

# Measure, Manage, Disclose: Asia's Corporate Path to Net-Zero Emissions

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## Asia's Corporate Path to Net-Zero Emissions

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### Executive Summary

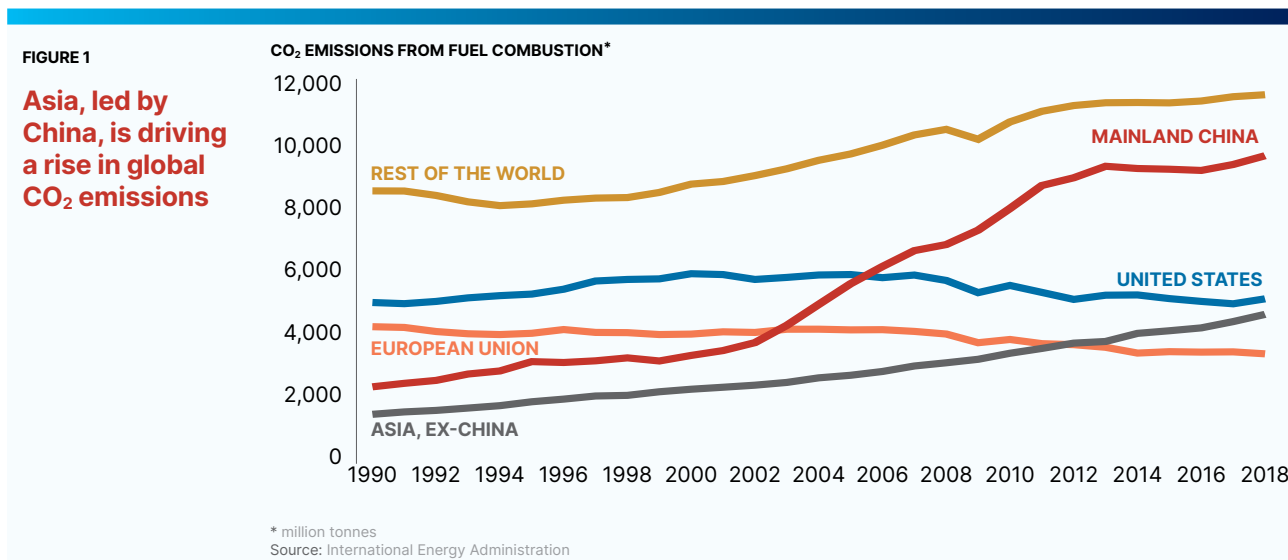
Blunting the impact of climate change is our time's greatest challenge. The landmark 2015 Paris Agreement on climate pledged to keep the rise in global temperatures to less than 2 degrees Celsius above pre-industrial levels. The overall Paris pledge is the sum of individual country pledges, known as Nationally Determined Contributions (NDCs), to drive decarbonization. But, even if all the NDCs were implemented, we would not get to net zero by 2050. To get there, the world needs to see emissions decline by over 8 percent – roughly the amount they fell in 2020 – each year from now until 2050.<sup>1</sup>

With 60 percent of the world's greenhouse gas emitters updating their Paris pledges to align with net zero by mid-century, policy support should help boost the outlook for investing in sustainability, climate solutions, and the innovation needed to get the world there. Taxes on carbon emissions have been set far too low, averaging \$3 per ton globally, far short of the estimated \$70 per ton needed to get to net zero. These will undoubtedly rise over the decades to come.<sup>2</sup>

Governments set policies, but business plays the most important role in translating policy into real-world action. We will see market forces start to reward climate resilient companies with higher valuations, and there will be negative consequences for those that fail to adjust quickly enough. Corporate environmental disclosures can help capital flow to the highest return and most sustainable investments. Strong climate reporting can help business benefit from incorporating climate into capital allocation decisions.

Asia's vibrant economies are at the heart of dire climate consequences, and the ability to help the world decarbonize. Asia accounts for 45 percent of global greenhouse gas (GHG) emissions, often measured in carbon dioxide equivalent, but is home to roughly 60 percent of the world's people; China alone is responsible for close to 30 percent of the global total (see Figure 1). As Asia's middle class grows, the region must ensure that growth is green, so that it enjoys the benefits of cleaner cities and improved overall welfare.





According to a report by McKinsey & Co., without climate mitigation, the effects of global warming will affect Asia disproportionately in several areas.<sup>3</sup>

- By 2050, Asia will risk up to \$4.7 trillion of GDP annually from loss of outdoor working hours, due to rising heat and humidity, which is more than two-thirds of the total estimated annual global GDP impact
- As many as 1 billion people in Asia will face the potential for lethal heatwaves
- Three-quarters, or \$1.2 trillion, of the world's physical assets and infrastructure vulnerable to riverine flooding is in Asia

This briefing's aim is to underscore the relevance of climate reporting to C-suite and board leadership. Engaged leadership is at the core of every company's transition to low-carbon operations. Executives whose compensation is tied in part to emissions reduction and other environmental Key Performance Indicators (KPIs) are more likely to succeed in their corporate sustainability efforts. It is easy to see these challenges as a cost, but early adopters will be better able to choose their most efficient decarbonization remedies, leaving them better positioned in the long run. Regulators will force costly action for laggards.

**Part One** of this briefing sketches the danger posed by human-induced climate change and the way in which the Paris Agreement charts a path forward. **Part Two** makes the business case for climate-related disclosure, discusses what strong climate disclosure should include, and illustrates the power of original equipment manufacturers (OEMs), investors, and asset managers to drive change. **Part Three** describes the major environmental reporting conventions and sheds light on the convergence taking place among standards. An **Appendix** provides a listing of resources.

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## Part One: Asia's Role in The Paris Climate Agreement's Road Map for Decarbonization

The historic 2015 Paris Agreement – a legally binding international treaty on climate change signed by 196 countries – is the most significant attempt at worldwide coordination to contain global warming to “safe” levels (less than 2 degrees and preferably 1.5 degrees Celsius).<sup>4</sup> It is also one of the mechanisms that will lead to governments increasingly holding businesses accountable on emissions reduction.

The Paris Agreement relies on individual countries implementing self-defined climate pledges, known as NDCs, to meet the agreement's goals. In their NDCs, countries promise actions they will take to reduce their greenhouse gas emissions. According to the Intergovernmental Panel on Climate Change (IPCC), the scientific body whose forecasts underpin the Paris Agreement, limiting warming to 1.5

degrees Celsius requires halving global emissions by 2030 and reaching net zero by 2050. Limiting warming to 2 degrees Celsius requires a 25 percent decline in CO<sub>2</sub> emissions by 2030 and reaching net zero around 2070.<sup>5</sup>

**Growing calls for carbon pricing could have a significant adverse impact on high-carbon businesses in the future, especially in terms of their financial structures and ability to repay loans, which would increase the credit risk faced by banks.**

The Paris Agreement works on a five-year cycle. NDCs are meant to be updated every five years, and to reflect increasingly ambitious climate goals. Most countries had submitted their first NDC by 2020 and some have submitted an update already.

Five years into the agreement, it is clear that Paris is falling short. Soon after its signing, carbon levels in the Earth's atmosphere surpassed 400 parts per million. This is dangerous territory: The last time this carbon level was reached was 800,000 years ago, and the sea level was more than 100 feet higher.<sup>6</sup> The earth is on track to warm somewhere between 3 and 4 degrees by 2100.

Climate risks are subject to tipping points that can have feedback effects. Melting arctic permafrost could release vast stores of methane, a powerful greenhouse gas, which in turn speeds up glacial melt and global warming. Disturbingly, potential feedback effects are not in the IPCC's climate models, raising the possibility of warming happening a lot faster than projected.<sup>7</sup>

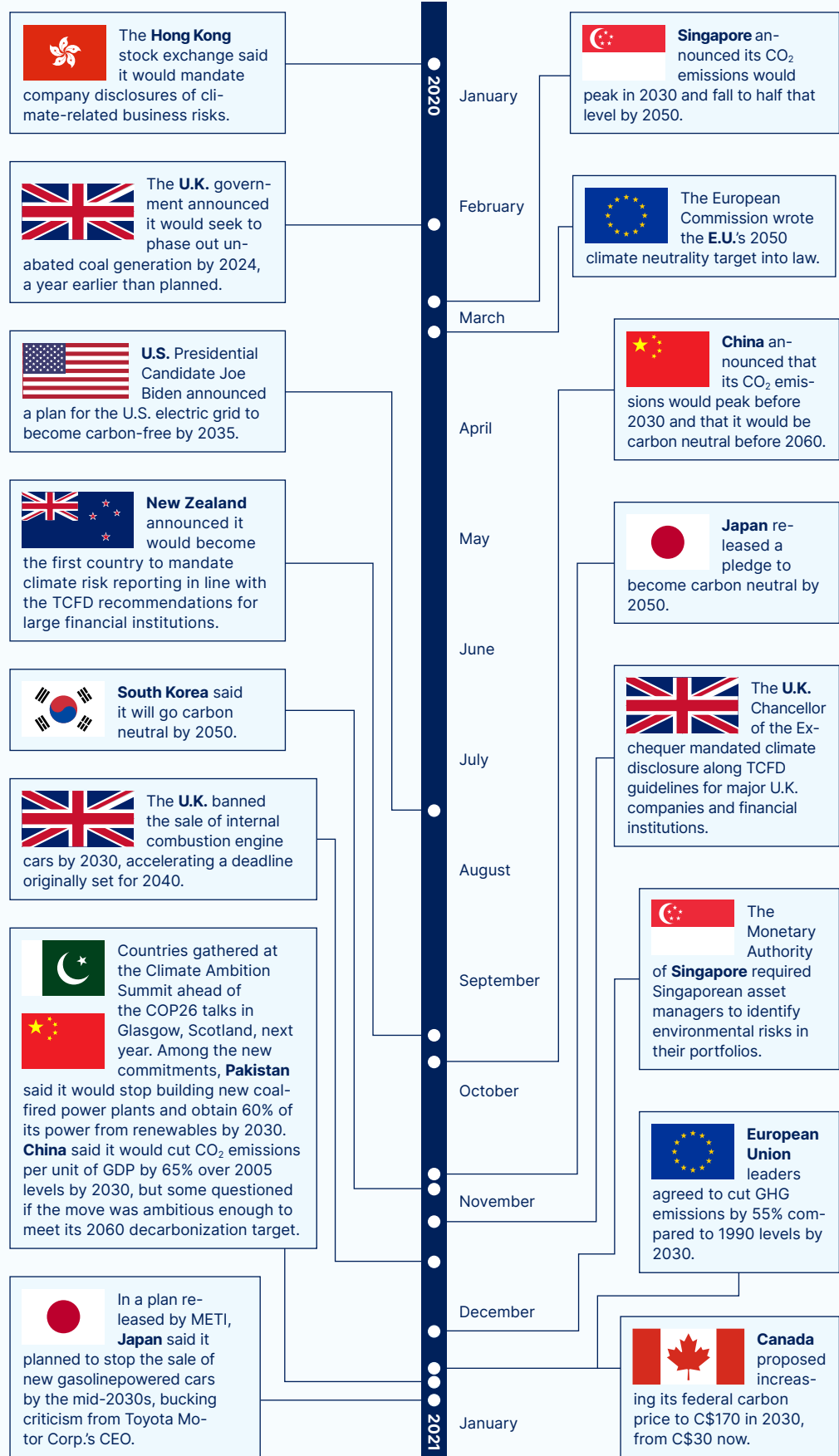
To reach net zero, the world needs to see emissions decline by over 8 percent – roughly the amount they fell in 2020 – each year from now until 2050.<sup>8</sup> Notwithstanding an 8.5 percent to 9 percent COVID-induced drop in 2020, global GHG emissions are still trending upward. Bending the emissions curve so that it starts sloping downward is a daunting task, requiring massive investments to boost energy efficiency and decarbonize energy systems.

### Commitment by Governments to Reduce Global Emissions

Fortunately, big emitters are tightening their NDCs ahead of the United Nations Climate Conference, COP26, this November (see Figures 2). Countries responsible for about 60 percent of global emissions are now aligned with the Paris

FIGURE 2

**The pace of climate commitments by governments and regulators has accelerated in 2020**



Agreement's science-based warming targets. China, the world's largest emitter, recently promised to scale up its NDC to reach peak emissions before 2030 and carbon neutrality before 2060.<sup>9</sup> Japan and South Korea followed by pledging carbon neutrality by 2050.

The U.S., the world's second-largest emitter, has rejoined the Paris Agreement, which the Trump administration had exited. President Joe Biden's energy agenda targets U.S. electricity production to be carbon-free by 2035, and the U.S. achieving net-zero emissions by mid-century.<sup>10</sup> Much depends on the U.S.'s ability to lead by example, as well as China's willingness to decarbonize the Belt and Road, as the developing countries that benefit from such projects will see their share of global emissions rise from 28 percent to 66 percent by 2050.<sup>11</sup>

**Engaged leadership whose compensation is tied in part to emissions reduction and other environmental KPIs is necessary for the success of any meaningful corporate sustainability effort.**

Climate consequences will be factored into international trade negotiations, just as labor laws are now. Richard Haass, president of the Council on Foreign Relations, recently noted that carbon emissions are going to be priced into trade. "Trade blocs have to introduce climate. If you want to produce with coal, should there be a tariff? In the future, increasingly, climate and sustainability will be fully integrated with trade."<sup>12</sup> Central banks are also focused on climate-related risks and sustainability in their financial stability work. So are regulatory stress tests and reserve adequacy measures for banks and insurers.

The business of climate mitigation will benefit from stimulus tailwinds. Europe's Green Deal allocated nearly one-third of its seven-year budget for climate action. South Korea's Green New Deal, unveiled in July 2020, calls for 73.4 trillion won (\$62 billion) to be spent over the next five years to help Korea achieve carbon neutrality by 2050. This spending is 45 percent of a broader 160 trillion won New Deal program to boost post-coronavirus job creation, targeting 1.9 million new jobs.<sup>13</sup>

The Green portion calls for an expansion of solar and wind energy to 42.7 gigawatts in 2025, up from 12.7 gigawatts in 2019. The government plans to install solar panels on 225,000 public buildings. It plans to invest in smart grids, the term for flexible power grids that can both deliver electricity generated by central power stations, and incorporate power from a host of distributed energy resources, such as renewable energy plus storage, and demand response.<sup>14</sup>

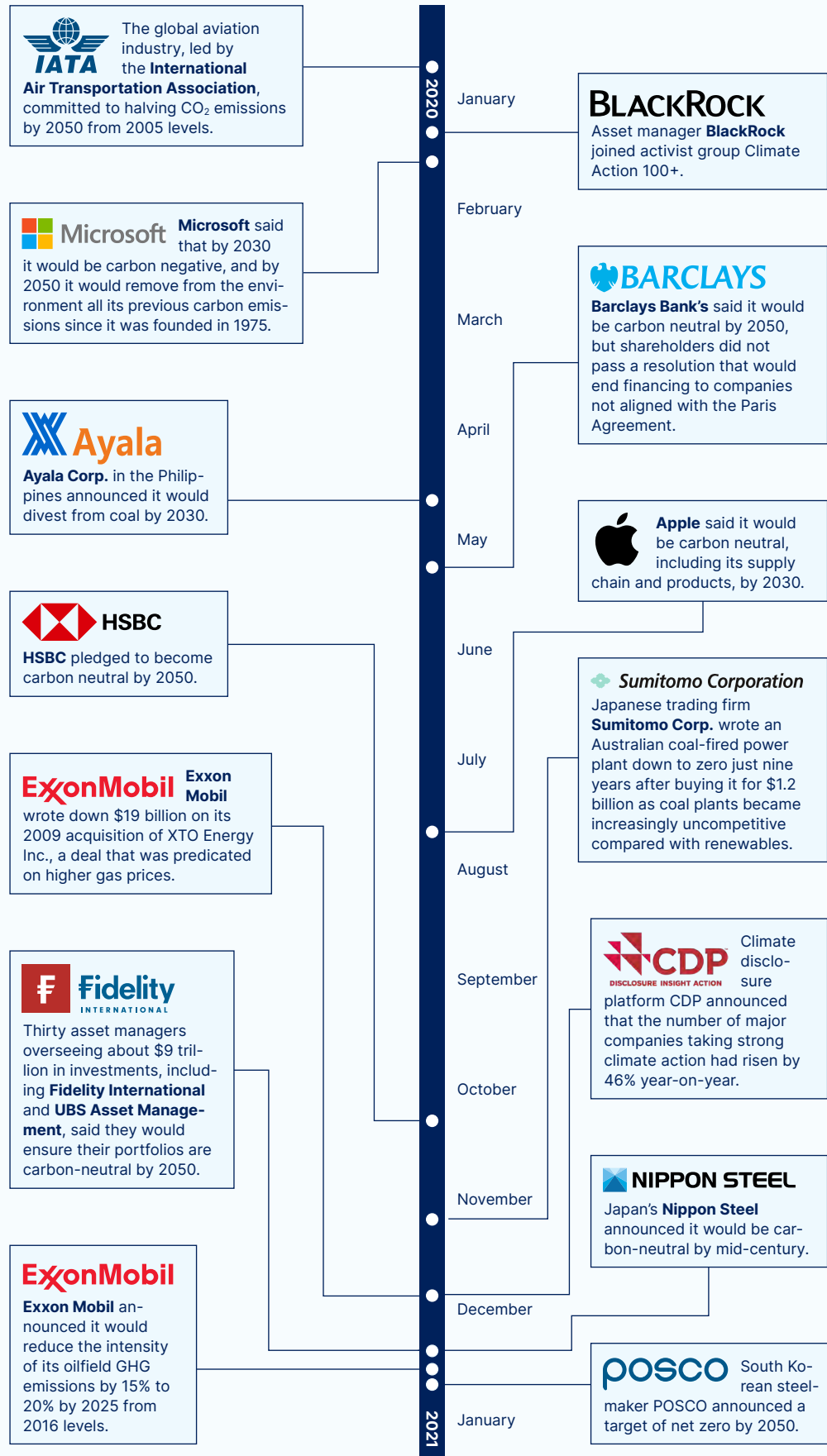
Countries must consider the effect of financing emissions beyond their borders. South Korea has been one of the top three public financiers of overseas coal power, providing approximately \$10 billion to overseas coal power projects between 2008 and 2018. Time will tell if the country will stop exporting coal and gas power plants, and their pollution and emissions, to the world.<sup>15</sup>

## **The Business Response to Climate Change**

The climate-related commitments of private companies also accelerated in 2020 (see Figure 3). In South Korea, the tightened NDCs and the recent actions by the

FIGURE 3

**The pace of climate commitments by private companies has accelerated in 2020**





Moon Jae-in administration have pressured **KEPCO**, the Korean state-owned utility responsible for numerous international coal plants, to announce it will not build any new ones. And, in the Philippines and South Africa, KEPCO made concessions to calls for climate justice by canceling or converting some of its coal plants in the pipeline to natural gas.

Stopping new coal-fired power plants in Asia is a “must have” for climate mitigation. Today 90 percent of Asia’s power emissions come from coal.<sup>16</sup> McKinsey estimates that as much as half of global investment in power in the next two decades will take place in Asian economies, making Asia’s choices about power infrastructure a key to potential decarbonization.<sup>17</sup>



A coal-fired power station at Datong in China's Qinghai province.

PHOTO: KIERAN DODDS / PANOS PICTURES

Industrial decarbonization is another area ripe for improvement, given that 80 percent of global CO<sub>2</sub> steel and cement emissions originate in Asia. China, Korea, and Japan are particularly aggressive in building capacity in green hydrogen.<sup>18</sup> **Sinopec**, China’s state-owned oil and gas giant, has announced it will focus on building out a green hydrogen supply chain. (Green hydrogen uses renewable or nuclear energy to produce hydrogen from water. It is another form of storage and a potential new source of carbon-free energy for high-heat industrial processes.)

Commercial banks are alert to the danger of underpriced emissions in their own portfolios. This will limit

lending to carbon-intensive industries. Taiwan’s Fubon Financial Holdings, in its 2019 Corporate Social Responsibility (CSR) report, notes, “Growing calls for carbon pricing could have a significant adverse impact on high-carbon businesses in the future, especially in terms of their financial structures and ability to repay loans, which would increase the credit risk faced by banks.”<sup>19</sup>

### **Benefits of the Energy Transition Outweigh the Costs**

Indeed, the benefits of the energy transition far outweigh the costs. For the planet as a whole, and for Asia, transition to net zero is more a matter of re-tooling existing spending on energy systems than spending a lot more. The World Economic Forum has suggested the incremental cost could be as little as 1.5 percent of global GDP, annually.<sup>20</sup>

In economic terms, International Renewable Energy Agency (IRENA) estimates the benefits of staying on a 2 degree warming path to human health and environmental costs would bring annual savings by 2050 up to five times the



additional annual cost of the transition. The global economy in 2050 would be larger, IRENA estimates, with nearly 40 million jobs directly related to renewables and efficiency. Timely action would also avoid stranding what IRENA estimates equate to over \$11 trillion worth of energy-infrastructure assets that are tied to today's polluting energy technologies.<sup>21</sup>

Adnan Z. Amin, Director-General of IRENA, wrote in *A Roadmap to 2050* that to get to net zero worldwide requires a sixfold increase in the pace of renewables deployment, with renewables ultimately accounting for two-thirds of energy consumption and 85 percent of power generation.<sup>22</sup> This bodes well for China's solar module, wind turbine, and battery manufacturers. By IRENA's accounting, the share of electricity in total energy use must double, with substantial

electrification of transport and heat. Integrating distributed energy resources like renewables plus storage and demand response into a flexible, potentially pan-Asian smart grid requires technological know-how and investment. Thus far, Belt and Road, China's massive infrastructure development program, has aggressively built out coal-fired electricity capacity. But it will avoid wasteful investment and see more profitable opportunities if it pivots to offer green power and energy systems to Belt and Road partners.

A similar set of challenges and opportunities lies in buildings and transport. More than 30 percent of global CO<sub>2</sub> emissions from transportation and buildings comes from Asia.<sup>23</sup> Asia is a leader in

technology such as electric vehicles and fuel cell electric vehicles (FCEV). The latter combine hydrogen stored in a tank with oxygen from the air to produce electricity. Water vapor is the by-product, and unlike more common battery-powered electric vehicles, fuel cell vehicles don't need to be plugged in.<sup>24</sup> Asia stands to benefit from the \$120 billion investment estimated to decarbonize mobility.<sup>25</sup> With its strong recovery from COVID-19, these are just some of the many ways Asia and its companies are well prepared to take advantage of the changes the 2020s bring.



A Yoma Micro Power plant in Myanmar's Sagaing region.

PHOTO: JULIAN RAY / YOMA MICRO POWER

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## Part Two: The Business Case for Climate Disclosure

How does adopting climate risk disclosure help businesses? Empirical investigation has shown that a carbon-efficient portfolio of stocks generates positive alpha, or excess return, relative to less carbon-efficient companies.<sup>26</sup> And, at the company level, the New York University Stern Center for Sustainable Business is pioneering research into what it calls ROSI, or the “return on sustainable investment.” Integrating sustainability in corporate strategy and practice, the center finds, can lead to a host of positive outcomes – like improving customer loyalty and employee relations, driving innovation, and improving supplier relations – that drive profitability. Over time, the center’s research tells us, this leads to higher corporate valuations, and a lower cost of capital.

Another very important business case is made by Mark Carney, first articulated when he was Governor of the Bank of England and Chairman of the G20 Financial Stability Board. In a now historic 2015 speech to executives of Lloyd’s of London, he argued for better information to allow investors to take a view. “An old adage is that which is measured can be managed,” he said. “Information about the carbon intensity of investments allows investors to assess risks to companies’ business models and to express their views in the market.” Carney’s holistic view tied together several errant threads. “By analogy, a framework for firms to publish information about their climate change footprint, and how they manage their risks and prepare (or not) for a 2 degree world, could encourage a virtuous circle of analyst demand and greater use by investors in their decision making. It would also improve policy-maker understanding of the sources of CO<sub>2</sub> and corporate preparedness.”<sup>27</sup>

### Key Elements of Strong Climate Risk Disclosure

Corporate financial disclosures are a tool that will help make capital allocation more efficient in the energy transition.

**1 Quantifying Key Risks and Opportunities:** As a first step, strong corporate climate risk disclosure focuses on quantifying the impact of material climate risks and opportunities. This includes the company’s best estimate of the financial impact of physical, litigation, and transition risks – including emerging regulation, carbon taxes, reputational risk, and acute physical risks – that arise from climate change. The company likewise discusses and quantifies potential opportunities, such as increased demand for products that meet or exceed energy-efficiency standards or cost savings from using renewable energy.

**2 Tying Learnings to Corporate Strategy:** The next step is to show how measuring risks and opportunities influences corporate strategy. Strategic growth opportunities that align with the energy transition are unevenly distributed. As an example, for banks and insurance companies, green finance is a positive driver of top-line growth, and climate-aware risk underwriting will drive profitability. But, as we have seen from massive write-downs of assets by the likes of Exxon Mobil Corp. and Total SE in 2020, for oil-and-gas concerns, the transition to a zero-carbon world increases the risk of further balance sheet impairments and declining demand.<sup>28</sup>

For **Schneider Electric**, a French multinational that has bolstered its Asia presence in recent years, analysis of climate risks and opportunities is key to its product and service offerings. The electrical equipment provider says in its 2019 annual report that the industry is experiencing two key climate-related trends that could threaten its business: toward a “net-zero world” (pressure for businesses to reduce their carbon emissions); and toward an “all-electrical world” (pressure for corporates to substitute oil with electricity).<sup>29</sup> For Schneider, risks and opportunities are two sides of the same coin: It also identifies the net-zero world and all-electric world as two of the “key megatrends driving growth.”

To mitigate the risks and take advantage of the opportunities of decarbonization and electrification, Schneider’s services address climate change and energy efficiency. Through its ECOFIT services, Schneider assists customers in modernizing their aging electrical equipment, reducing maintenance costs, and contributing to decarbonization by extending asset life and improving energy efficiency. When assets reach the end of their useful lives, Schneider provides recycling services. (The company does a cost-benefit analysis to help clients decide when it is most appropriate to repair or retrofit equipment, and when to replace it.<sup>30</sup>) Catering to decarbonization opportunities at all points in the asset lifecycle has made good business sense for Schneider and set it up for future growth.<sup>31</sup>

**3 Disclosing Detailed Emissions Data:** Disclosing emissions data, including targets for and progress toward emissions reduction, as well as whether a company uses an internal price on carbon, is another component of strong disclosure. Detailed emissions reporting includes measuring three types, or scopes, of emissions. Scope 1 covers direct emissions from owned or controlled sources such as factories, office buildings, or vehicles. Scope 2 covers indirect emissions from the generation of purchased electricity, heating, or cooling, consumed by the company. Scope 3 includes all other indirect emissions that occur in a company’s value chain. Not all firms have a capability to do a detailed Scope 3. Emissions reporting can be complex and costly, depending on what industry a company is in. Often, outside experts are used for verification of the emissions data. Companies will disclose any third-party verification or assurance they use. Some companies report data on water and waste, such as usage and recycling figures, and relevant KPIs.

Taiwan electronics manufacturer **Acer Inc.** provides a detailed breakdown of the sources of its Scope 3 emissions, the vast majority of which come from product energy consumption. The company also went one step further by working with its suppliers to calculate the entire product lifecycle carbon footprint for its Chromebook C740 computer. Acer found that 65 percent of that footprint originated from the product’s raw materials and another 34 percent from product usage, mostly electricity.<sup>32</sup> Armed with that knowledge, Acer will be able to more efficiently target efforts to reduce Scope 3 emissions, which is often the most challenging area for emissions reductions.

**4 Engagement:** Engagement is another key aspect of climate disclosure that imparts useful information about the company’s intentionality. The **Suntory Group’s** Climate Change 2020 filing on the CDP platform describes several supply chain engagement initiatives. Suntory Group asks suppliers to report environmen-

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tal, social and governance (ESG) metrics on CO<sub>2</sub> emissions and climate change, as a prerequisite for becoming a supplier to Suntory.<sup>33</sup> Knowing the emissions data of its suppliers helps Suntory calculate a detailed analysis of its own Scope 3 emissions. Since packaging is a material expense, and the source of 68 percent of its emissions, it also engages with its packaging suppliers on the joint development of lower-emissions packaging. Suntory also sets goals and is targeting using recycled PET bottles for more than 50 percent of its domestic soft drink business by 2025.

**5 Reporting and Governance Structure:** Finally, there should be detailed discussion of the reporting and governance structure. Best practices include board oversight of ESG matters. A thorough report will discuss who is responsible for coordinating ESG efforts, how often they meet with the board and C-suite, and whether accountability for KPIs is reflected in compensation. Engaged leadership whose compensation is tied in part to emissions reduction and other environmental KPIs is necessary for the success of any meaningful corporate sustainability effort.

### **The Power of OEMs, Investors, and Asset Managers to Drive Change**

Powerful OEMs are a massive driver of change, as they have the power to influence their supply chains.

Already carbon neutral for corporate emissions worldwide, **Apple Inc.** expanded its plan to become carbon neutral across its comprehensive carbon footprint, including its manufacturing supply chain, and throughout its entire product life cycle (its Scope 1, 2, and 3 emissions) by 2030. This means that by 2030, every Apple device sold will have net-zero climate impact. It is tapping its suppliers to help make it happen. And in turn, its suppliers need strong climate disclosure to be able to rise to the challenge.

Apple Inc.'s 2020 Environmental Progress Report includes a detailed roadmap to current and future emissions reduction, including energy efficiency upgrades to buildings, protecting forest land and restoring mangroves that act as carbon sinks, incentivizing low-carbon product design, and increasing recovery and re-use of key materials like rare earth magnets, tungsten, and steel. In fiscal year 2019, Apple reduced its comprehensive carbon footprint for the fourth consecutive year—down 35 percent compared to 2015, even as net revenue increased by 11 percent over that same period, according to its 2020 Climate Change filing on the CDP disclosure platform.

After studying its emissions profile, Apple zeroed in on the fact that electricity used for manufacturing accounted for three-quarters of its overall carbon footprint. To combat this, Apple launched its Supplier Clean Energy initiative, urging all its suppliers to transition to 100 percent renewable electricity sources used in making Apple products, including for material extraction, component manufacturing, and product assembly, by 2030. Apple shares best practices with its suppliers through training; engages with governments to advocate for new renewable capacity on the grid; and created the China Clean Energy Fund, through which Apple and its suppliers together have invested in over 1 gigawatt of new clean energy projects, roughly equivalent to two average-sized nuclear reactors.<sup>34</sup>



### Temasek: Driving Change Through Sustainable Investing

Temasek Holdings Pte. Ltd., the Singapore government-owned investment company, with a portfolio valued at S\$306 billion (\$230 billion), is an example of how capital allocators like itself can drive change by integrating climate considerations into investment decision-making. Founded in 1974, Temasek considers sustainability to be an intrinsic part of its DNA. To formalize this practice in its investments, in 2018 Temasek created an ESG integration framework, which considers sustainability issues alongside commercial considerations when evaluating a new investment's long-term return potential and brand halo.<sup>62</sup> Temasek discloses its portfolio emissions, has a target for net zero, and, like Apple, is using its influence over its portfolio companies to ask them to do the same.

Temasek believes it has a critical role to play in the successful transition to a net-zero carbon economy by 2050. In September 2020, it became a supporter of the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD). As an investor, Temasek engages in sustainability dialogs with its portfolio companies, urging them to "identify and share consistent, comparable and forward-looking information on risks and

opportunities they face as a result of climate change." On its website, Temasek explains: "This information is essential for us, as we seek to support sustainable businesses with the aim of building an economy that is resilient to climate-related uncertainties."<sup>63</sup>

Temasek discloses its own portfolio's emissions, which are roughly 29 million tons of CO<sub>2</sub> annually. Even as the portfolio itself is growing, management has set a goal of halving emissions from its 2010 level by 2030. Using its evolving ESG integration framework, Temasek evaluates the climate impact of all potential new investments. This involves measuring its carbon footprint (GHG emissions including Scopes 1, 2, and 3) and how its emissions intensity compares to peers; its resilience to climate change from the standpoint of physical and transition risk; and making sure the core business contributes technological innovation and meets customer needs in a decarbonizing world.<sup>64</sup>

By 2050, the Temasek portfolio will deliver net-zero carbon emissions. This measure-to-manage approach is one that must be taken up by banks and other capital allocators if we are to reach the goal of the Paris Agreement.<sup>65</sup>

So far, the Supplier Clean Energy Program has garnered 7.8 gigawatts of clean energy commitments, which equates to removing more than 3 million cars from the road. In a testament to Apple Inc.'s ability as a large OEM to drive compliance, 71 percent of suppliers, including **Taiwan Semiconductor Manufacturing Co. (TSMC)** and **Foxconn**, have signed on.<sup>35</sup> TSMC, the world's largest semiconductor foundry, in turn, has signed the largest-ever power-purchase agreement for renewable energy on record, with **Ørsted**, the Danish offshore wind developer.<sup>36</sup> Through it, TSMC will take the full production from Ørsted's 920 megawatt Taiwan offshore wind farm, Greater Changhua 2b and 4. As TSMC is the largest power consumer in Taiwan, this agreement with Ørsted also helps Taiwan meet its own goal to decarbonize its energy system. It bears emphasizing that the case for decarbonization is made easier by the fact that renewable energy is already cheaper than more fossil-intensive forms in many parts of Asia.

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### More Work to Do for Banks and Asset Managers

Much as decarbonization is aided by better disclosure, there are huge implementation gaps in the banking and financial services industry. For example, the well-regarded Banking on Climate Change 2020 report by a group of watchdog NGOs including Rainforest Action Network, BankTrack, and the Sierra Club, finds that banks have together funneled \$2.7 trillion into financing fossil fuels in the four years after the Paris Agreement was adopted (2016–2019). Banks from the U.S., China, and Japan top this list of those lending to carbon-intensive industries, with China Construction Bank and Bank of China notable for funding coal mining.<sup>37</sup>

Furthermore, banks and insurance companies have failed to agree on a methodology to disclose a detailed Scope 3, i.e. the emissions implications of their lending activities. Banks' internal operations are rarely carbon-intensive, with the exception of their data centers. Their lending to carbon-intensive industries – data that would be captured in a detailed Scope 3 emissions tally – is.

Asset managers are likely to be pressured to take more concrete action as fiduciaries to vote their proxies in favor of decarbonization measures. **BlackRock Inc.** and **Vanguard Group**, which together control a combined \$14 trillion of assets, ranking them among the most influential investment fiduciaries, were nailed by responsible investment campaign group ShareAction for being among the least supportive of shareholder climate and social resolutions.<sup>38</sup> BlackRock Chairman and CEO Larry Fink has been vocal in his commitment to stopping climate change, and Blackrock signed on to Climate Action 100+, an investor-led initiative signed by companies managing \$52 trillion in assets, which is dedicated to ensuring that the world's largest corporate greenhouse gas emitters take necessary action on climate change.<sup>39</sup> Looking at just “climate critical” shareholder resolutions, Majority Action, a non-profit focused on holding corporations accountable for their investments, found that BlackRock supported just three out of 36 proposals when voting its proxies. Vanguard only voted in favor of four.<sup>40</sup>

## Part Three: Disentangling the Standards

The business case for GHG measurement and management is compelling. But to gain the full benefits of disclosure, companies must report emissions according to a set of commonly accepted standards comparable within and across industries. Therein lies the problem: There has been a profusion of reporting standards in recent years, and companies often struggle with how best to show stakeholders that they are decarbonizing and managing climate risk. Fortunately, reporting bodies and other stakeholders are working to align the standards, a process that is expected to show results in the next 18 months to two years. This section attempts to untangle the maze of reporting standards and illustrate the work that is underway to allow for comparability and perhaps eventual convergence (see Figure 4).

The Amsterdam-headquartered **Global Reporting Initiative (GRI)** is among the oldest and most widely used sustainability reporting frameworks.<sup>41</sup> Established by non-profit Ceres and the UN Environment Program in 1997 following the 1989 Exxon Valdez oil spill, the now-independent reporting body focuses on

FIGURE 4

## Sustainability reporting standards



GREENHOUSE  
GAS PROTOCOL



Standard	Global Reporting Initiative (GRI)	Greenhouse Gas (GHG) Protocol	Carbon Disclosure Project (CDP)	Sustainable Development Goals (SDG)
Who	Independent standard-setting organization headquartered in Amsterdam	Partnership between the World Resources Institute and the World Business Council for Sustainable Development	International sustainability non-profit based in Germany, the U.K., and the U.S.; funded by government, philanthropy, membership fees, sponsorships, and data licensing	United Nations
Focus	Triple bottom line: people, profit, planet	Measuring GHG emissions from private and public-sector operations, value chains, and mitigation actions	Climate	Poverty, inequality, climate change, environment, peace, justice
Content	Provides detailed reporting guidance for 33 sustainability topics and their economic, social and environmental impacts	Aims to provide a standardized methodology for GHG accounting	Scores companies, cities, states, and regions on their impact on climate change, water security, and forests	Global goals to advance the UN agenda of achieving a prosperous, inclusive and sustainable society for all by 2030
Advantages	Flexible; useful for those seeking to develop a separate sustainability report; good for those just starting out given its very explicit guidelines; measures a company's impact and long-term progress toward sustainable development; measures progress against Paris Agreement	One of the most widely used international accounting tools for measuring greenhouse gas emissions	Measures progress against Paris Agreement; allows for the aggregation of GHG emissions data across sectors; survey format allows for regular changes in the questionnaire and innovation in corporate disclosure requirements; has a "lite" version for first-time responders to gauge performance without public disclosure	The issues raised by the SDGs are germane to governments and regulators; companies can select those that are most relevant to their business strategy
Disadvantages	The large number of indicators and the value-chain assessment requirement can be burdensome for some companies and overly detailed for investors	Largely an accounting tool, rather than a full reporting framework	CDP's survey format may be a downside for companies looking to narrativize their story in report format, or those who do not score well on CDP's letter-grade assessment	The SDGs were designed for countries; the relevance of each SDG to corporations may not be explicitly outlined
Alignment with Other Standards	Aligned with many aspects of TCFD, but has a broader scope	TCFD requires GHG protocol methodology	Aligned with TCFD.	Can be included in GRI reports; CDP helps track certain SDGs
Stakeholder Pressure	Sweden mandates GRI reporting; the Malaysia and Singapore stock exchanges recommend using GRI reporting to fulfill disclosure requirements; the Bombay Stock Exchange includes GRI as one of the frameworks companies can use to fulfill disclosure requirements; the Philippine Stock Exchange references GRI in its "comply or explain" ESG reporting guidelines	Used by the European Union's Emissions Trading Scheme	The Bombay Stock Exchange includes CDP as one of the frameworks companies can use to fulfill disclosure requirements	Not mandated

FIGURE 4 (continued)

## Sustainability reporting standards



Standard	Sustainability Accounting Standards Board (SASB)	Task Force on Climate-Related Financial Disclosures	Climate Disclosure Standards Board (CDSB)	IIRC
Who	Independent standard-setting organization	Industry-led task force established by the G20's Financial Stability Board	A consortium of environmental and business NGOs	Global coalition of regulators, investors, companies, standard setters, the accounting profession, and NGOs
Focus	ESG issues that are material to a given industry	Financial risks and opportunities from climate change in the areas of governance, strategy, risk management, and metrics and targets	To create the enabling conditions for natural capital and climate change disclosures to be integrated into the mainstream report	Value creation over time and capital inputs and outputs: financial, manufactured, intellectual, human, social and relationship, and natural
Content	Indicators for financially material sustainability topics for specific industries	Disclosure recommendations in 11 areas to provide report users with information needed to assess and price climate-related risks; also calls for the disclosure of some information in annual reports	Guidance on reporting on climate and sustainability issues via a mainstream annual report	Guidance on producing an investor-focused report that analyzes a company's performance through the lens of the "six capitals"
Advantages	Provides easy comparability for investors; useful for listed companies; focuses on sustainability standards that are most relevant to a particular industry and a focus on forward-looking risks	Many existing frameworks and standards are aligning with TCFD; closely related to disclosure requirements for some of the major stock exchanges, including in Singapore and Japan; becoming a preferred framework for institutional investors globally and increasingly receiving endorsement from governments and regulators; provides framework for companies to think about climate risk	Aims to help companies understand how to prepare integrated reports; committed to alignment with other standards	In-depth; helps to convey the message of enterprise value creation
Disadvantages	Requires broad adoption by companies in order to provide comparability for investors; very U.S.-oriented; may not work well for large, diversified conglomerates	More complex than some other frameworks; some users find it difficult to implement climate scenario analysis, especially in some of the most at-risk countries in Asia	An overarching umbrella group comprised of other standards bodies; it is utilized by few major Asian companies as compared to other standards	Does not provide standardized indicators
Alignment with Other Standards	Aligned with TCFD	Fully aligned with SASB and CDSB and partially aligned with IIRC	Aligned with TCFD	Aligned with many but not all aspects of TCFD
Stakeholder Pressure	154 investors in 19 countries with \$55 trillion in assets under management are members of the SASB Alliance or the SASB Member Advisory Group. The Bombay Stock Exchange includes SASB as one of the frameworks companies can use to fulfill disclosure requirements; the Philippine Stock Exchange references SASB in its "comply or explain" ESG reporting guidelines	The U.K. will make TCFD disclosures mandatory by 2025. Governments and regulators in Australia, Canada, Hong Kong, Japan, Malaysia, the Philippines, Singapore, South Africa, and the EU have expressed support for TCFD or integrated it into their policy frameworks	The CDSB's framework can be used for TCFD implementation under the U.K.'s forthcoming mandate for TCFD reporting by 2025	The Bombay Stock Exchange includes IIRC as one of the frameworks companies can use to fulfill disclosure requirements; the Philippine Stock Exchange references IIRC in its "comply or explain" ESG reporting guidelines



**To reach net zero, the world needs to see emissions decline by over 8 percent – roughly the amount they fell in 2020 – each year from now until 2050.**

companies' impact on people and the planet and includes a broad range of ESG metrics, from anti-corruption to water management. Modeled on the generally accepted account principles (GAAP), the framework has become increasingly popular with large Chinese companies, particularly since releasing a Chinese version of the standards in 2018.<sup>42</sup>

The GRI report is a way to track overall CSR progress, including commitments to other sustainability reporting frameworks. For example, **Delta Electronics, Inc.** notes in its 2018 GRI report that its carbon emissions reduction goal was certified by the **Science-Based Targets initiative** in 2017. (Targets are considered science-based if they align with the goals of the Paris Agreement.)<sup>43</sup> It became a supporter of the **Task Force on Climate Related Financial Disclosures (TCFD)** in 2018. GRI reporting is a way for companies to showcase how their products and services contribute to the

**UN Sustainable Development Goals (SDGs)**. The Philippines' **Ayala Corp.**, for example, emphasizes its contribution to national development through the provision of services such as public utilities and healthcare, using GRI reporting. Singapore's **City Developments Ltd.**, uses GRI to show how its mission of "building quality, green, and innovative spaces" directly corresponds to the SDG of building sustainable cities and communities.<sup>44</sup>

In 2000, the Carbon Disclosure Project (CDP) introduced a corporate questionnaire on climate and environmental impacts. Investors and other stakeholders can compare companies across industries, evaluating their responses, along with each company's report card, on the CDP website.<sup>45</sup> The questionnaire, which also rates cities and states, serves as a centralized data collection platform for monitoring progress on emissions reductions across industries and geographies. At the company level, the CDP questionnaire aligns with TCFD reporting, discussed below.

### **The Trend Toward Integrated Reporting**

At its inception, sustainability reporting was perceived as having different goals and a different audience from financial reporting. It was often siloed as "non-financial" reporting. But stakeholders now see that sustainability and profits are intertwined. Climate change is impacting companies' bottom lines. As the benefits of sustainability reporting gained traction, so did the call for integrated financial and non-financial reporting.

At the 2007 World Economic Forum in Davos, a consortium of environmental and business NGOs formed the **Climate Disclosure Standards Board (CDSB)**. CDSB offers guidelines on how companies should report their impact on natural capital and climate change within the context of a mainstream corporate report, in a so-called integrated report.

Integrated reporting gained further momentum in 2009, when the U.K.'s Prince Charles called a meeting with Mervyn King, chairman of GRI and a former South African Supreme Court judge. King, who also chaired the UN Committee on Governance and Oversight, was leading a committee that would create his young nation's first-ever corporate governance code.<sup>46</sup> King argued that the drivers of value creation included financial capital, natural capital, and human capital, and that they were interconnected and interdependent. He argued that business models needed to be rethought to reflect the importance of natural capital and social capital (stakeholder relationships), in particular, to value creation.

Prince Charles was sympathetic to the argument, as he worried that the Royal Family's investee companies were not doing enough to demonstrate their impact

on society and on the environment. The meeting, attended by regulators, asset managers, and the "big four" accounting firms, led to the creation of the non-profit **International Integrated Reporting Council (IIRC)** in 2010. Corporate sustainability professionals laud IIRC's ethos of value creation. But IIRC does not offer standardized indicators, hindering comparability.<sup>47</sup>

The California-based **Sustainability Accounts Standards Board (SASB)**, established in 2011, created industry-specific standards for integrated reporting. SASB's strength is its focus on "materiality," or industry-specific environmental, social, and governance issues that have a material impact on profits.<sup>48</sup> Some multi-industry conglomerates struggle to fit their businesses into the SASB framework,

and non-U.S.-listed companies may find the framework, which closely tracks the U.S. Financial Standards Accounting Board, less appropriate.

Integrated reporting elevated the importance of corporate sustainability reporting to the level of financial reporting. Still lacking, however, were standards that could give visibility into a company's risks and opportunities in the face of climate change.

### **The Creation of the Task Force on Climate-Related Financial Disclosures**

In 2015, Mark Carney, then-Governor of the Bank of England and Chairman of the G20 Financial Stability Board delivered a (previously referenced) landmark dinner speech to Lloyd's of London, titled "Breaking the tragedy of the horizon – climate change and financial stability." Carney warned that climate change posed a threat to financial stability, using the reinsurance industry as an example. He used the



A kangaroo flees a bush fire in New South Wales, Australia in 2019, which was Australia's hottest and driest year ever.

PHOTO: MATTHEW ABBOTT / PANOS PICTURES

phrase “tragedy of the horizon” to describe the paradoxical tendency for business leaders to ignore the threat of climate change because its effects were thought to be felt “beyond the traditional horizon of most actors – imposing a cost on future generations that the current generation has no direct incentive to fix.”<sup>49</sup>

Carney outlined three key risks stemming from climate change. Though he spoke of them in terms of the reinsurance industry, they are applicable to any industry. **Physical risk** describes the impact on insurance liabilities and financial assets that arise from climate and weather events, like rising sea levels. **Liability risk** refers to the impacts that could arise if parties who have suffered loss or damage from the effects of climate change seek compensation from those they hold responsible. Such claims, Carney said, “could come decades in the future, but have the potential to hit carbon extractors and emitters – and, if they have liability cover, their insurers – the hardest.” Finally, he spoke of **transition risk**. These are the financial risks which could result from the process of adjustment toward a lower-carbon economy. Changes in policy, technology, and physical risks could prompt a reassessment of the value of a large range of assets as costs and opportunities become apparent, he told the executives.<sup>50</sup>

Making a point that at the time was quite new, Carney argued that “a carbon budget – like the one produced by the IPCC – is hugely valuable, but can only really be brought to life by disclosure, giving policymakers the context they need to make choices, and firms and investors the ability to anticipate and respond to those choices.”\* This is the idea behind the creation of the Task Force on Climate-Related Financial Disclosures (TCFD), introduced by Carney and former New York City Mayor Michael Bloomberg in December 2015. Within five years, 1,500 companies had signed on, one-third of them from the Asia-Pacific region. Japan has been a leading adopter; its companies make up around 300 of the 500 TCFD supporters in the Asia-Pacific region (see box).<sup>51</sup>

Chinese firms are not yet routinely publishing climate disclosures. The TCFD website lists only nine TCFD supporters in China, and a recent CDP report finds that Chinese financial institutions lag their global peers on TCFD alignment. (Chinese banks, along with U.S. banks, are among the top financiers of fossil fuel projects.)<sup>52</sup> The nation’s recently tightened NDC is driving change, and China’s 14<sup>th</sup> Five-Year Plan is expected to mandate further alignment of the nation’s state-owned enterprises with the country’s climate goals. In a move that foreshadows change, some of China’s largest state-owned energy companies, including **China National Offshore Oil Corp.** and **State Power Investment Corp.** have begun to disclose their contribution to China’s goal of net zero by 2060.<sup>53</sup>

TCFD was designed to be compatible with and complementary to other standards, including with CDP, CDSB, and SASB, and with a significant portion of the IIRC and GRI metrics, although the latter are broader and include more social and governance metrics.<sup>54</sup>

TCFD is not without its challenges. The kind of sophisticated climate scenario analysis it calls for can be difficult. This is particularly so in Asia, where the highest-risk countries often fail to collect the necessary data for companies to use

\* The world is on track to exhaust its energy-related carbon budget for 1.5 degrees of warming in less than a decade, according to IRENA’s Global Energy Transformation: A Roadmap to 2050

### **Building Momentum for TCFD Disclosures: The Japan Experience**

Of the some 1,500 TCFD supporters worldwide, around 300 are Japanese companies, making Japan a world leader in support for TCFD. Why has Japan been so successful?

Japan's TCFD Consortium was key in mobilizing corporate support for the framework. The group was led by industry, notably Japan's influential Keidanren, or Japanese Business Federation, and its chairman Hiroaki Nakanishi, a strong industry voice for climate issues. Government agencies lent their support as observers and sources of technical assistance, including the powerful Ministry of Economy, Trade, and Industry (METI). And Japan's Government Pension Investment Fund pushed for the broad adoption of ESG standards under the leadership of former executive managing director Hiro Mizuno.<sup>66</sup>

Recognizing the complexity of the TCFD requirements, participants in the TCFD Consortium provided various technical support and guidance, as well as opportunities for companies to learn about the kinds of information useful to investors. METI published a detailed, 101-page guidebook on implementing TCFD, with specific advice

for five energy-intensive sectors—autos, chemicals, iron and steel, electronics, and energy.<sup>67</sup> METI and Japan's Financial Services Agency (JFSA) hosted a series of conferences on climate-related financial disclosure and scenario analysis, and JFSA and the Japan Exchange Group held a company-investor dialogue on TCFD.<sup>68</sup>

Companies that have committed to the TCFD recommendations may opt to become members of the TCFD consortium and are recognized on the consortium's website.<sup>69</sup>

Perhaps most importantly, the consortium sent a strong signal from the government about the importance of climate disclosures.<sup>70</sup> The support from the highest levels of government and industry could portend increasing regulatory requirements, making early adoption a smart move for businesses.

Japan's experience with TCFD may well serve as a guide for industry, government, and regulators elsewhere seeking to bolster sustainability reporting in their own countries.

in order to analyze how climate will impact their businesses.<sup>55</sup> Conducting meaningful estimates of the physical risks of climate change requires expertise in the complex discipline of climate science, and not all companies have such resources.

### **Regulatory Pressure is Building for TCFD Adoption**

There is increasing regulatory pressure to adopt TCFD, and sustainability reporting more broadly. New Zealand recently announced it would make TCFD disclosures mandatory by 2023, pending parliamentary approval, and the U.K. will do so by 2025.<sup>56</sup> In Asia, economies that have embraced TCFD, such as Japan, could be on a similar path; the Japanese government endorsed the framework in 2019.<sup>57</sup> In 2020, the monetary authorities of both Singapore and Hong Kong asked banks to use TCFD as a reference in disclosing climate information.<sup>58</sup>

The profusion of reporting standards remains a challenge, but there has been progress. The “big five” reporting bodies—CDP, CDSB, GRI, IIRC, and SASB—announced in September 2020 that they would work toward developing a comprehensive sustainability reporting system.<sup>59</sup> A month later, SASB and IIRC



announced that they would merge to become the Value Reporting Foundation.<sup>60</sup> Accounting standards body the **International Financial Reporting Standards Foundation** is assessing whether to develop a global sustainability reporting framework.<sup>61</sup> And the World Economic Forum (WEF) this year released a set of “Stakeholder Capitalism Metrics” that show how different reporting frameworks can be used interchangeably.

Through these processes, the standard setters say their frameworks will become fully interoperable, reducing redundancy of effort. Efforts like that of the WEF offer a guide to doing so by showing where the metrics match up across the different frameworks. But the reporting bodies caution that there may never be one single standard: Different frameworks have different goals and cater to different audiences.

For businesses that are new to corporate disclosures, the process will look less intimidating. That should leave more time to focus on decarbonizing and streamlining business processes.

## Conclusion

With the earth facing even greater climate consequences the longer we take to bend the emissions curve down, the need for action is clear. The enormity of the task of reaching net zero as a planet is on the one hand daunting, and on the other, it provides one of the greatest business opportunities of our time.

To unleash the dynamism of the private sector, governments must set clear goals. Markets are not the answer to everything, but they will play a critical role in pricing emissions. Taxes on carbon emissions have been set far below the estimated \$70 per ton needed to get to net zero. Likewise, it is imperative the market for carbon offsets be developed into one much larger and deeper to help achieve net-zero global emission targets.

Corporate environmental disclosures will help capital flow to the highest return and most sustainable investments, and spur innovation and best-practices

sharing. They are a useful addition to the tools business leaders will need in an increasingly precarious future, both to chart a course that will help their companies, and to create positive and enduring change for life on earth.



Protesters in Germany call on business to address the climate crisis.

PHOTO: MARKUS SPISKE / UNSPLASH

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## Resources

### **Center for Sustainable Business: Return on Sustainability Investment (ROSI)**

<https://www.stern.nyu.edu/experience-stern/about/departments-centers-initiatives/centers-of-research/center-sustainable-business/research/return-sustainability-investment-rosi>

### **Climate Disclosure Standards Board application guidance for climate-related disclosures**

<https://www.cdsb.net/climateguidance>

### **RE100 Corporate Buyer's Consortium for Renewable Energy**

<https://www.there100.org/sites/re100/files/2020-11/RE100percent20Joiningpercent20Criteria.pdf>

### **Science-Based Targets Initiative: Ambitious Corporate Climate Action**

<https://sciencebasedtargets.org/>

### **World Economic Forum's report: Measuring Stakeholder Capitalism: Towards Common Metrics and Consistent Reporting of Sustainable Value Creation**

<https://www.weforum.org/reports/measuring-stakeholder-capitalism-towards-common-metrics-and-consistent-reporting-of-sustainable-value-creation>

### **TCFD Publications: Recommendations, Implementation Guide, and 2020 Status Report**

<https://www.fsb-tcfd.org/publications/>

### **TCFD Case Studies**

<https://www.tcfddhub.org/case-study/>

### **Ministry of Trade, Economy, and Industry of Japan's Guidance on Climate-Related Financial Disclosures**

[https://www.meti.go.jp/english/press/2018/pdf/1225\\_006b.pdf](https://www.meti.go.jp/english/press/2018/pdf/1225_006b.pdf)

### **CDP and SASB TCFD Implementation Guide**

[https://www.cdsb.net/sites/default/files/sasb\\_cdsb-tcfd-implementation-guide-a4-size-cdsb.pdf](https://www.cdsb.net/sites/default/files/sasb_cdsb-tcfd-implementation-guide-a4-size-cdsb.pdf)

### **Japan TCFD Consortium Website**

<https://tcfd-consortium.jp/en>

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**Ministry of the Environment (Japan) Practical Guide for  
Scenario Analysis in Line with TCFD Recommendations**

<https://www.env.go.jp/en/headline/2396.html>

**Findings of the Corporate Reporting Dialogue's Better Alignment  
Project, exploring how to more effectively support organizations  
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<https://corporatereportingdialogue.com/climatereport2019/introduction.html>

**World Economic Forum, How to Set Up Effective Climate Governance  
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**Bursa Malaysia Sustainability Reporting Guide**

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**Hong Kong Monetary Authority White Paper  
on Green and Sustainable Banking**

<https://www.hkma.gov.hk/media/eng/doc/key-information/guidelines-and-circular/2020/20200630e1a1.pdf>

**Monetary Authority of Singapore Proposed Guidelines  
on Environmental Risk Management (Banks)**

<https://www.mas.gov.sg/-/media/MAS/News-and-Publications/Consultation-Papers/2020/Consultation-Paper-on-Proposed-Guidelines-on-Environmental-Risk-Management-for-Banks.pdf>

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