have seen consistent coverage of

direct (scope 1) GHG emissions. In 2020, over 89% of companies disclosing data on their internal carbon price identified scope 1 being covered. In comparison to 2018, there has also been an increase of 70 companies taking a value chain approach with internal carbon prices covering direct and indirect value chain (scope 1, 2 and 3) emissions.

CARBON PRICING REGULATION

TRENDS FROM CORPORATE DISCLOSURES

More than 1,100 companies disclosed to CDP that they are currently subject to regulation on the price of emissions.

An additional 717 companies expect such regulation within three years. 60% of companies that were asked this question by CDP disclosed that they do not currently face or expect to face such regulation within three years.

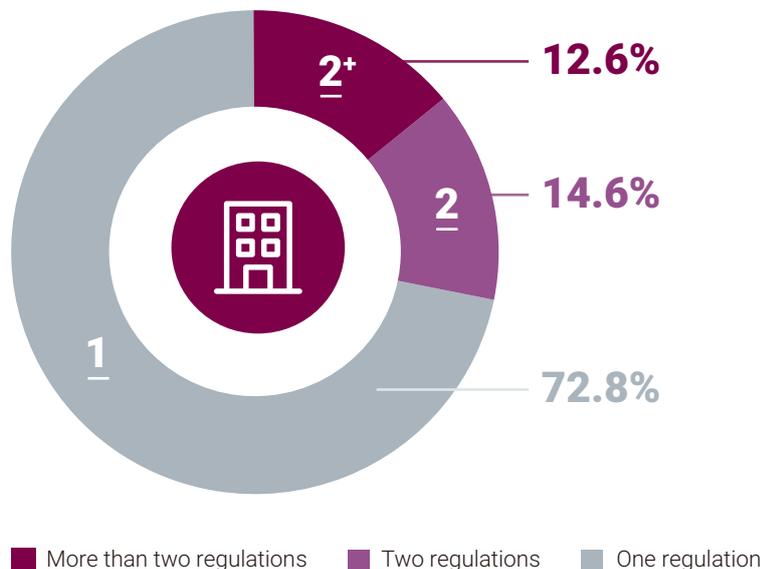
Carbon pricing regulation by numbers: 2020



Across the globe, there are now 64 carbon pricing initiatives in place or scheduled for implementation, covering 12 gigatons CO₂e, representing over 22% of global GHG emissions¹². In 2020, companies disclosed to CDP that they were subject to 57 different regulatory schemes worldwide.

Of the 1,113 companies that disclosed current regulation on carbon emissions in 2020, most reported regulation from just one mechanism; 14.6% stated being subject to two regulatory schemes and a further 12.6% said they are subject to more than two.

Number of regulations companies are exposed to: 2020



12. World Bank Group, Carbon Pricing Dashboard - <https://carbonpricingdashboard.worldbank.org/>

Since CDP's last report in 2017, there have been notable changes in carbon pricing regulation. Germany, Austria, and Luxembourg have commenced plans to price carbon in sectors not currently covered by the EU ETS, and the EU's Green New Deal with its commitment to reach carbon neutrality by 2050 has strengthened the case for wider carbon pricing coverage. Mexico launched a national pilot ETS, the first emissions trading system in Latin America. We have also seen an increase in the sectors and GHG emissions being covered by carbon pricing regulation, and thresholds are being lowered to regulate more companies, including in Chile, Iceland, New Zealand, and Switzerland¹³.

There have also been significant developments in subnational initiatives, notably in Canada's provinces and territories, which are now complemented by federal regulations. In the US, New Jersey and Virginia joined the Regional Greenhouse Gas Initiative (RGGI) and

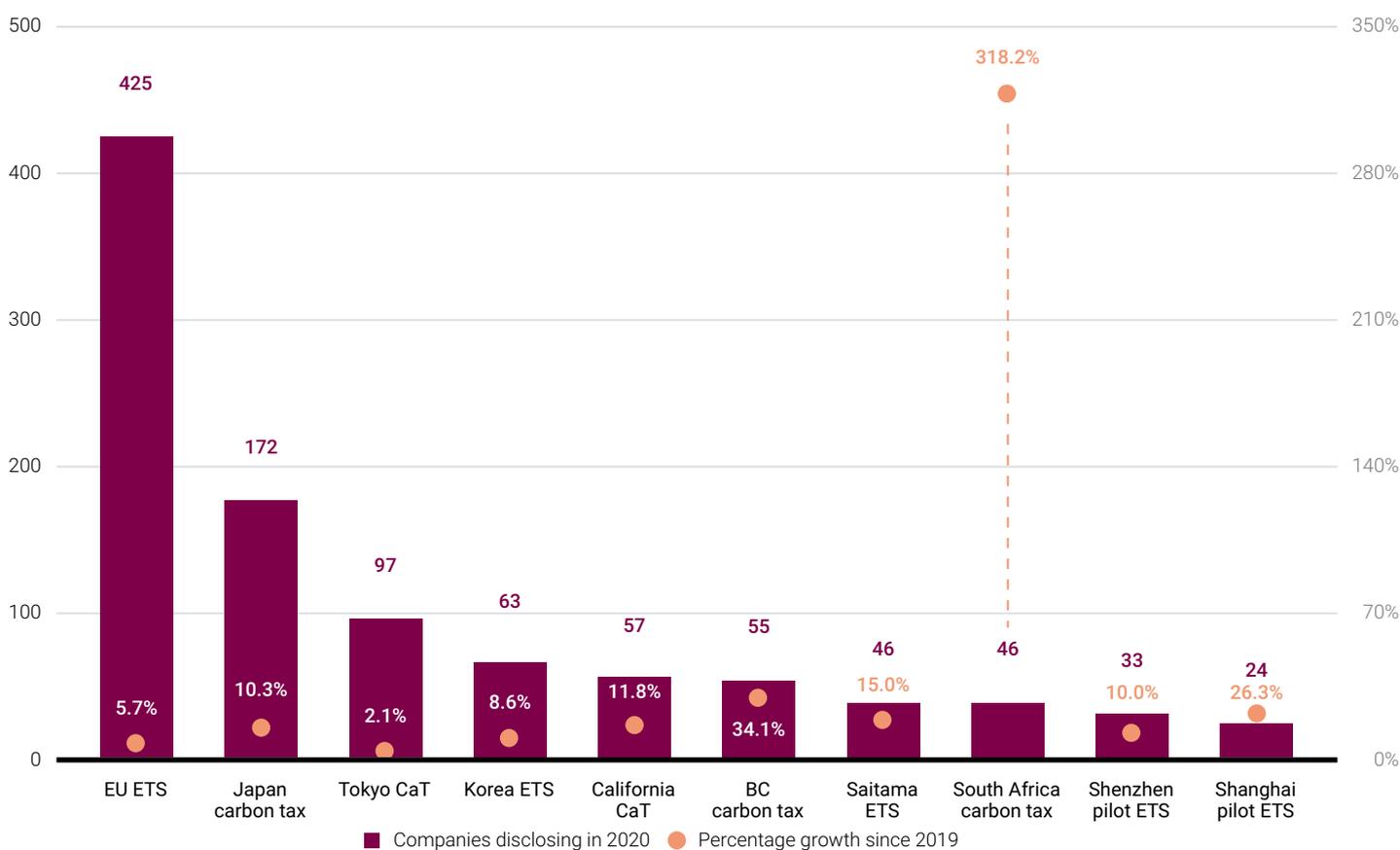
Pennsylvania intends to do so by 2022 at the earliest.

The EU ETS which now covers Norway, Iceland, and Liechtenstein in addition to the 27 EU member nations, was cited more often than any other regulation in 2020. 425 companies disclosing to CDP in 2020 stated they are subject to this regulation, an increase of 5% since 2019.

The fastest growing regulation by percentage increase of companies disclosing their exposure is the South Africa carbon tax, implemented in 2019, which now covers 46 companies disclosing to CDP in 2020 – a 318% increase year-on-year.

The graph below shows the ten most disclosed carbon pricing regulations that companies are subject to, and the percentage change from 2019 to 2020.

Commonly disclosed carbon pricing regulations: 2020



Regulation and internal carbon pricing

In 2020, more than 3,000 companies disclosed to CDP that they do not expect to face governmental regulation on the price of emissions within three years and do not foresee carbon pricing regulation to be a substantive risk. Just 14% of these companies use or plan to implement an internal carbon price within two years. Therefore, companies that disclose carbon pricing as a risk and face or expect pricing regulation are five times more likely to use an internal carbon price than those that do not.

CDP's analysis also notes that despite over 1,830 companies disclosing current exposure or potential exposure to carbon pricing regulation, 60% (over 1,100 companies) did not identify this regulation as a substantive risk to their stakeholders. It's possible that carbon pricing regulation might not meet the thresholds set by these companies to be considered a material risk - however it's a potential gap in information that investors should explore at a company level.

13. World Bank Group, State and Trends of Carbon Pricing 2020 - <https://openknowledge.worldbank.org/handle/10986/33809>

Emissions Trading Systems and Carbon taxes

Emissions Trading Systems (ETS), also known as cap-and-trade (CaT), establish a limit (cap) on emissions within a specific jurisdiction which is reduced over time thereby reducing overall emissions. This is a market-based approach allowing companies to buy and sell allowances (trade) equivalent to the total emissions cap, with a financial incentive for companies to reduce emissions. Emissions Trading Systems provide certainty about future emissions, but not about the price of those emissions which will inevitably vary over time.

These schemes can apply across various levels. In 2020, the ETS most often disclosed to CDP was the EU ETS. Other common schemes reported to CDP were the Tokyo CaT, Korean national ETS,

and California Cap and Trade.

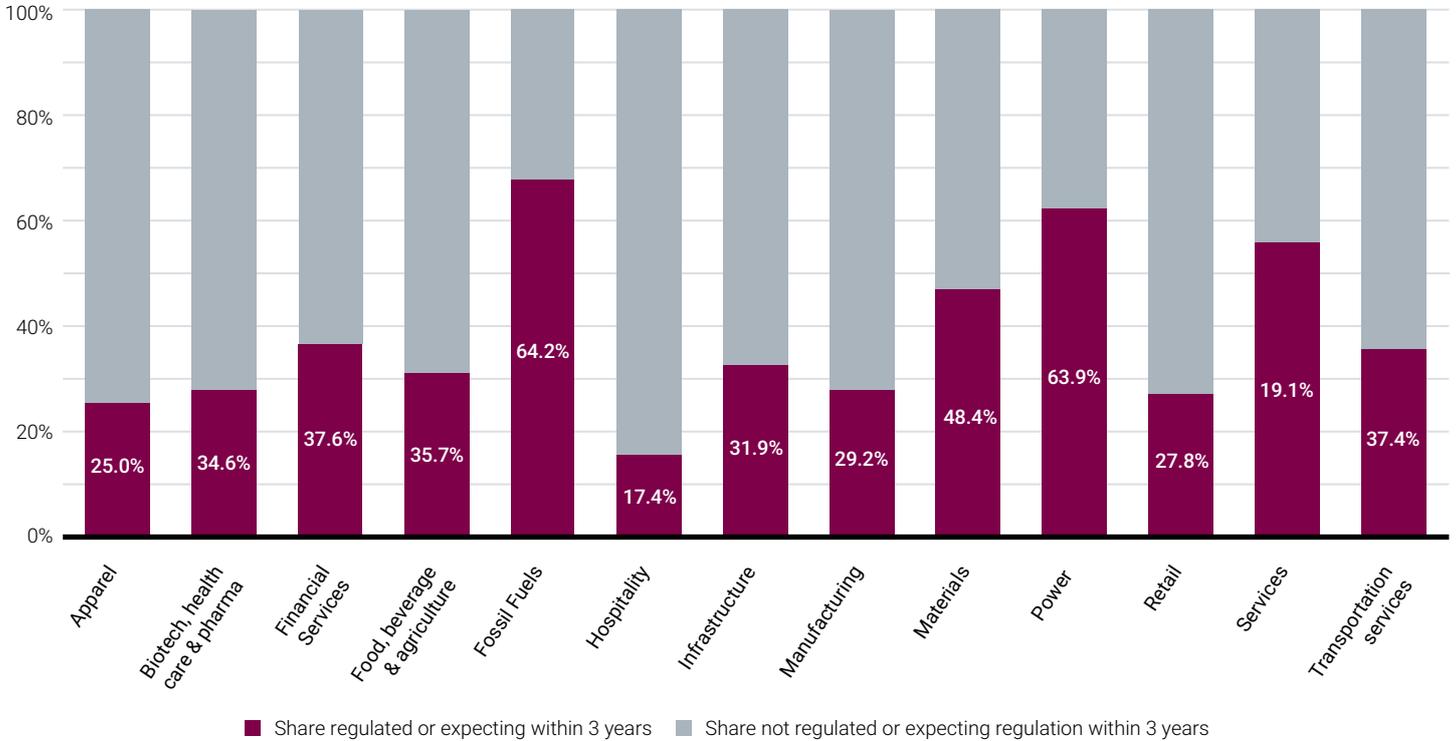
Carbon taxes are a direct cost levied by governments who set a price that companies must pay for each ton of GHG emissions emitted. A carbon tax differs from an ETS in that it provides a higher level of certainty about cost but less certainty about the level of emission reductions that will be achieved. The most common carbon tax as disclosed to CDP is the Japan national carbon tax with over 170 companies reporting to CDP that they are subject to this regulation. Two other frequently identified carbon taxes are the British Columbia carbon tax in Canada and the South Africa carbon tax, which regulate more than 50 and 45 of the disclosing companies respectively.

Regulation by industry

Fossil fuels and power companies report the highest rate of current or expected emissions regulation. This aligns with expected thinking, as these activities are typically covered by carbon taxes and emissions trading systems like the EU ETS.

The hospitality industry has the lowest rate with less than one in five companies disclosing current or expected regulation.

Share of industry regulated: 2020

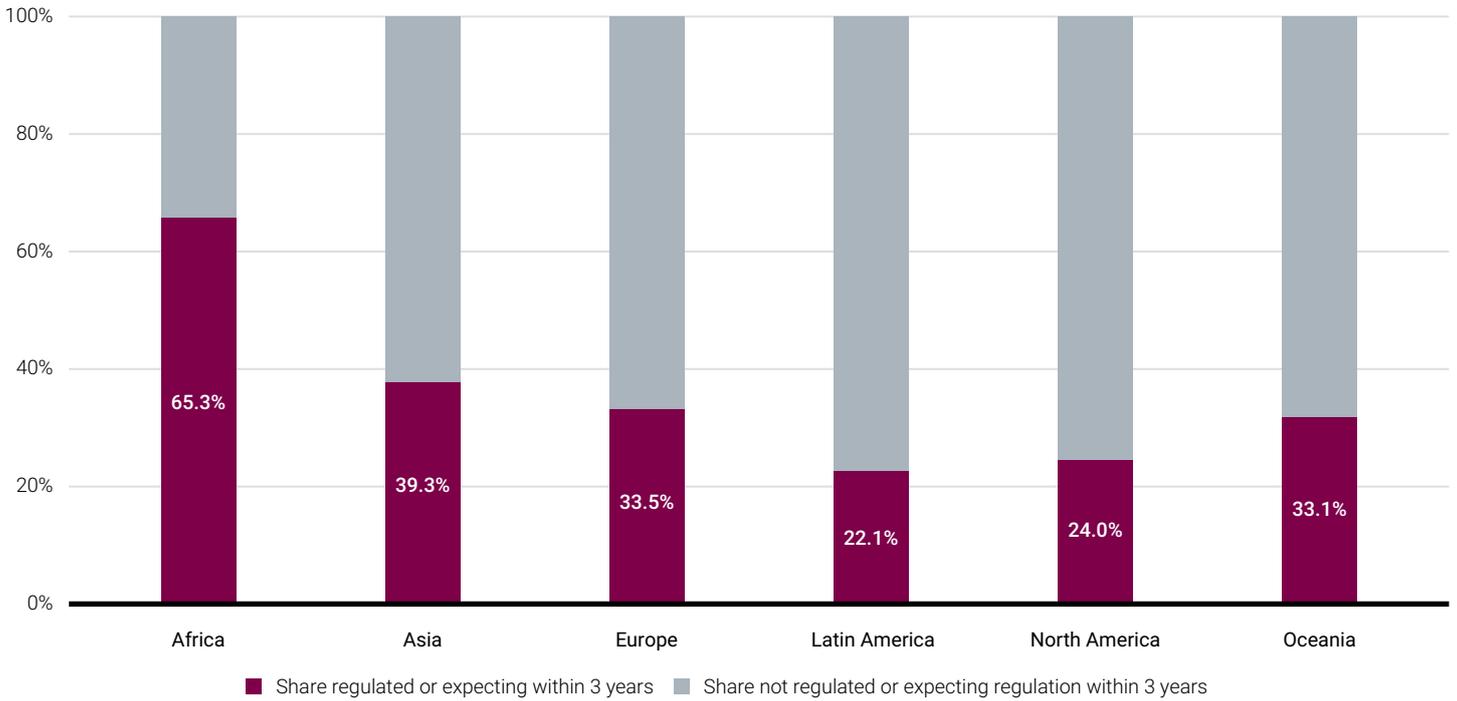


Regulation by region

Among all regions, Africa has the highest share of companies reporting or expecting regulation within three years. Note that three quarters of disclosing companies in Africa are based in South Africa which implemented a national carbon tax in June 2019.

North and Latin America have the lowest rates with around one quarter of all companies facing or expecting regulation. The majority of disclosures from North America come from the U.S. which lacks federal emissions regulations and has a nascent, patchwork assortment of state policies (e.g. RGGI).

Share of companies regulated by region: 2020



ANNEX

TYPES OF INTERNAL CARBON PRICING AND PRICES USED: 2020

Shadow pricing remains the most commonly used pricing type and has the highest median value price.

While many companies employ multiple types of carbon pricing depending on their needs, shadow pricing is most often used with over 5 in 10 companies implementing this pricing type. A shadow price places a hypothetical cost of carbon to each ton of emissions as a tool to reveal hidden risks and opportunities in operations and supply chains, and to support strategic decision-making related to future capital investments.

Prices on carbon vary based on emissions scope and type of price. The table below shows the median¹⁴ price per ton converted to US

dollars. Apart from being the most common, shadow prices are the highest dollar value of any price type.

GHG Scope	Implicit price	Internal fee	Internal trading	Offsets	Shadow price
Scope 1	\$28	\$23	Insufficient data ¹⁵	\$21	\$25
Scope 2	\$7	\$64	Insufficient data	Insufficient data	\$29
Scope 3	Insufficient data	\$19	Insufficient data	Insufficient data	\$49
Scope 1; Scope 2	\$28	\$22	\$31	\$2	\$28
Scope 1; Scope 3	Insufficient data	Insufficient data	Insufficient data	Insufficient data	\$25
Scope 1; Scope 2; Scope 3	\$23	\$11	Insufficient data	\$7	\$34

Price ranges by type

Price type	Median price per tonne (US\$)	Maximum price per tonne (US\$)
Implicit price	\$27	\$918
Internal fee	\$18	\$532
Internal trading	\$27	\$71
Offsets	\$6	\$35
Shadow price	\$28	\$459

Price ranges by region

Region	Median Price USD	Max. Price USD
Africa	\$8	\$120
Asia	\$28	\$918
Europe	\$28	\$532
Latin America	\$8	\$100
North America	\$23	\$760
Oceania	\$17	\$297

14. The median is used as CDP's data show significant variability within each scope and price type

15. Insufficient data: fewer than five companies reported data

Price ranges by industry

Industry	Median Price USD	Max. Price USD	Unique companies with usable data
 Apparel	\$82	\$760	5
 Biotech, health care & pharma	\$43	\$918	22
 Financial Services	\$17	\$297	105
 Food, beverage & agriculture	\$28	\$177	40
 Fossil Fuels	\$28	\$100	55
 Hospitality	\$16	\$20	4
 Infrastructure	\$35	\$383	32
 Manufacturing	\$28	\$532	116
 Materials	\$28	\$459	137
 Other services	\$20	\$146	78
 Power generation	\$23	\$112	77
 Retail	\$23	\$135	42
 Transportation services	\$20	\$269	33

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About CDP

CDP is a global non-profit that drives companies and governments to reduce their greenhouse gas emissions, safeguard water resources and protect forests. Voted number one climate research provider by investors and working with institutional investors with assets of over US\$106 trillion, we leverage investor and buyer power to motivate companies to disclose and manage their environmental impacts. Over 9,600 companies with over 50% of global market capitalization disclosed environmental data through CDP in 2020. This is in addition to the hundreds of cities, states and regions who disclosed, making CDP's platform one of the richest sources of information globally on how companies and governments are driving environmental change. CDP is a founding member of the We Mean Business Coalition.

Visit <https://cdp.net/en> or follow us @CDP to find out more.