

HSBC Holdings plc

Task Force on Climate-related Financial Disclosures ('TCFD') Update 2020

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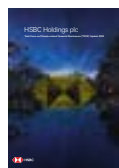
“As a bank, an investor and an employer, we recognise our economic, environmental and social responsibility to help our clients on the road to a net zero future. Our net zero climate ambition was an important step in this regard – but we now need to support it with increased, robust disclosures, risk management and metrics to track and communicate our progress, aligned to the FSB’s TCFD recommendations. Accountability here is key, so we will continue to engage and work closely with our customers, investors, regulators and the wider industry to improve our collective climate reporting and help smooth the transition to a low-carbon economy.”

Noel Quinn

Group Chief Executive

A reminder

The currency we report in is US dollars.



Cover image: Around the world the lights of fireflies – often known as glow worms or lightning bugs – are fading as their survival comes under increasing threat from climate change, pesticides and light pollution. Part of the beetle family Lampyridae, fireflies are critical to the diverse ecosystems they inhabit. But rising sea levels and climate temperature, and more frequent extreme weather events are contributing to the destruction of their long-established habitats and food supplies, leaving many of the 2,000 firefly species at risk of extinction.

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Our climate risk and reporting strategy

Our climate ambition

We recognise the threat climate change poses to global economic, social and geopolitical stability, and that every organisation must play its part to help secure the future of our planet.

To avoid the worst impacts of climate change, global greenhouse emissions need to be cut by 45% by 2030 and achieve net zero by 2050, according to The United Nations' Intergovernmental Panel on Climate Change.

Given the scale of the challenge, the most significant contribution we can make is supporting our customers on their journey to a low-carbon economy by financing the transformation of businesses and infrastructure.

In October 2020, we announced a new climate ambition to become net zero in our financed emissions by 2050 or sooner. We aim to support our customers by setting a new target to mobilise between \$750bn and \$1tn of sustainable finance and investment by 2030, underpinned by strong governance, risk management and metrics to measure our progress.

The Task Force on Climate-related Financial Disclosures ('TCFD'), established by the Financial Stability Board ('FSB') in response to the Paris Agreement, encourages consistent, reliable and clear measurement and reporting of climate-related financial risks. Its recommendations provide an important framework for understanding and analysing

how climate change impacts our customers, our own operations and our strategy.

We recognise there is much work to be done and we are committed to making regular, transparent TCFD disclosures to communicate our progress as we develop our climate risk management capabilities and build on our 2020 climate scenario analysis pilot. We will encourage our customers, suppliers and the industry to do the same.

This *TCFD Update 2020* outlines our response to the recommendations so far, and represents our fourth TCFD disclosure.

For further details of our climate ambition, see pages 45 to 50 of the ESG review within our *Annual Report and Accounts 2020*.

Key climate risks

As we embark on integrating climate into our Group-wide strategy, it is vital that we understand the impact of climate change and policy measures being introduced to support the transition to a low-carbon economy.

The two main channels of climate risk are:

- Physical risk arising from the increased frequency and severity of weather events, such as hurricanes and floods, or chronic shifts in weather patterns.
- Transition risk arising from the process of moving to a low-carbon economy, including changes in policy, technology and consumer behaviour.

Both could potentially have long and short term financial and non-financial consequences for our business and our customers, particularly in carbon-intensive sectors. Financial impacts may materialise through higher risk-weighted assets over the longer term, greater transactional losses and/or increased capital requirements. Non-financial impacts could materialise if our own assets or operations are affected by extreme weather or chronic changes in weather events patterns.

We have developed plans to incorporate climate risk into our Group-wide risk management framework for the five principle

risk types most likely to be impacted by climate risk. We have identified these as retail credit risk, wholesale credit risk, resilience risk, regulatory compliance risk and reputational risk.

In the table below, we set out examples of events that could cause financial losses or impact our strategy, and the principal risk types most likely to be materially impacted.

Climate risk impact	Principal risk type impacted	Examples of potential impact
Extreme weather events or chronic changes in weather patterns impact our assets, operations or our customers' assets	Retail credit risk Wholesale credit risk Resilience risk	<ul style="list-style-type: none"> – The cost of flood damage to a customer's home leaves them unable to repay their mortgage – Hurricane damage to a customer's warehouse halts manufacturing and leaves them unable to repay their loan – One of our data centres is flooded and we are unable to service customers
Our business models or our customers' business models fail to align to a low-carbon economy	Wholesale credit risk Reputational risk	<ul style="list-style-type: none"> – Failure to align to new regulations leads to a loss of business and customers are unable to repay their loans – Our actions lead to negative external perceptions of our organisation
We fail to effectively design and market climate-related products across all global businesses or respond to regulatory change	Reputational risk Regulatory compliance risk	<ul style="list-style-type: none"> – We fail to respond to customer demand or a regulatory change, leading to adverse stakeholder reaction

TCFD recommendations and our progress

Here we summarise the key areas of progress we have made over the past 11 months in response to the TCFD recommendations.

TCFD recommendation	Our progress in 2020
Governance	
Describe the Board's oversight of climate-related risks and opportunities	<ul style="list-style-type: none"> – The Board is responsible for our climate ambition and strategy and receives climate-focused updates twice a year. – The Group Risk Committee provides oversight of climate risks and opportunities through enterprise risk reports, deep dives and updates.
Describe management's role in assessing and managing climate-related risks and opportunities	<ul style="list-style-type: none"> – The Group Executive Committee manages our climate ambition with management responsibilities integrated into the relevant business and functional areas. <p>▶ Read more on our governance approach on page 5.</p>
Strategy	
Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term	<ul style="list-style-type: none"> – We have identified our key climate risks over the short, medium and long term, and identified the principal risk types as retail credit risk, wholesale credit risk, resilience risk, reputational risk and regulatory compliance risk.¹ <p>▶ Read more on our climate risks and risk types on pages 3, 8 and 22.</p>
Describe the impact of climate risks and opportunities on the organisation's businesses strategy and planning	<ul style="list-style-type: none"> – We are prioritising climate-related financing and investment, and in October announced our new climate ambition to become a net zero bank, support customers to thrive in the transition to a low-carbon economy, and to unlock next generation climate solutions. <p>▶ Read more on our climate ambition on page 6, and our ESG review pages 45 to 50 within our <i>Annual Report and Accounts 2020</i>.</p>
Describe the resilience of the organisation's strategy taking into consideration different climate-related scenarios, including a 2°C or lower scenario	<ul style="list-style-type: none"> – We have carried out various exercises to analyse our resilience, including: <ul style="list-style-type: none"> – using the Paris Agreement Capital Transition Assessment ('PACTA') tool to assess our customers' impact on climate and help develop clear pathways to net zero financed emissions. We have run a pilot on our automotive loan book; and – running a stress testing pilot to assess the impact of different climate scenarios on our customers and our own infrastructure. <p>▶ Read more on our scenario analysis and PACTA pilots on pages 13 to 21.</p>
Risk management	
Describe the organisation's processes for identifying and assessing climate-related risks	<ul style="list-style-type: none"> – In response to identifying our key climate risks, we have reviewed our risk appetite and defined our approach to managing these risks. – We are reviewing our policies for managing a number of principal risk types, initially resilience risk, sustainability risk and regulatory compliance risk. <p>▶ Read more on our climate risk management approach, on pages 22 to 24.</p>
Describe the organisation's processes for managing climate-related risks	<ul style="list-style-type: none"> – We manage our asset management customers' climate risk in line with our fiduciary responsibilities to protect and grow the assets. <p>▶ Read more on our asset management approach to climate risk in our policies and procedures on www.assetmanagement.hsbc.co.uk/en/institutional-investor/about-us/responsible-investing/policies.</p>
Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation's overall risk management	<ul style="list-style-type: none"> – The Trustee of our UK Pension Scheme manages climate risk in line with its fiduciary responsibilities towards members.² – We have established a dedicated climate risk programme to accelerate the integration of climate risk into our Group-wide risk management framework, which includes identification and assessment, management, and aggregation and reporting.
Metrics and targets	
Disclose the metrics used by the organisation to assess climate-related risk and opportunities in line with its strategy and risk management process	<ul style="list-style-type: none"> – We use several metrics to measure and track our progress against key targets, and we will be refining our approach to financed emissions (scope 3), including carbon intensity, for specific portfolios. – We set a new sustainable finance and investment target of \$750bn to \$1tn by 2030, after reaching \$93.0bn of our \$100bn by 2025 target. The \$40.6bn achieved in 2020 counts towards both the existing 2025 target and the new target.
Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets	<ul style="list-style-type: none"> – We continue to disclose our wholesale loan exposure to the six high transition risk sectors, and use our corporate customer transition risk questionnaire to help inform our risk management. – We include an environment measure in the scorecards of our executive Directors and Group Managing Directors. The long-term incentive scorecards of our executive Directors (three-year performance period to the end of December 2023) have a 25% weighting for targets aligned to our climate ambitions.
Disclose scope 1, scope 2 and, if appropriate, scope 3 greenhouse gas emissions and the related risks	<ul style="list-style-type: none"> – We continue to disclose business travel, energy-related emissions and renewable energy use, and aim to disclose further details on our own scope 3 emissions in future reporting. <p>▶ Read more on our climate metrics and targets on pages 25 to 26, and our ESG review pages 45 to 50 within our <i>Annual Report and Accounts 2020</i>.</p>

¹ Short term: less than one year; medium term: period to 2030; long term: period to 2050.

² For further details of our UK Pension Scheme's latest TCFD statement, see <https://futurefocus.staff.hsbc.co.uk/-/media/project/futurefocus/information-centre/pensioner/other-information/2020-tcf-statement.pdf>

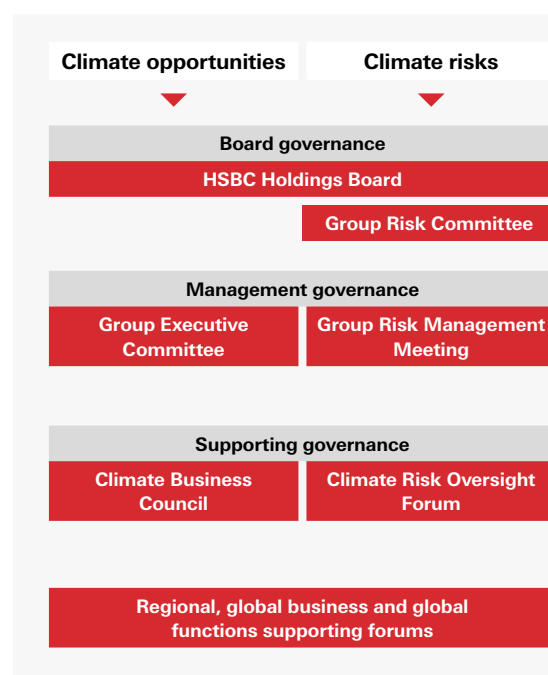
Governance

Board oversight

The Board sets our strategic direction, including having responsibility for our climate strategy. We realise that our climate and sustainable finance ambitions will only be successful if they are integrated into our governance structure. As a result, our Group Chief Executive is the main sponsor of our climate ambition and we provide regular updates on our climate and sustainable finance initiatives to the Board and the Group Executive Committee.

The Group Chief Risk Officer and the chief risk officers of our Prudential Regulation Authority-regulated businesses are the senior managers responsible for climate financial risks under the UK Senior Managers Regime. The chief risk officers attend Board meetings and where appropriate provide regular verbal and written updates to the Board and Group Executive Committee ('GEC').

The Group Risk Committee ('GRC') provides oversight of climate risks and opportunities through a wide range of high level enterprise risk reports, deep dives and updates. For example in 2020, the GRC and the HSBC UK Risk Committee received an update on the thematic review of climate risk management and reviewed the Group's climate risk appetite statement and risk management approach.



Management's role

The GEC and regional and global business executive committees manage our climate ambitions and are advised by our Climate Business Council. An information dashboard is provided to the GEC every quarter to seek to improve our awareness and management of key climate risks. Management responsibilities for climate risk are integrated into the relevant business and functional areas.

Climate risk receives risk management oversight at the Risk Management Meeting of the Group Executive Committee ('GRMM') through the 'Top and emerging risk' report. In 2020, the Group Risk Executive Committee also reviewed an update on the financial and non-financial risks from climate change. A dedicated Climate Risk Oversight Forum ('CROF') is responsible for shaping and overseeing HSBC's approach to climate risk.

This forum also provides updates to the GRC and GRMM on climate risk matters.

All these forums interact with each other on items that require broader co-ordination, discussion, business or risk engagement.

Roles and responsibilities for managing climate risk are aligned to HSBC's risk management framework and the three lines of defence model to ensure robust oversight and challenge of our capabilities.

In 2020, the Climate Business Council shaped the Group's sustainability strategy and climate ambition that was subsequently approved by the Board in October. The CROF defined the Group's climate risk appetite and risk management approach, which was endorsed by the GRMM and GRC in November and will

be considered by the Board in early 2021. All Group risk forums have received updates on the Group's climate stress testing and scenario approach, and the ESG Steering Committee and the Disclosure Committee have reviewed and approved climate-related disclosures.

In addition, climate risk updates were provided to our principal subsidiaries in the UK, Asia, Singapore and Mexico, as well as to HSBC Insurance and our digital business services and compliance functions.

Strategy

Becoming a net zero bank

In October 2020, we announced our new climate ambition to become net zero, including in our own operations by 2030 as well as our financed emissions by 2050. We aim to achieve this by providing sustainable finance solutions, offering advice on how to structure financing and investments that align

to the Paris Agreement, and engaging with our customers on transition and physical risk.

The transition to a net zero economy – and economic resilience and prosperity – will require transformation on a global scale. We are committed to taking a lead role in this shift to a building a more sustainable future.

To ensure we stay on track, we will use a wide variety of performance metrics to measure our progress, and we intend to develop clear and measurable pathways to lowering financed emissions using the Paris Agreement Capital Transition Assessment ('PACTA') tool. For further details of our metrics and targets, see pages 25 and 26.

Supporting our customers through transition

We recognise our wider role in society and believe we can make a positive impact in the way we do business.

In 2017, we committed to providing and facilitating \$100bn of sustainable finance and investment by 2025. At the end of 2020, we had fulfilled \$93.0bn of this commitment, comprising \$66.9bn through facilitating the flow of capital and providing customers access to capital markets, and \$20.0bn in financing and \$6.1bn in investments to support environmental and social goals.

Given our progress, as part of our climate ambition we announced a new commitment to mobilise between \$750bn and \$1tn of sustainable finance and investment over the next decade. This will prioritise working with customers who are seeking to reduce their carbon emissions across all industries, while ensuring a just and stable transition to maintain economic stability.

Our new commitment builds on our 2017 target and incorporates sustainable finance and investment of \$40.6bn in 2020, which also contributed to our initial 2017 target, as well as additional products of \$3.5bn. Our progress will be published each year and will seek to continue to be independently assured.

We plan to increase our portfolio of transition finance solutions, including in clean tech innovation, sustainable infrastructure and nature-based investments, to help even the heaviest-emitting sectors to progressively decarbonise. Applying a climate lens to our financing decisions will involve understanding the different challenges and conditions our customers face across developed and

developing economies. To achieve this, we require transparent and consistent climate-related information from our customers, and will advocate for increased disclosure where ever possible.

For further details of our climate strategy, see pages 45 to 50 of the ESG review within our *Annual Report and Accounts 2020*.

We are actively engaging with partners to identify and implement sustainable climate solutions, including for hard-to-decarbonise industries, which today account for 30% of global emissions, see footnote 1. Unprecedented financing is needed to support our customers in the transition, and we have identified three areas of sustainable finance to prioritise:

Priorities to support our customers in the transition

Transition finance	Sustainable infrastructure	Sustainable investments
<ul style="list-style-type: none"> – Financing to enable companies' shift to sustainable, low-carbon activities – Support and engagement for transition of hard-to-decarbonise industries – Global network to promote sustainability across global supply chains 	<ul style="list-style-type: none"> – Financing and advisory capabilities to grow renewable energy and related infrastructure – Investment vehicles and origination-distribution mechanisms to channel investor capital 	<ul style="list-style-type: none"> – Establish HSBC Asset Management as a leading provider of responsible investments – ESG solutions and structured products for institutions – Full suite of products to help individuals manage ESG risks and invest in sustainability-related opportunities

1 Energy Transitions Commission 'Mission Possible' report

Read more on how we are supporting customers on pages 10 to 12.

Unlocking next-generation climate solutions

A key part of our strategy is to unlock climate solutions, helping to transform sustainable infrastructure into a global asset class. Natural capital is a core part of the net zero journey. In August 2020, we established HSBC Pollination Climate Asset Management, which aims to be the world's largest dedicated manager of natural capital investments. It gives investors the opportunity to invest in a diverse range of assets, including farmland, forests and water, and to support projects designed to preserve, protect and enhance nature over the long term. The intention is to launch a series of natural capital and carbon credit funds for institutional investors, with the aim to launch the first fund in mid-2021.


For further details of our climate solutions and innovations, see page 50 of the ESG review within our *Annual Report and Accounts 2020*.

How we analyse the resilience of our strategy


Developing our understanding and analysis of climate

Delivering on our climate ambition will require embedding climate considerations across the Group's strategy. It is therefore important that we build a clear understanding of climate-related risks to inform and guide how we select and engage with our clients, how we allocate our financial resources, and how we measure, monitor and mitigate the impact of climate change on our clients' exposure as well as our own operations.


To achieve this, we must be able to accurately identify and analyse:



The impact climate change will have on our customers.



The impact our customers will have on the climate.



The impact climate change will have on our own infrastructure (operational resilience).

The next sections of our *TCFD Update 2020* set out our progress to date in each of these areas.

There are multiple potential climate transition and adaptation pathways, and each will have a different impact on the environment, our customers, our communities more broadly – and ultimately on HSBC itself. Scenario analysis allows different pathways to be explored, and the transition and physical impacts to be quantified in a way that supports robust risk management and strategic decision making. Developing this climate stress testing and scenario analysis capability is a critical pillar of our climate strategy.

Our target ambition

We have developed a strategic framework for our climate stress testing and scenario analysis capabilities. The framework, which is in the process of being implemented, has been designed using a principle-based approach. This ensures our climate analysis can deliver insights that support both our business strategy and risk decision making, and can evolve over time. It is designed to allow us to make continuous improvements in line with new and rapidly evolving standards, align with our existing frameworks and processes, and to embed climate in our core business strategy, client engagement, and financial and strategic planning processes.

The strategic framework will help us to:

- Integrate climate risk analysis into the core business applications and broader frameworks around planning, client engagement and business strategy planning.
- Support our business teams in assessing transition strategies for customers in priority sectors and advising on risk implications.
- Embed clear accountabilities, ownership and responsibilities for climate targets across our senior management and global functions.
- Meet regulatory expectations on climate stress testing and scenario analysis.
- Develop enriched climate specific data and infrastructure to allow accurate measuring and monitoring of climate impact and progress.

Progress so far

Achieving these capabilities will take time. We are implementing a phased development approach to ensure that we benefit from the lessons we learn along the way and can respond to change.

In 2020, we laid the foundations by communicating our strategy, engaging with customers, setting our target ambition level and starting to develop our climate risk scenario testing capabilities. In the coming years, we aim to expand our capabilities and coverage, and increasingly integrate climate change scenario testing results into relevant business-as-usual activities and key processes to help deliver our climate strategy.

To support HSBC's strategic and financial decision making, we have developed capabilities to conduct pilot climate scenario analysis on our portfolios exposed to climate risk. We reflect granular characteristics in our analyses to ensure that insights are useful and actionable both from a risk management and business perspective.

Our bespoke models use evolving and sophisticated industry approaches to estimate the impact of physical and transition climate risk on selected segments of our portfolios. These were developed in close collaboration with our risk management, finance and global business teams ensuring that the key drivers of climate risk for the most vulnerable sectors and locations are reflected at a granular level. Identifying and monitoring these different and diverse impacts will strengthen our ability to manage risk and support our customers' climate goals.



How climate change is impacting our customers

Key areas of focus

We recognise that climate change could impact our customers in two main ways. Firstly, customer business models may fail to align to a low-carbon economy, which could mean, for example, that new climate-related regulation may have a material impact on their business. Secondly, extreme weather events or chronic changes in weather patterns may damage our customers' assets leaving them unable to operate their business or live in their home.

One of the most valuable ways we can help our customers navigate the transition challenges is through financing and investment. To do this effectively, we must understand the risks they are facing.

The table below summarises the key categories of transition and physical climate risk, with examples of how our customers might be affected financially by climate change and the shift to a low-carbon economy.

Climate-related risk		Main causes of financial impact on customers
Transition	Policy and legal	Mandates on, and regulation of, existing products and services Litigation from parties who have suffered from the effects of climate change
	Technology	Replacement of existing products with lower emission options
	End-demand (market)	Changing consumer behaviour
	Reputational	Increased scrutiny following a change in stakeholder perceptions of climate-related action or inaction
Physical	Acute	Increased severity of extreme weather events
	Chronic	Changes in precipitation patterns Rising temperatures

The next few pages of our *TCFD Update 2020* focus on the customers we believe are most vulnerable and the areas where we are most exposed to climate-related risk. They include:

- Our key areas of focus for our corporate customers, including a high risk sector breakdown of our exposures.
- A summary of the drivers likely to have the most impact on our corporate customers and how we are supporting them, including new transition finance solutions to help the most emissions-heavy sectors decarbonise.
- Initial scenario analysis insights from our 2020 pilot of our corporate customers.
- Initial scenario analysis insights from our 2020 pilot of our retail customers.



Understanding our customers' strategies and exposure

To better understand our exposure to transition risk we identified six high transition risk sectors within our global corporate lending portfolio, based on their contribution to global carbon dioxide emissions and other factors. These are automotive, building and construction, chemicals, metals and mining, oil and gas, and power and utilities. Within our retail business, our initial focus was on the UK and Hong Kong residential mortgage portfolios, which make up approximately 65% of our total mortgage exposure.

In the table below, we capture our lending activity to customers within the six high risk sectors, including environmentally responsible and sustainable finance activities. Green financing for large companies that work in high

transition sectors is also included.

For further details on how we designate counterparties as high transition risk, see footnote 2.

We continue to roll out our corporate questionnaire to help understand our customers' climate transition strategies and the risks they face. In 2020, we expanded the geographic scope of the questionnaire to cover more countries. Across 2019 and 2020, we received responses from customers within the six high transition risk sectors, which represented 41% of our exposure – an increase of seven percentage points from 2019. See response breakdown by sector in the table below.

Information submitted through the questionnaire is collated to build a deeper picture of which corporate customers need to adapt and their readiness to change, and it helps us to identify potential business opportunities to support the transition. It is also being used to support and supplement the management of transition risk in our credit risk management processes.

Within the power and utilities, and metals and mining sectors shown in the table below, our direct exposure to thermal coal is 0.2% of the wholesale loans and advances figures.

Wholesale loan exposure to transition risk sectors and customer questionnaire responses							
	Automotive	Building and construction	Chemicals	Metals and mining	Oil and gas	Power and utilities	Total
Wholesale loan exposure as % of total wholesale loans and advances to customers and banks ^{1,2,3}	≤3.1%	≤4.0%	≤3.4%	≤2.5%	≤3.4%	≤3.2%	≤19.6%
Proportion of sector for which questionnaires were completed ⁴	42%	44%	32%	45%	42%	40%	41%
Proportion of questionnaire responses that reported either having a board policy or a management plan ⁴	68%	81%	77%	54%	84%	93%	77%
Sector weight as proportion of high transition risk sector ⁴	16%	20%	18%	13%	17%	16%	100%

1 Amounts shown in the table include green and other sustainable finance loans, which support the transition to the low-carbon economy. The methodology for quantifying our exposure to high transition risk sectors and the transition risk metrics will evolve over time as more data becomes available and is incorporated in our risk management systems and processes.

2 Counterparties are allocated to the high transition risk sectors via a two-step approach. Firstly, where the main business of a group of connected counterparties is in a high transition risk sector, all lending to the group is included irrespective of the sector of each individual obligor within the group. Secondly, where the main business of a group of connected counterparties is not in a high transition risk sector, only lending to individual obligors in the high transition risk sectors is included.

3 Total wholesale loans and advances to customers and banks amount to \$673bn (2019: \$680bn).

4 All percentages are weighted by exposure.



How climate change is impacting our corporate customers

Supporting our customers to thrive through transition is a key part of our strategy. Here we set out the key sectoral drivers impacting each of our high transition risk sectors and include some examples of how we continue to support our corporate customers on this journey.

<h2>Automotive</h2>	<p>Automotive carbon emissions are mainly a combination of tail-pipe and vehicle manufacturing emissions. Cars currently contribute over 7% of global emissions, over half of the emissions from transport as a whole, according to the Energy Transition Commission. Achieving net zero emissions within this sector depends on transitioning away from combustion engines to electric vehicles and alternative fuel sources, as well as recycling of construction materials or use of low-carbon materials. A shift in vehicle use towards car sharing or self-drive vehicles, and a reduction in the number of vehicles, could also play an important role.</p> <p>The most immediate impact on our customers in the automotive sector is their response to the policy and regulatory changes targeting cleaner fuel standards and technological advancement in battery design, and decarbonising energy use and material production.</p> <p>How we are supporting customers</p> <ul style="list-style-type: none"> ◆ In September 2020, HSBC acted as joint bookrunner and lead manager on a €2bn dual-tranche green bond for car maker Volkswagen, which will use the proceeds to finance the manufacturing of electric vehicles and dedicated e-charging stations (as per Volkswagen's Green Bond Framework). ◆ In October 2020, we played a key role on a €2.5bn sustainability-linked revolving credit facility for Michelin, the French tyre maker. Repayment terms are linked to Michelin meeting targets on the group's employee engagement, greenhouse gas emissions reduction and environmental impact of its sites.
<h2>Building and construction</h2>	<p>Given current global urbanisation trends, building and construction activities are expected to increase through to 2030. Achieving net zero emissions by 2050 will depend on a number of technological challenges, such as improving building design, efficiency to minimise resources extraction, material production, construction and decommissioning/recycling. However, the majority of this sector's carbon emissions are generated through heating, cooling and lighting.</p> <p>The biggest net zero carbon risks for our customers in this sector stem from decarbonising energy use and energy efficiency, including the retrofitting of older buildings and developing building design, embracing low-carbon building materials, decarbonising construction processes, and adopting low emission heating and cooling technologies.</p> <p>How we are supporting customers</p> <ul style="list-style-type: none"> ◆ In October, we were a manager and adviser for leading international real estate group Lendlease on its debut A\$500m green bond, the proceeds of which will be directed towards new or existing eligible green projects globally. ◆ In November, we helped Switzerland-based cement producer LafargeHolcim launch a €850m sustainability-linked bond – the first for the building materials sector. LafargeHolcim will pay a premium if it fails to reduce the carbon intensity of its cement by 17.5% – from 2018 levels – by 2030. ◆ In December, we were a joint advisor and co-ordinator for a \$1.08bn (A\$1.4bn) syndicated sustainability-linked loan for Australia-based urban services and engineering company Downer Group. The company's borrowing costs will be reduced if it meets greenhouse gas emissions reduction and social sustainability targets.



<h2>Chemicals</h2>	<p>A high-energy sector, which currently accounts for 24% of total primary demand for oil and gas, the chemicals sector directly contributes to 4% of carbon dioxide emissions through its energy intensive manufacturing processes, according to the International Energy Agency ('IEA'). Chemicals are important components in most manufactured products and will provide many of the key inputs for a sustainable transition in the energy sector. The sector faces a challenge to reduce emissions while at the same time increasing the supply for some of the key chemical products that will enable decarbonisation in the energy sector. The chemicals industry's low-carbon transition has been slower than in power, building and construction sectors, largely due to the high initial research and development investment costs of decarbonisation, long payback periods and lack of demand for low-carbon materials.</p> <p>The net zero carbon risks for our customers operating in, and relying on, the chemicals industry mostly hinge on decarbonising energy usage through process changes, decreasing coal use in manufacturing processes, increasing energy efficiency, and developing and deploying carbon capture technologies.</p> <p>How we are supporting customers</p> <ul style="list-style-type: none"> ◆ In July 2020, we issued our first green loan in Vietnam with total project investment of \$63m to plastics manufacturer Duy Tan, to finance new recycling machinery that can turn 100,000 tonnes of plastic bottles a year into raw materials for reuse. ◆ In July, we helped German consumer goods company Henkel issue the first corporate bonds aimed at reducing plastic waste. Henkel will use the equivalent of \$100m raised to foster a circular economy, which includes the development of reusable and recyclable packaging and adhesives.
<h2>Metals and mining</h2>	<p>Within this sector, emissions are produced by the use of fuel in mining processing operations and the release of fugitive methane emissions during fossil fuel extraction, as well as by the consumption of power, primarily in refining and smelting operations, and by coal-fuelled blast furnaces. While the industry provides critical components towards the growth of green technologies, mining and extraction of metals itself is carbon intensive. Efforts to decarbonise are focused around improved energy efficiency, fuel substitutions, deployment of carbon capture storage, electrification and renewable energy use. Increasing the use of recycled scrap in production also offers a way to reduce emissions within the industry.</p> <p>There are a wide range of potential net zero carbon risks for our customers operating in metals and mining, including increased recycling of materials, alternative or more energy efficient smelting processes, cost-competitiveness of carbon capture and storage, and uncertainty on the scalability and deployment of the use of hydrogen via zero emissions methods. The regulatory and policy focus on protecting sustainable metal producers from carbon-intensive competitors is another factor.</p> <p>How we are supporting customers</p> <ul style="list-style-type: none"> ◆ In November, we structured a sustainability linked loan for Bangladesh steel manufacturer BSRM Group, where a 2.5 billion taka (approximately \$29m) working capital facility was linked to improvements in BSRM's energy efficiency. Loan terms were aligned to the borrower's performance against pre-determined sustainability performance target benchmarks.



Oil and gas

The oil and gas sector is one of the largest contributors to greenhouse gas emissions. Emissions generated by end users of the fuels it produces – known as supply chain or scope 3 emissions – are responsible for 33% of global greenhouse gas emissions, according to the Organisation for Economic Co-operation and Development ('OECD') and IEA. The sector's own operations account for a further 9% of global emissions. Without decarbonisation interventions across the economy these emissions will remain high, with oil demand peaking around 2030, according to the IEA. Introducing current technologies and techniques can substantially decarbonise operational emissions from the various sources, which include extraction and drilling, flaring, fugitive emissions, refinery heat and power systems.

Net zero carbon risks for our customers stem mainly from the speed and scale of technological and policy changes designed to cut future emissions over the medium to long term, which will reduce demand for fossil fuels. The ability of other sectors to decarbonise or shift to alternative energy sources such as nuclear, solar or wind for power generation will also have an impact.

How we are supporting customers

- ◆ In June 2020, we played a lead role on UK-listed engineering company Weir Group's \$950m sustainability linked revolving credit facility. Weir Group's margin will adjust depending on its performance against a set of predetermined sustainability performance targets for emissions reduction, employee well-being and safety. We worked with Weir to select ambitious and meaningful targets aligned with its strategy of sustainable and efficient delivery of natural resources. In February 2021, Weir Group completed the sale of its oil and gas division.

Power and utilities

The power and utilities sector remains central to global decarbonisation efforts, with electricity demand expected to double by 2050, according to International Renewable Energy Agency. To reduce carbon emissions, fossil fuel power generation requires carbon capture and storage together with an increasingly rapid shift to low or zero carbon energy sources such as renewables and improvements in energy efficiency to help reduce demand.

Net zero carbon risks for our customers in this sector include significantly reducing carbon capture and storage costs, and policy and regulatory support for renewable energy. There are also high investment costs from developing renewable energy in developing countries and integrating systems for wind and solar power generation.

How we are supporting customers

- ◆ In June 2020, we took a lead role on a \$488m green financing facility for Viking Link, a high voltage electricity 'interconnector' between the UK and Denmark, which will supply renewable energy to 1.4 million households.
- ◆ In June, we helped Castle Peak Power Company raise a \$350m energy transition bond. The proceeds will finance natural gas importation infrastructure as part of the transition to lower emission energy sources in Hong Kong.
- ◆ In December 2020, we advised Denmark-based Ørsted on the \$2.7bn sale of a 50% stake in the Greater Changhua 1 offshore wind farm, which will supply green power to over 650,000 Taiwanese households once commissioned in 2022.

Our 2020 climate-related stress testing pilot

In 2020, we launched our internal climate stress testing and scenario analysis pilot exercise on some of our portfolios most exposed to climate risk. The objectives of the pilot were twofold. Firstly, to develop the foundations for our climate financial risk stress testing capabilities. Secondly, to make a preliminary identification of the most material drivers of climate risk within our business and feed these assessments into our risk management and business decision making.

The pilot exercise was scenario specific and is based on a sample that is not representative

of our entire portfolio, including large, significant exposure to non-public and large corporate companies. For corporate exposures, a sample of companies within each of the disclosed TCFD sectors was analysed at a name level, with results extrapolated to the remainder of the portfolio. The impact of individual customers' transition plans was not considered. Results should therefore be interpreted accordingly. In addition to providing the insights illustrated on the following pages, the pilot has helped identify what will be needed to roll out climate stress testing across our global portfolio.

It has also laid the groundwork for upcoming regulatory stress tests, including the Bank of England's 2021 Climate Biennial Exploratory Scenario ('CBES') exercise and the Hong Kong Monetary Authority's Banking Sector Climate Risk Stress Test.

The table below illustrates the strategic questions that our climate stress testing and scenario analysis capabilities will help us begin to answer and inform our core processes.

Use of climate stress testing and scenario analysis to answer strategic questions

Guiding questions		
<ul style="list-style-type: none"> How will our clients be impacted under different climate scenarios? How should we advise our clients to mitigate their climate risk exposure? How do we accurately track and monitor impact of climate risk on performance? 	<ul style="list-style-type: none"> What is the impact of climate risk on our business plan? Do we have sufficient financial resources given the potential climate scenarios? Does our financial resource allocation approach reflect the climate risks facing the business? 	<ul style="list-style-type: none"> Where are the key pockets of climate risk in the portfolio? Is this climate risk exposure within risk appetite? What is the impact of potential mitigation actions?
▼	▼	▼
Embedding into core processes		
Client advisory and decision making	Product design	Strategic planning
	Risk management	Regulatory reporting
Performance metrics	Capital planning	Public disclosures

Scenario selection and time horizons

We are developing our own internal capabilities to define and set parameters for bespoke scenario modelling as part of our scenario analysis framework implementation plan. Our pilot was run on a suite of specific scenarios published by the Network of Central Banks and Supervisors for Greening the Financial System ('NGFS'). The NGFS scenarios test a broad range of possible outcomes and have been created as a starting point for central banks and supervisors.

The NGFS scenarios reflect a range of potential future scenarios that encompass a complex set of social, political and economic decisions¹. They can be grouped into the following three types:

- Orderly transition – this assumes early introduction of climate policies that gradually become more stringent. Net zero CO₂ emissions will be achieved before 2070, giving a 67% chance of limiting global warming to below 2°C and leading to low physical and transition risks.
- Disorderly transition – this assumes climate policies are not introduced until 2030. Late introduction and limited available technologies mean emissions reductions need to be sharper, which will drive increased transition risks.

- Hot house – this assumes currently implemented policies are preserved. Emissions grow until 2080 leading to 3°C or more of global warming and subsequent severe physical risks.

We developed our scenario test over a 30-year time horizon to ensure that it reflected the long-term effects of transition and physical risks on our customers.

Methodology

Our pilot considered both physical and transition risks under each scenario and reflected name-specific characteristics for wholesale portfolios, as well as property-level characteristics for retail mortgage and commercial real estate portfolios. It is important to note that the NGFS scenarios used do not project business cycles, with GDP growing at a steady rate over the course of each scenario. Over 30 years, a steady growth assumption will have a positive 'rising tide' impact on results and we would expect the outcomes to differ if downturns or alternative GDP assumptions were considered.

The core pilot analysis was performed assuming customer exposures on a 'static balance sheet', in other words assuming customer exposures would remain static

across the scenario. The pilot sample across the wholesale portfolios was heavily concentrated in large public companies where information is readily available, and did not represent every geography. Using insights from the exercise, we are performing analysis to understand what steps we might take to mitigate any risks and seize business opportunities to support customers in their adaptation to climate risk under each scenario.

¹ For full details of the NGFS guide to climate scenario analysis for central banks and supervisors, see https://www.ngfs.net/sites/default/files/medias/documents/ngfs_guide_scenario_analysis_final.pdf



Initial insights from our scenario analysis

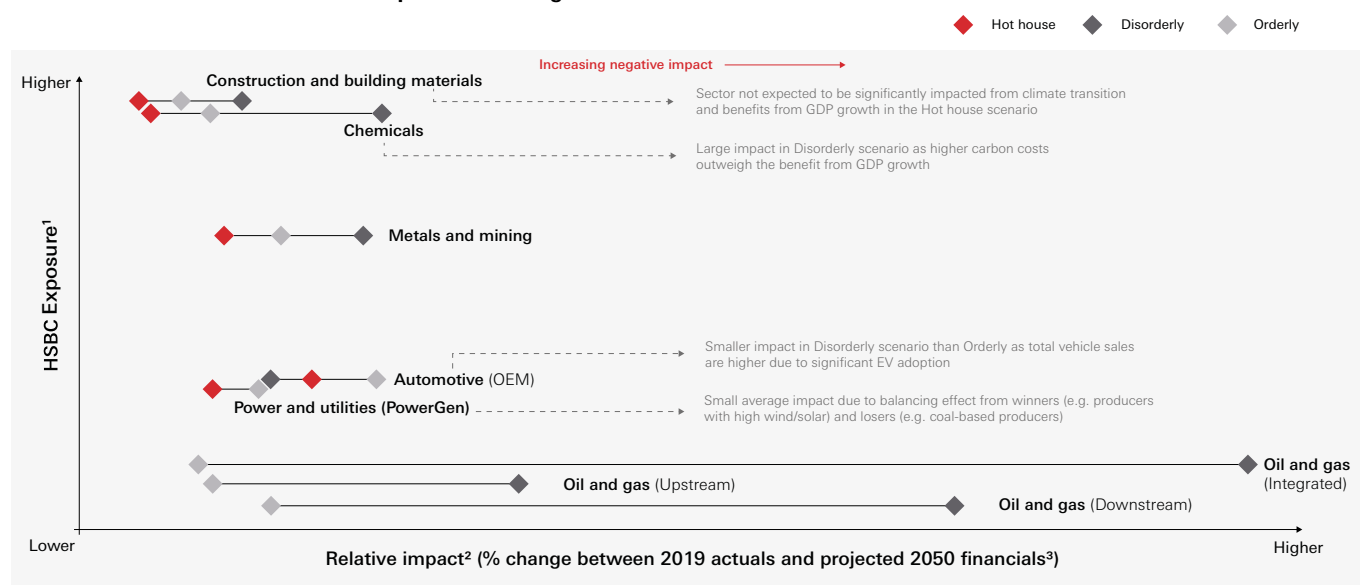
Over the next two pages we summarise the initial findings of our scenario analysis stress testing pilot for six high transition risk sectors and sub-sectors. The graphic illustrates the level of risk we are exposed to within each portfolio, and maps the loan value (known as exposure at default) within each sector and the projected relative financial impact of transition risk from climate change. All portfolios were measured against a range of potential future scenarios grouped into three types – Orderly, Disorderly and Hot house – unless otherwise stated. For further details of the scenarios and methodology, see page 13.

Automotive	The pilot was run on automotive original equipment manufacturers ('OEM'), a subset of the automotive sector. The key scenario driver for auto manufacturers is the transition from internal combustion engine ('ICE') vehicles to electric vehicles ('EV'). Significant EV adoption occurs in all scenarios, with higher EV penetration in the high carbon tax scenarios. The main drivers of financial impacts on companies are: the influence of each scenario on total market vehicle sales and EV penetration; current company EV volumes and growth trajectory; and current company financial strength and ability to sustain high research and development costs associated with the transition to electric. Overall, expected credit losses are expected to increase through to 2025 as research and development investments to fund the transition decrease profits and cash flow. Companies with high EV growth trajectory are expected to see smaller negative impact as EVs offset declines in combustion vehicles sales and they achieve EV scale quickly. Companies 'behind' in electric vehicle development or without strong financials to fund its growth face larger negative impacts. In the long-run, companies perform better in scenarios that encourage a larger shift to electric, such as under the Disorderly scenario, as once they overcome the initial investment in EV manufacturing technology, the marginal cost of EV production is expected to be lower than for ICE.
Building and construction	Our building and construction sector comprises primarily construction contractors as well as a small component of building materials companies, such as cement producers. Overall, the portfolio is projected to perform relatively well as construction contractors do not produce significant emissions and hence are not impacted by the introduction of carbon tax. Under all scenarios, they benefit from economic growth which leads to a reduction in expected credit losses. Cement production is a hard to abate high emission sector, and in the Orderly and Disorderly transition scenarios it faces the combined challenge of carbon taxes on high direct emissions from operations and increased costs of abatement. This leads to expected credit losses rising sharply. However, as cement production companies represent a small portion of total sector exposure at default ('EAD') the overall building and construction portfolio performs relatively well in the scenario.
Chemicals	The chemicals sector comprises the production of thousands of different products with different emissions characteristics. Some are emissions-intensive – for example, primary chemicals like ammonia and methanol – and others are not. The primary scenario drivers for this sector are the cost of emissions due to carbon pricing and overall growth in chemicals demand due to ongoing economic expansion. Companies with emissions-intensive products face the greatest transition risk due to higher carbon costs from chemicals production, and higher abatement costs as they invest in technologies and processes to lower their emissions. Companies with lower emissions intensities actually see a slight reduction in expected credit losses in the Hot house and Orderly scenarios as overall chemicals demand growth outweighs the impact of higher carbon costs.
Metals and mining	From a climate perspective, metals and mining comprises of four main sub-sectors – coal mining (thermal and metallurgical), energy transition minerals (for example, lithium, cobalt, copper), steel production and other minerals (including gold, aluminium). There is limited exposure to pure coal companies in our portfolio, however, as would be expected, these companies would likely be significantly hit in Orderly and Disorderly scenarios, reflecting the impact of decarbonisation policies. Companies in energy transition minerals, used in the manufacturing of batteries and wiring, are expected to perform well as economic growth and increasing sales of electric vehicles drive demand. Those in other minerals, which includes precious metals, are also expected to be positively impacted in the scenarios driven by economic growth. However, extraction of energy transition minerals and other minerals is still a carbon intensive process so companies face margin pressure in transition scenarios as the cost of operations increases due to carbon taxes. Steel production, a hard to abate carbon-intensive process, will attract high carbon taxes, hence the Disorderly scenario in particular has a significant negative impact. Overall, expected credit losses for coal and steel companies in the portfolio rise sharply, but more diversified mining companies perform relatively well.



<h2>Oil and gas</h2>	<p>The primary transition risk facing oil and gas companies is fall in demand for fossil fuels. In the Orderly transition risk scenario early policy action leads to a gradual increase in carbon tax, and an assumed global investment in negative emissions technologies, which offset some impact of continued fossil fuel usage late in the scenario. The transition risk is significantly higher in the Disorderly scenario as a delay in climate policies until 2030 leads to much higher carbon taxes, lower availability of emissions reduction capabilities and an increased need for electrification to meet net zero targets. At the counterparty level, companies with lower production costs perform better as they are able to maintain outputs and margins as demand falls. Companies with significant production of advanced biofuels perform well in both transition scenarios as increased demand for biofuels offsets declines in petroleum refining. Among downstream companies, those with higher spreads between crude oil costs and refined liquids prices are also better positioned. For upstream and integrated companies involved in extraction of oil and gas, those with reserves that have low extraction and production costs can maintain output for longer as demand declines. The midstream sector, which represents a small share of our total oil and gas exposure at default, faces similar impacts as upstream, with demand for transportation of oil and gas moving in line with upstream production. Midstream companies with operations in high-cost production regions can expect larger negative impacts.</p>
<h2>Power and utilities</h2>	<p>The pilot was run on power generation companies, a subset of the power and utilities sector. The average expected credit losses impact across the sample is limited, but this masks significant threats and opportunities for companies depending on their current power generation mix and financial strength. In both the Orderly and Disorderly scenarios, companies must transition to a world in which generation is primarily from wind and solar by 2050. Companies that already have significant wind and solar power have an advantage and companies with stronger balance sheets are better able to sustain the investment required to grow their renewables capabilities. The sector performs better in the Disorderly scenario than in the Orderly, due to the delay in policy action in the Disorderly scenario until 2030 increasing both demand and prices for electricity.</p>

Consolidated transition risk heat map across six high transition risk sectors – illustrative results of sub-sectors



1 HSBC's actual exposure per sector/sub-sector.

2 Illustrates the impact by scenario and in comparison to other sectors.

3 Projected impact of transition risk on HSBC's financials (% change between 2019 actuals and projected 2050 financials).

Note: Each data point only reflects the transition risk impact of climate change. Hot house scenario results are not included for oil and gas. For power and utilities (PowerGen), the Orderly and Disorderly points are overlaid because the increase in electricity prices in the Disorderly scenario supports counterparties through the transition.



How climate is impacting our retail mortgage customers

To understand the level of climate risk within our retail mortgage portfolio, we focused our financial risk assessment on the UK and Hong Kong mortgage portfolios, which together account for approximately 65% of our retail mortgage portfolio, as of November 2020.

Key drivers of climate risk for residential real estate

Residential real estate may be affected by changes to climate and extreme weather events, such as floods, subsidence, and wind storms, which could impact both property values and the ability of borrowers to afford their mortgage payments. Potential climate-related regulatory policy changes, such as new minimum energy efficiency performance standards and how they impact the real estate market, could also influence property values. Other economic impacts from the transition to

a low-carbon economy, shifts in GDP and employment levels could also affect borrowers' ability to repay their loans.

In the medium term, key drivers of risk for mortgage customers include the physical risk of potential regionalised flooding, wild fires and wind storms. Another, is our ability to respond and adapt to new and emerging regulatory requirements across multiple jurisdictions.

In the longer term, sustained climate changes could severely impact mortgages in some geographical regions. Borrower repayments could also face macroeconomic strain from regulatory or market approaches to transition risk.

The potential impact for HSBC

At an aggregate level, the overall impact from climate risk across our Hong Kong and UK residential real estate portfolios is expected to be limited in all scenarios, although the Hot house scenarios show the largest relative impact. Initial findings on physical risk impacts indicate that in the UK these are primarily driven by coastal flood, river flood and subsidence, while in Hong Kong, impact from physical risk is immaterial across scenarios. Additionally, the largely stable GDP growth assumptions lessen the impact of transition in Orderly and Disorderly scenarios on broad macroeconomic drivers. However, more work is needed to analyse results and conduct further sensitivity testing.

For UK residential real estate, the transition scenarios introduce increased costs due to the introduction of energy efficiency standards. The projected end of Flood Re – a joint initiative between the UK government and insurers to provide affordable access to insurance to high risk properties – in 2039 is a relatively significant driver of physical risk impact in all scenarios as it was assumed for the pilot that Flood Re is neither replaced nor extended. The exit of Flood Re from the insurance market will leave properties with high flood risk more likely to be uninsurable and facing a significant decrease in valuation.

For Hong Kong residential real estate, there are currently no minimum energy efficiency requirements so transition costs have not been factored into the analysis.

The pilot reflected an initial analysis of physical and transition risks based on emerging data and modelling across a number of risk disciplines, as well as a number of assumptions and parameters. We will continue to refine the forecasting models, data and assumptions over the course of 2021 and will aim to refresh and communicate our understanding of climate-related risks in the future. Management action plans and triggers will be developed as needed to mitigate the risks that are identified as appropriate.

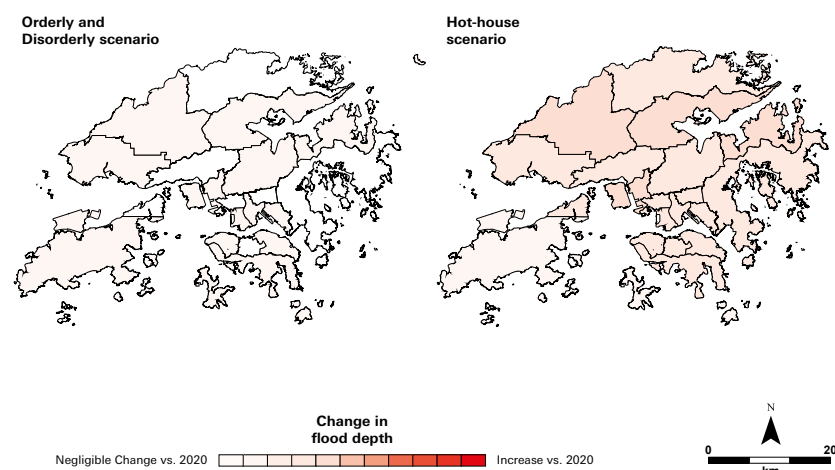


Initial insights from our scenario analysis

The maps below illustrate the potential risks of coastal and river flooding for our retail mortgage customers in Hong Kong and the UK, and how this may vary under the Orderly, Disorderly and Hot House climate scenarios. The risk of direct flood damage to mortgaged properties is based on inputs used in our pilot exercise and does not reflect the impact on HSBC itself.

Although our pilot analysis was at a postcode, or equivalent, level to reflect local variation, for simplicity we are illustrating regional averages in these maps. For Hong Kong, we show the projected change in flood depth compared to 2020 for a particular risk outcome. The UK maps show the projected change in homeowners' expected average cost from flooding per year compared to 2020. Since the Orderly and Disorderly scenarios use the same physical risk forecasts these are combined into a single map.

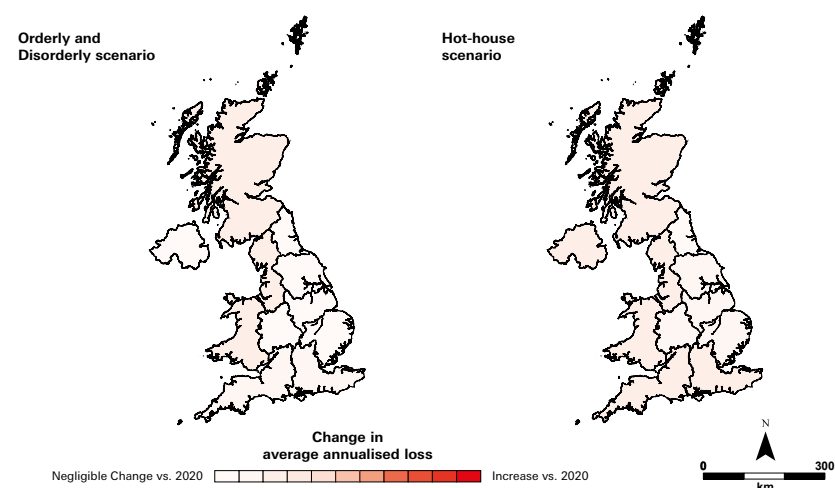
Figure 1: Evolving flood impact on our Hong Kong residential real estate portfolios – 1:200 return period view¹



Source: Marsh

¹ Projected change in flood depth at ground level for the 1:200 year return period (i.e. 0.5% annual exceedance probability) at the locations of mortgaged properties over the two forecast scenarios compared to 2020.

Figure 2: Evolving flood impact on our UK residential real estate portfolios – average annual loss view²



Source: Marsh

² Projected change in borrowers' financial risks across all return periods, i.e. changes in their potential flood insurance needs/costs (expressed as an average annualised loss), at the locations of mortgaged properties over the two forecast scenarios compared to 2020.

How we are supporting customers

We offer loans or additional mortgage borrowing that can be used to purchase more energy efficient properties or to help customers improve the energy efficiency of their existing homes. This can help reduce their running costs in the short term and lower their exposure to transition risk in the longer term.



Analysing the impact our customers have on climate change

How we will use PACTA to measure alignment

At the heart of our plan is a pledge to reduce financed emissions from our portfolio of customers to net zero by 2050 or sooner, in line with the goals of the Paris Agreement. This means embedding climate change into our financing decisions across the Group and intensifying our support for customers in their transition to lower carbon emissions. To do this, we need to understand the impact our customers are having on the climate.

To help us achieve this, we plan to use the Paris Agreement Capital Transition Assessment ('PACTA') tool developed by the 2 Degrees Investing Initiative ('2DII') with backing from UN Principles for Responsible Investment, to develop clear, measurable pathways to net zero.

This should help us evaluate our loan portfolio exposure to climate transition risk at a customer and portfolio level, guide and improve our climate target-setting processes, and enhance the advice and financing solutions we offer customers to ensure we can help even the most heavily-emitting sectors decarbonise.

Scope and data

In 2020, we initiated a pilot to build our knowledge of the PACTA methodology and enhance our understanding of its effectiveness and limitations, pointing to areas where we may need to explore complementary methodologies and processes.

The PACTA methodology currently covers six climate-relevant industry sectors that are key to the transition to a low-carbon economy: oil and gas, coal, power, automotive, steel and cement (shipping and aviation are under development). Within these sectors the scope is refined further to only include the segment of the value chain that has the most impact on the climate.

The diagram below sets out the PACTA sectors and relevant segments covered by the tool.

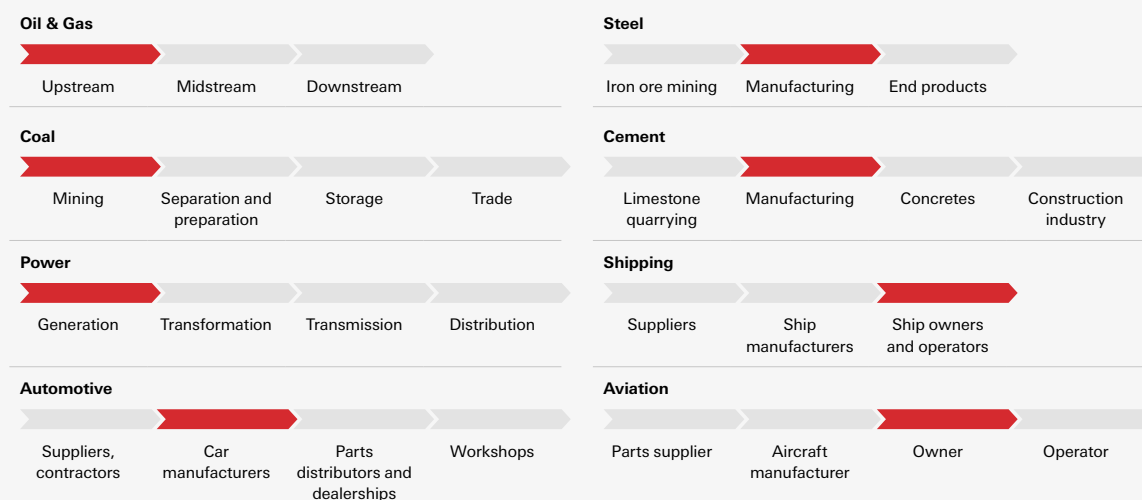
PACTA uses three main sets of inputs: loan book or portfolio data, asset-level data on current and future economic units of output, and scenario data.

While we define transition risk portfolios on an end-to-end basis, the PACTA methodology only focuses on specific sections of the portfolio. This sector-based approach means that PACTA only covers part of our portfolio and we will therefore need to determine our approach for the rest of our portfolio. For example, in the automotive sector, component manufacturers face exposure to transition risk from electric vehicles requiring fewer and simpler components. However, PACTA focuses on car manufacturers and therefore additional tools will have to be developed to

determine and measure the transition risk faced by component manufacturers.

For the oil and gas, coal, power and automotive sectors, the methodology uses a technology/fuel mix metric while for steel and cement the methodology uses an emissions intensity metric. These are calculated at a portfolio and client level for present day and five years in the future. The methodology assumes a static balance sheet and for client level data a constant market share. These metrics can then be compared to a market benchmark and to the trends set as targets in climate scenarios.

PACTA sectors and relevant segments



Key: ■ segments covered by the tool



The starting point

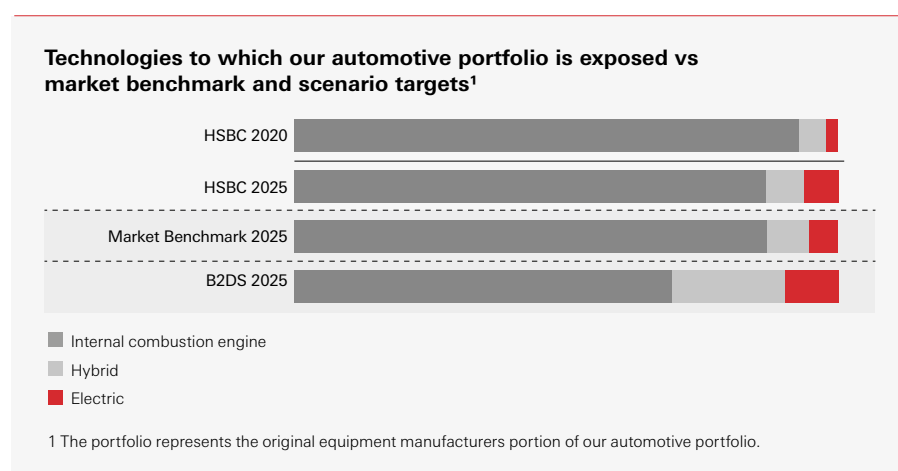
In 2020, we began applying the PACTA transition assessment tool to relevant segments of our client portfolios, starting with a pilot test of the automotive sector.

We used the asset level database and scenarios for the automotive sector provided by Asset Resolution and 2DII respectively. We did not perform any validation of this data.

The automotive portfolio was compared to the trends in the Beyond 2 Degrees Scenario ('B2DS') developed by the IEA. This scenario aims to limit with a 50% chance global temperature rise to 1.75°C above pre-industrial levels. This scenario does not necessarily follow the most economically efficient pathway. However, it does not depend on the breakthrough of unforeseen technologies,

in other words, all technologies included in the scenario are already commercially available or will be within the time frame of the scenario.

The results of applying the PACTA methodology on original equipment manufacturers ('OEM') within our automotive portfolio are shown below.



Our OEM portfolios is exposed to a technology mix that is in line with the absolute technology distribution of the market. It is clear that based on the asset level data provided by Asset Resolution, the automotive industry as a whole needs to move faster in order to meet the B2DS scenario envisaged by the IEA. The market benchmark is the total car production from all manufacturers in the asset level data provided by Asset Resolution.

HSBC used the methodology and tools developed by 2DII and the underlying data provided by Asset Resolution. HSBC has not developed or validated such tools, methodology and underlying data. The application of the methodology (or consequences of its application) shall not be interpreted as conflicting with any legal or contractual obligations and such legal or contractual obligations shall take precedence over the application of the methodology. Our application, interpretation or involvement with the PACTA, express or implied, is not intended to and shall not create or grant any right or cause of action to, by or for any person.

Next steps

We recognise that the current means of measuring financed emissions/climate scenario alignment globally needs improving. The PACTA methodology itself is still evolving and there are other approaches to measuring climate scenario alignment that may provide different results.

In 2021, we intend to apply the PACTA approach to the rest of our transition risk sectors while continuing to enhance our understanding of the tool, especially the data and assumptions that underpin it.



How we test the resilience of our infrastructure

We have a large global footprint, with a network that covers 64 countries and territories and more than 200,000 employees. It is therefore critical that we understand the potential for business disruption caused by climate change to ensure that we can adapt and increase our resilience where appropriate.

The launch of our pilot climate stress testing and scenario analysis exercise enabled us to not only assess our retail mortgage portfolio

but also test the resilience of our own real estate, including global data centres, office buildings, trading floors, branches and service centres.

Stress testing our own real estate and buildings involved a two-part process. In May 2020, working with our external insurance partners, we carried out advanced natural catastrophe modelling of our entire global real estate and buildings portfolio across roughly

4,600 sites. The modelling analysed the potential impact of key physical climate hazards on the existing portfolio and took into account the location and characteristics of each building, and the resilience measures currently in place. This enabled us to stress test our levels of insurance for expected property damage and business interruption, confirming the level of cover as appropriate.

Understanding the resilience of critical properties

We categorise our buildings and real estate depending on their importance to maintaining our critical business operations. This ensures that our buildings are engineered to standards commensurate with the risk to our business. In the fourth quarter of 2020, we worked with external climate consultants to assess the physical impact of forward-looking climate scenarios on 97 of our most critical properties. The six-step modelling process covered all

major climate-induced threats at the specific location of the buildings.

We currently purchase insurance for property damage and business interruption and consider insurance as a loss mitigation strategy depending on its availability and price. In line with the methodology used for insurance pricing, loss is calculated based on historical physical damage and failure

probability (essentially business interruption) for each site, and is designed to illustrate how each asset will respond given its engineering characteristics and inherent resilience. The physical climate risk model we used for our analysis is widely adopted by the industry as a basis for analysing global risk, and aligns with requirements for stress testing activities, such as the Bank of England's 2021 CBES.

Initial insights from our climate scenario analysis pilot

Some of the initial key findings from our pilot scenario stress test of our 97 most critical properties and sites, included:

- By 2050, 15 of the 97 most critical properties will potentially face increased risk from physical hazards under the most severe Hot house climate change scenario of 3°C increase in climate temperature.
- These 15 properties are distributed across our global real estate portfolio and face potential increased risk to hazards such as surface water flooding, coastal inundation, riverine flooding and soil movement due to drought.
- By 2050, 17 properties are also at increased risk of being unavailable for use for at least one day in any future year, due to the impact of climate change under the most severe Hot house scenario. This suggests that in addition to physical damage, external factors such as access issues in the surrounding area may prevent them from being used.
- Overall, by 2050, our analysis shows that severe weather events are not expected to breach the risk appetite for building availability of 99.995% availability per year for our most critical buildings.

Next steps

This forward-looking data will inform real estate planning. We will continue to improve our understanding of how extreme weather events impact our buildings portfolio as climate risk assessment tools improve and evolve.

We regularly review and enhance our global engineering standards, and will continue to assess historic claims data from our insurers and our own incident dashboards, to help ensure our building design standards reflect the potential impacts of climate change and help us achieve our 2030 carbon net zero ambition.

We are also working with our insurers and our internal insurance risk team to develop a structural inspection programme to identify and mitigate the risks of building unavailability. This will help us prioritise capital investment for improvements to properties where necessary, including for building façade, roof, windows and other structural elements that might be vulnerable.

Lessons from stress testing the resilience of our strategy

Our pilot exercise to test the resilience of our business has laid the foundations for our strategic climate stress testing and scenario analysis processes across the Group.

We have developed a framework for analysing how climate change impacts our customers and our own operations as well as a deeper understanding of our customers' impact on climate and the sustainability of their businesses as they transition to a low-carbon economy. We are still at the early stages of our journey, but even so, the insights produced from our exploratory exercise have enhanced senior management and the Board's understanding of the climate risks embedded in our lending portfolio. In particular, we have a clearer understanding of the location and potential size of key risks, and the measures we might take to address them.

This process, and future scenario analysis and stress tests, will support the continued evolution and implementation of our strategy, and how we engage with our customers, especially those in the key transition sectors or with assets most in need of climate resilience measures. They will help guide how we allocate our financial resources, and how we measure, monitor and mitigate the impact of climate change on our own operational resilience. Lessons learned have been reviewed and will be fed into our ongoing development plans over the course of 2021.

It is however essential to recognise that climate scenario analysis is complex and in its infancy. As approaches continue to evolve and our ability to capture more data continues to improve, both in terms of the extent of physical resilience measures across client assets and the granularity of climate-related metrics, we will refine our quantitative analysis and reporting.

In addition to our own internal efforts, regulators are also driving progress. The Bank of England's 2021 CBES tests marks an important milestone for the industry and the development of climate risk measurement over the long term. We will continue to work with regulators and other supervisory bodies as they explore climate scenario testing, and share what we have learned to help shape a globally consistent industry-wide approach.



Integrating climate into risk management

In November 2020, we formalised our overall approach to climate risk management and developed plans to integrate climate risk into the Group-wide risk management framework through existing policies, processes and controls for our key climate risks. This includes aligning climate risk with our three lines of defence model to ensure robust oversight of climate risk.

We have also reviewed our risk appetite to reflect the risks from climate change, setting out the measures we intend to take to support our climate ambition and our commitments to regulators, investors and stakeholders.

Our approach to climate risk management is aligned with HSBC's Group-wide risk management framework, which follows five simple steps: define and enable, identify and assess, manage, aggregate and report.

This will ensure the Board and senior management have visibility and oversight

of the climate risks that could have the greatest impact on HSBC. For example, we have established a transition risk framework to improve how we identify, assess and manage our exposure to high transition risk sectors, and we continue to engage with our customers to better understand and support their low-carbon strategies.

In 2020, we began reviewing our policies on sustainability risk, resilience risk and regulatory compliance to identify any gaps and help improve our understanding of how climate change is likely to impact these risks. For further details of this work, see pages 23 and 24.

A dedicated climate risk programme has been established to accelerate the integration of climate risk into risk management. The programme was approved in December 2020, and is one of the key risk investments for 2021. We will continue to embed our climate risk appetite and risk management framework

across our businesses throughout 2021.

An important strand of this work will involve exploring how to increase the availability and quality of data so that new metrics can be developed to strengthen how we assess and manage climate risks and opportunities.

TCFD sets out four main drivers of transition climate risk – policy and legal, technology, end-demand (market) and reputational – and two physical risk drivers – acute and chronic (see page 8 for the potential impact these may have on our customers). In the table below, we illustrate how this impact on our customers might manifest across our principle risk types, and the potential time frames involved.

Risk management framework					
Risk type	Financial risks		Non-financial risk		
	Wholesale credit	Retail credit	Strategic risk (reputational)	Resilience risk	Regulatory compliance risk
Timescale	Short – long term	Medium – long term	Short – long term	Short – long term	Short – medium
Transition risk drivers					
– Policy and legal	♦	♦			♦
– Technology	♦				
– End-demand (market)	♦				
– Reputational	♦		♦		
Physical risk drivers					
– Acute – <i>increased severity of extreme weather</i>	♦	♦		♦	
– Chronic – <i>changes in weather patterns</i>	♦			♦	

1 Short term: less than one year; medium term: period to 2030; long term: period to 2050.

Financial risk

Wholesale credit risk

Identification and assessment

We have identified six key sectors where our wholesale credit customers have the highest climate risk, based on their CO₂ emissions. These are oil and gas, building and construction, chemicals, automotive, power and utilities and metals and mining.

We continue to roll out our CO₂ transition and physical risk questionnaire to our largest customers in high risk sectors to assess and improve our understanding of the impact of climate change on their business models and any related transition strategies (for further details, see page 8). In 2021, we intend to increase the scope and coverage of the questionnaire.

We are developing our approach to climate stress testing.

Management

We continue to evolve our transition risk framework, with the focus on developing a methodology, data analytics and climate-related risk score for our customers and portfolios.

This will enhance our management of transition and physical risk across our wholesale credit portfolio.

Aggregation and reporting

We currently report our key sector exposure as part of the ESG dashboard that is presented quarterly to the Group Executive Committee. Our reporting will evolve as our approach to climate risk management matures.

Retail credit risk

Identification and assessment

We manage retail credit risk under a framework of controls which enable the identification and assessment of credit risk, from individual credit facilities through to the total portfolio, across Wealth and Personal Banking ('WPB').

In 2020, we carried out an initial assessment of our residential mortgage portfolio collateral exposure to physical risk using natural catastrophe modelling based on historical exposures.

The results of the stress test will deepen our understanding of the impacts of the shift to a low-carbon economy, and the physical risk implications for our largest residential mortgage portfolios. As part of this we are developing new data metrics to improve how we measure exposure to physical risk.

Management

We are focusing on embedding climate risk into retail risk management, prioritising exposure in the largest residential mortgage portfolios. We continue to update our risk management framework and policy to reflect lessons learnt from our climate risk assessments.

Aggregation and reporting

The climate risk programme for WPB and its impact on retail credit risk are reported to the WPB Sustainability and Climate Risk Steering Committee and the WPB risk management meeting on a periodic basis.

Reputational risk

Identification and assessment

We implement sustainability risk policies, including the Equator Principles for assessing and managing social and environmental risk of financing large projects, as part of our broader reputational risk framework. We focus on sensitive sectors that may have a high adverse impact on people or the environment, and in which we have a significant number of customers. A key area of focus is high carbon sectors, which include power generation, mining, agricultural commodities and forestry.

Management

As the primary point of contact for our customers, our relationship managers are responsible for checking that our customers meet policies aimed at reducing carbon impacts. Our global network of more than 75 sustainability risk managers provides local policy support and expertise to relationship managers. A central Sustainability Risk team provides a higher level of guidance and is responsible for oversight of policy compliance and implementation.

Our sustainability risk policies preclude HSBC from financing:

- new coal-fired power plants;
- new offshore Arctic oil or gas projects;
- new greenfield oil sands projects, new thermal coal mines and new customers dependent on thermal coal mining; and
- illegal logging and deforestation by customers involved in agricultural commodities and forestry.

For further details of our sustainability risk policies, see page 51 of the ESG review within our *Annual Report and Accounts 2020*.

Aggregation and reporting

Our Sustainability Risk Oversight Forum provides a Group-wide forum for senior members of our global risk team and global businesses affected by sustainability risk, and oversees the development and implementation of sustainability risk policies. Cases involving complex sustainability risk issues related to customers, transactions or third parties are managed through the reputational risk and client selection governance process.

We report annually on our implementation of the Equator Principles and the corporate loans, project-related bridge loans and advisory mandates completed under the principles.

For the latest report see: <https://www.hsbc.com/who-we-are/our-climate-strategy/sustainability-risk/equator-principles>.

Non-financial risk

Regulatory compliance

Identification and assessment

Compliance has identified and assessed product management, mis-selling, conduct (including disclosures), conflicts of interest and regulatory change as the key risks from a climate risk perspective. Product management and mis-selling are the primary risk areas where we must:

- Effectively and consistently consider climate risk factors in the development and ongoing governance of new, changed or withdrawn products and services.
- Ensure that climate-related products and services offered to customers are appropriate for their needs and that all marketing materials and disclosures are clear, fair and not misleading. We will not facilitate greenwashing by conveying a false impression or providing misleading information about a product or service's climate credentials.

Management

Compliance has reviewed existing policies and controls to include climate risk considerations for the key risk areas where appropriate.

For example, climate risk has been embedded within the Group's product management policy. This means that where a product is positioned or described as sustainable, individuals accountable for the product must be satisfied that this is justifiable and accurate before providing approval to launch or change the product.

Our product management policy is being updated to ensure that product inventories have common data attributes, including the capture of climate, sustainable or green attributes.

We will continue to develop our policies and underlying metrics to enhance the management of the key climate risks in line with the Group's climate ambition and risk appetite.

Aggregation and reporting

Compliance has established an ESG and Climate Risk Working Group to monitor and oversee our key regulatory compliance risks.

This group tracks and monitors the embedding of climate risk within the management of regulatory compliance risks and controls, and assesses ongoing regulatory and legislative changes across the sustainability and climate risk agenda.

Our compliance function is also represented at the Group's Climate Risk Oversight Forum.

Resilience risk

Identification and assessment

Our initial assessment of climate risk has identified building unavailability, workplace safety, information technology and cyber security risk, transaction processing risk, and third party risk, as the key risks facing our operational resilience.

In 2020, we worked with external partners to assess the climate risk to our own real estate portfolio – taking into consideration the risk exposures to wind storm, earthquake, flood, storm surge and bushfire. Although the results concluded that the risk remained within our risk appetite, we recognise that extreme weather events associated with climate change have the potential to intensify over time so we will continue to work with our partners to identify and assess emerging climate risks.

Management

In 2020, we started reviewing our existing policies, processes and controls to ensure that climate risk is considered across our key risk areas, and that these are managed in line with our climate ambition and risk appetite. This work will continue throughout 2021.

Our stress test pilot results will also inform our approach to climate risk management.

Aggregation and reporting

Our exposure to climate risk will continue to be aggregated and reported to the Non-Financial Risk Management Board and other relevant formal governance forums.

Metrics and targets

Metrics to measure progress

We are using several metrics to measure our progress of our net zero journey, including our carbon emissions, renewable energy sourced for our operations, balance sheet exposure to carbon-intensive sectors and progress made against our sustainable finance commitment.

We intend to develop clear, measurable pathways to net zero within our financing portfolio, using the PACTA tool, which measures the alignment of relevant sectors with net zero.

In 2020, we began to apply PACTA to the relevant segments of our loan book, starting with the automotive sector, to build our knowledge of the tool and improve our understanding of its effectiveness and limitations. For further details, see page 18.

We know this is a journey and recognise that the current means of measurement of financed emissions globally need improving to track reductions better. Over the course of 2021, we will be refining our approach to financed and supply chain emissions,

formalising the qualifying criteria for sustainable finance, and enhancing reporting on investments.

In the following table, we set out our ambition, the metrics and indicators we used in 2020 to measure our progress, and the metrics and indicators we aim to develop and use in future to measure our progress.

For a snapshot of the progress we have made so far, see page 26.

Ambition	Metrics and indicators used in 2020	Metrics and indicators to be developed in 2021
Becoming a net zero bank¹ Be net zero in our operations and supply chain by 2030 or sooner	<ul style="list-style-type: none"> – CO₂ emissions per FTE across scope 1, 2 and 3 – Absolute CO₂ emissions across scope 1, 2 and 3 – Percentage of renewable electricity sourced 	<ul style="list-style-type: none"> – Supply chain emissions
Align our financed emissions to achieve net zero by 2050 or sooner	<ul style="list-style-type: none"> – Illustrative PACTA results for our automotive book. (For further details, see page 18 and 19.) – Percentage of wholesale loans and advances in high transition risk sectors. (For a breakdown by sector, see page 9.) – Illustrative impacts of climate scenarios on our transition risk sectors. (For further details of our scenario analysis, see pages 14 to 16.) 	<ul style="list-style-type: none"> – Net zero-alignment of our financing portfolio
Supporting our customers Support our customers in the transition to a sustainable future with \$750bn to \$1tn of sustainable finance and investment by 2030	<ul style="list-style-type: none"> – Sustainable finance and investment provided (\$bn). (For further details of our progress, see pages 48 to 50 of the ESG review within our <i>Annual Report and Accounts 2020</i>.) – Ranking in Dealogic green, social and sustainable bond league tables² 	
Unlocking new climate solutions Help transform sustainable infrastructure into a global asset class, and create a pipeline of bankable projects	<ul style="list-style-type: none"> – Established HSBC Pollination Climate Asset Management with the aim to launch the first fund in mid-2021. (For further details, see page 50 of the ESG review within our <i>Annual Report and Accounts 2020</i>.) 	<ul style="list-style-type: none"> – Cleantech investment within our technology venture debt fund – Philanthropic programme to provide scale to climate innovation ventures, renewable energy, and nature-based solutions

¹ Our reported CO₂ emissions in 2020 related to energy and business travel. For further details of scopes 1, 2, and 3, and our progress on carbon emissions and renewable energy targets, see pages 45 and 46 of the ESG review within our *Annual Report and Accounts 2020*.

² Dealogic ranking based on apportioned bookrunner value, excluding self-issuances. For further details of our ranking, see page 48 of the ESG review within our *Annual Report and Accounts 2020*.

Progress against our targets

This is a snapshot of the progress we have made, based on the metrics we used in 2020.

Target

\$100bn

of sustainable finance and investment to be provided and facilitated by 2025¹

2.0

tonnes of CO₂ used per full-time equivalent ('FTE') by the end of 2020²

100%

of our electricity to be sourced from renewable sources by 2030

Progress

\$93.0bn

Cumulative progress since 2017

1.76

tonnes used per FTE²

37.4%

of our electricity consumed is renewable, mainly from power purchase agreements

Other indicators

3rd

Dealogic ranking for green, social and sustainability bonds globally in 2020.

A-

CDP disclosure leadership score 2020

1 In October 2020, we announced a new target ambition to provide between \$750bn to \$1tn of sustainable finance and investment by 2030.

2 This carbon figure covers scope 1, scope 2 and scope 3 (travel) emissions. For further details on carbon emissions reporting, see our reporting guidelines on www.hsbc.com/our-approach/esg-information/esg-reporting-and-policies.

Additional metrics used in 2020

Our carbon dioxide emissions in tonnes

Absolute

Total

406,000

530,000

From energy

363,000

414,000

Included energy UK

8,000

10,400

From Travel

43,000

116,000

Per FTE

Total

1.76

2.26

From energy

1.57

1.76

From Travel

0.19

0.5

■ 2020 ■ 2019

Energy consumption in GWh

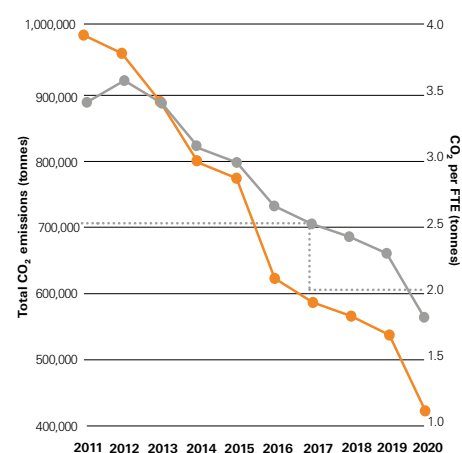
	2020	2019
Total Group	928	1,050
UK only	247	281

≤19.6%

Wholesale loan exposure to transition risk sectors
(2019: 20.6%)

See page 9 for sector breakdown

Carbon emissions (total and FTE)



Key:

◆ Total CO₂ emissions (tonnes)

● CO₂ per FTE (tonnes)

..... The 2020 target was set at 2.5 CO₂ tonnes/FTE until 2017, when the target was stretched to 2.0 CO₂ tonnes/FTE

► For a more detailed breakdown of our climate data, see pages 46 of the ESG review within our *Annual Report and Accounts 2020* and our separate *ESG Data Pack* at www.hsbc.com/esg.

How we engage externally to drive progress

We recognise that no single government, industry or corporation has the power to effect change on its own given the scale and urgency of the climate change challenge. Partnerships and collaboration are a key part of how we aim to help manage the future risk of climate change for the financial system and society at large, and support the real economy in the transition to a low carbon, sustainable future.

We actively seek opportunities to join forces with leading industry partners to improve the impact of climate change solutions, and work with regulators and international organisations to help deliver effective regulation and governance for our customers, the industry and wider society.

We aim to use our global reach and leadership to help accelerate the climate conversation and improve global industry standards in sustainable investing through our regulatory engagement, including as chair of the Bank of England climate risk management working group and the Monetary Authority of Singapore's Green Finance Industry Taskforce.

To advocate change and help align recovery to climate and sustainability goals we have joined a number of industry-led initiatives and key industry forums globally. Our involvement includes as chair of the Institute for International Finance sustainable finance working group and the risk management working group of the industry-led Climate Risk Management Forum in the UK, and we

co-chair the International Capital Markets Association's climate transition finance working group. We sit on the global steering committee of the investor-led Climate Action 100+ initiative and chair the Institutional Investors Group on Climate Change ('IIGCC') corporate programme. We are also one of the founding partners of the Sustainable Market Initiative, launched by HRH The Prince of Wales to accelerate global progress towards a sustainable future.

We have continued to extend our sustainable finance business partnerships, most notably in natural resources, technology and sustainable infrastructure. In 2020, we established a joint venture with climate change advisory and investment firm Pollination Group, with the aim of building HSBC Pollination Climate Asset Management into the world's largest natural capital investment manager.

To encourage increased investment in sustainable infrastructure there needs to be stronger standards around adequate, bankable projects. To help address this, we are leading the Finance to Accelerate the Sustainable Transition Infrastructure ('Fast-Infra') initiative, in partnership with the International Finance Corporation ('IFC'), the OECD, the World Bank's Global Infrastructure Facility and the Climate Policy Initiative, to help build sustainable infrastructure into a global mainstream asset class. Fast-Infra aims to develop a global sustainability labelling system for infrastructure investment, to ensure that governments and project developers embed high ESG standards into new infrastructure to access this label.

We also co-chair the Coalition for Climate Resilient Investment, which was launched at the UN General Assembly's Climate Action Summit in September 2019, bringing together institutional investors, banks, insurers, rating agencies and governments to develop risk-informed frameworks and tools to integrate and price physical climate risks in decision making.

Through our HSBC Centre of Sustainable Finance we share our thought leadership and collaborate with organisations such as the Energy Transition Commission, World Resources Institute, Climate Bonds Initiative, Singapore Institute of International Affairs, and the Asia-Pacific Structured Finance Association.

As an early signatory on global climate initiatives we actively participate in external and stakeholder consultations, such as the Equator Principles for the sustainability impact of project finance deals. We are partners of World Economic Forum Alliance of CEO Climate Leaders, a global network of chief executives who support bold and proactive action to ensure a smooth transition to a low-carbon and climate-resilient economy, and we are a member of the Climate Finance Leadership Initiative, which convenes leading companies to mobilise and build private capital for climate solutions.

For further details of HSBC Pollination Climate Asset Management, see page 6.

Our key external memberships include

- Chair of Bank of England climate risk management working group
- Chair of Monetary Authority of Singapore Green Finance Industry Taskforce
- Founding member of the Climate Finance Leadership Initiative
- Founding member of Chapter Zero: The Directors' Climate Forum
- Chair of the Institute of International Finance sustainable finance working group
- Member of Climate Action 100+ global steering committee
- Member of the Financial Conduct Authority and Prudential Regulation Authority's Climate Financial Risk Forum ('CFRF')

For further details of our sustainability-related memberships, see <https://www.hsbc.com/who-we-are/our-climate-strategy/sustainability-memberships>.



Cautionary statement regarding forward-looking statements

This TCFD Update may contain projections, estimates, forecasts, targets, opinions, prospects, results, returns and forward-looking statements with respect to the financial condition, results of operations, capital position, strategy and business of the Group, which can be identified by the use of forward-looking terminology such as 'may', 'will', 'should', 'expect', 'anticipate', 'project', 'estimate', 'seek', 'intend', 'target' or 'believe' or the negatives thereof or other variations thereon or comparable terminology (together, 'forward-looking statements'), including the strategic priorities and any financial, investment and capital targets described herein. Any such forward-looking statements are not a reliable indicator of future performance, as they may involve significant stated or implied assumptions and subjective judgements, which may or may not prove to be correct. There can be no assurance that any of the matters set out in forward-looking statements are attainable, will actually occur or will be realised or are complete or accurate. The assumptions and judgements may prove to be incorrect and involve known and unknown risks, uncertainties, contingencies and other important factors, many of which are outside the control of the Group. Actual achievements, results, performance or other future events or conditions may differ materially from those stated, implied and/or

reflected in any forward-looking statements due to a variety of risks, uncertainties and other factors (including without limitation those that are referable to general market conditions or regulatory changes or the impact of the COVID-19 outbreak). Any such forward-looking statements are based on the beliefs, expectations and opinions of the Group at the date the statements are made, and the Group does not assume, and hereby disclaims, any obligation or duty to update, revise or supplement them if circumstances or management's beliefs, expectations or opinions should change. For these reasons, recipients should not place reliance on, and are cautioned about relying on, any forward-looking statements. No representations or warranties, expressed or implied, are given by or on behalf of the Group as to the achievement or reasonableness of any projections, estimates, forecasts, targets, prospects or returns contained herein.

Additional detailed information concerning important factors that could cause actual results to differ materially from this TCFD Update is available in our Annual Report and Accounts 2020 for the fiscal year ended 31 December 2020, which is expected to be filed with the Securities and Exchange Commission ('SEC') on Form 20-F on 24 February 2021.



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