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Our financial sector climate services

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Contents

Our point of view

Climate change is no longer just a reputational issue, it can have real impacts on the credit quality of borrowers which investors, auditors and regulators will want to understand.

Given the swift ratification of the Paris Agreement, we think that climate policy will emerge sooner than expected; strategic risk appetite allocation and transactional decisions made by banks today should anticipate such emerging climate policy risks and correctly integrate such impacts to credit risk management.

- At the transaction or client level, banks should start incorporating the financial impacts of climate change into standard credit risk analysis, and request better disclosure of these risks from their clients and counterparties.
- At the portfolio level, by applying stress tests, banks can start to consider how climate change and its possible impacts on credit quality may impact capital adequacy requirements.
- All of these will also need to be reviewed in anticipation of the IFRS9 changes to impairments accounting rules where a more forward-looking and continuous assessment of credit quality will be needed, and in some cases, over the lifetime of a particular exposure.
- The TCFD's work will also drive expectations that climate risk disclosures will increasingly be focused on financial impacts, which gives rise to governance implications for the risk and audit committees of companies. We expect that over time, regulatory disclosure and stress testing requirements will become more common.

We are seeing a number of forward thinking banks place climate change in their risk management frameworks and start to assess the implications of climate change on their lending and trading books.

We can help you to:

1. Understand and assess risks at a transaction, client and portfolio level.
2. Identify and manage climate risk data and feed this into current credit risk modelling.
3. Interpret what the low-carbon transition means for their institution to inform decision making at all levels and capitalise on the opportunities.
4. Establish policies, strategy and tools to embed climate risk management across the business.
5. Prepare robust and comprehensive climate-related financial disclosures.

The context

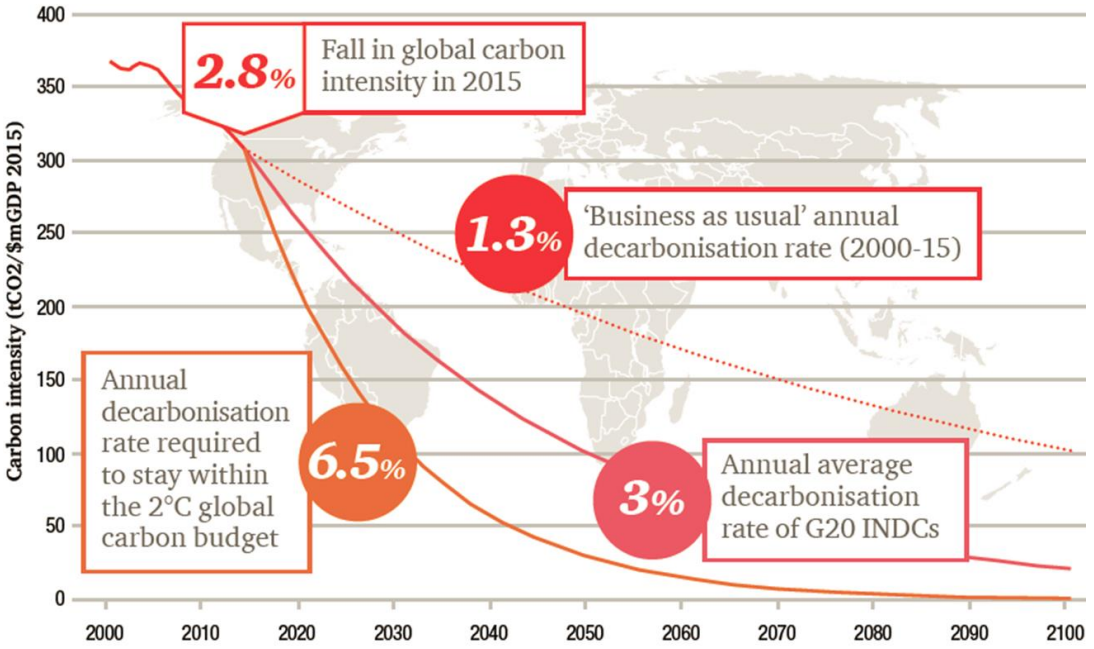
1

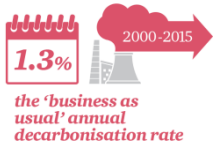
Government climate policy increases transition risks

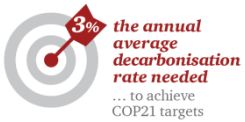
The Paris Agreement, signed in December 2015, shows governments' ambitions policy to reduce carbon emissions.

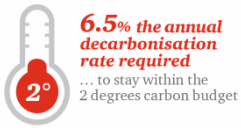
Public policy is set to drive carbon reductions

In December 2015, governments agreed to the ambition of limiting global warming to 1.5°C above preindustrial levels. This agreement ('the Paris Agreement') is made up of Nationally Determined Contributions (NDCs) – commitments to reduce national greenhouse gas (GHG) emissions. These NDCs imply a step change in efforts to reduce GHG emissions – A low carbon transition which will result in impacts to businesses. The chart below shows how if achieved, NDC's will more than double the current rate of decarbonisation from 1.3% p.a. to 3% p.a. over the next 10-15 years. This falls short of the 6.5% decarbonisation required to stay within the 2 degrees carbon budget.









The low carbon transition will impact business

'Shifts in our climate bring potentially profound implications and risks for insurers, financial stability and the economy', Mark Carney.

Stranded assets e.g. to achieve a 2°C goal, between 60-80% of known coal reserves will have to remain unexploited.

Climate change can have real impacts on the credit quality of borrowers, which investors, auditors and regulators will want to understand. Banks face transition risk through their clients. The most tangible financial impacts are likely to be impaired asset values and loan books. For example, under the International Energy Agency's (IEA) 2°C scenario, **coal use would need to fall by 30% in the next 25 years**, being displaced by gas, nuclear, renewables and energy efficiency. This will potentially result in '**stranded assets**' that are fossil fuel resources unable to achieve an economic return, as a result of the market changes associated with the transition to a low carbon economy.

The timeline below illustrates the impact to the coal industry in 2015 which experienced a reduction in coal consumption (-1.8%), with a switch to lower carbon gas (+1.7%) as well as oil (+1.9%). Wind and solar energy output grew at 17.4% and 32.6% last year, but are still as yet tiny fractions of the whole energy system.

"In financial terms, we estimate that the value of unburnable reserves could amount to over $100 trillion out to 2050."

Citigroup

"One live risk right now is of [insurers] investing in assets that could be left 'stranded' by policy changes which limit the use of fossil fuels."

Paul Fisher, Deputy Head of Prudential Regulation Authority

"Short-term shifts in market sentiment induced by awareness of future climate risks could lead to economic shocks and losses of up to 45% in an equity investment portfolio value (23% for fixed income).

Cambridge Institute for Sustainability Leadership

U.S. Coal Company Alpha Natural Resource Files For Bankruptcy
Forbes, August 2015

China Coal Imports Crash as Economy Slows Amid Clean Power Shift
Bloomberg, January 2016

Exxon, Chevron face shareholder defiance over climate proposals
CNBC, May 2016

Peabody Energy Agrees to Greater Disclosures of Financial Risk
NY Times, November 2015

US energy giant Peabody crashes into bankruptcy as coal industry convulses
The Telegraph, April 2016

Dutch parliament votes to close down country's coal industry
The Guardian, September 2016

Pressure on financial intermediaries to act on transition risk is increasing

Climate chance related threats spur financial service providers to action.

Nationally determined contributions

- Ratification of climate agreement
- EU to reduce 40% by 2030
- China 20% electricity from non-fossil fuel by 2030
- US to reduce 20% by 2025

Reform and regulation

- French Energy Transition Law
- Prudential Regulatory Authority: report on CC impact to insurance sector
- FSB Task Force on Climate-related Financial Disclosures
- IFRS 9 impairment rules
- Rating agencies account for climate risk e.g. S&P
- G20 Green Finance Study Group

Asset owners/managers

- Montreal Carbon Pledge
- Portfolio Decarbonisation Coalition
- Divestment movement
- Global Investor Statement on Climate Change
- Investors worth $5.2 trillion have pledged to divest fossil fuels (at end of 2016)

Policy mechanisms

- Carbon-pricing mechanisms
- Implicit price on carbon
- Support R&D to advance low carbon technology
- Revisions to policies that run counter to emissions reductions goals

Peer banks

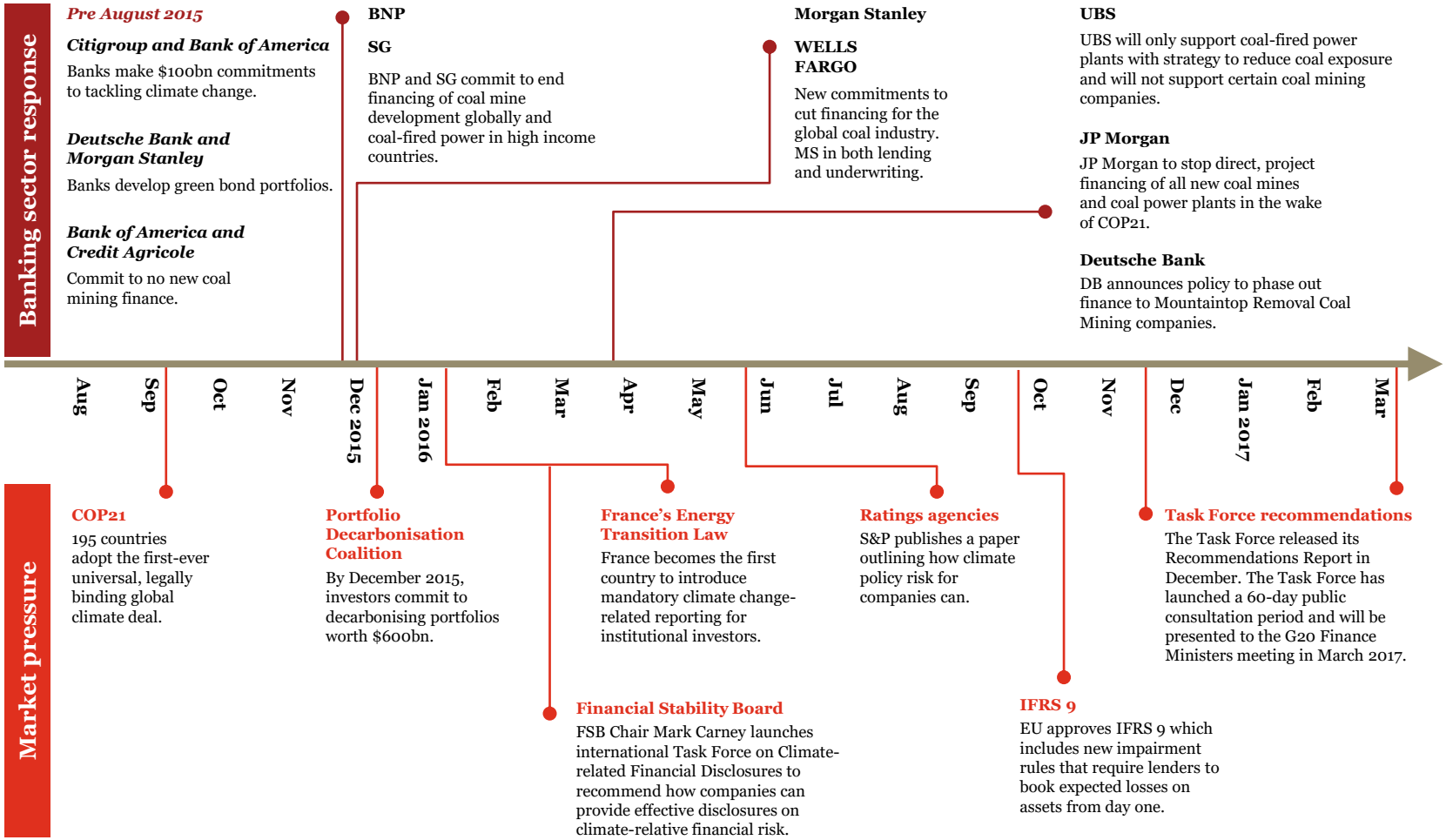
- Banks are publically announcing commitments to limit financing of coal-fire generation and coal mining
- UBS, JP Morgan, HSBC and Barclays are members of the FSB Taskforce on climate-related disclosures

NGO campaigns

- BankTrack's 'Paris Pledge' campaign supported by over 40 campaigning groups calling on banks to publicly pledge to phase out financing for the coal industry
- Rainforest Action Network publishes annual fossil fuel finance league tables

The market response to climate risk

The scope of global fossil fuel divestment has doubled over the past 15 months, with 86 institutions and individuals controlling $5.197 trillion in assets pledging to divest (as at end of 2016).



Climate change creates transition and physical risks

Climate change creates several types of risk which must be assessed and identified.

Financial impacts

Financial opportunity:

- Efficiency savings and cost reduction
- Increased natural resource productivity
- New revenue streams
- Reduced impairment of climate resilient assets
- Improved market liquidity through enhanced market pricing

Reputation risk:

- Damage to brand value or reputation resulting in lost revenue
- Additional expenditures e.g. corporate affairs, litigation etc.

Market and economic risk:

- Company or securities valuations
- Asset impairment
- Viability of certain business models
- Credit rating implications

Financial impacts

Physical risk:

- Chronic: Degradation or limitations on resource availability e.g. labour, natural resources etc.
- Acute: Disruptions to operations, transportation, supply chains etc.
- Acute: Damage to physical assets
- Acute: Impact on insurance liabilities

Policy and regulation risk:

- Compliance costs
- Stranded assets
- Asset impairment
- Liabilities
- Restrictions and limitations on carbon intensive assets
- Asset depreciation

Technology risk:

- Write-offs for investments in disrupted technologies
- Required investment in new technologies
- Process change costs to accommodate new technologies

Challenges in managing credit risk from climate change

Managing climate risks for financial institutions' is a more difficult challenge because of the spread of investment and lending portfolios

Financial institutions are responding to the call for greater transparency of 'financed emissions' (the GHG emissions associated with investments) and the related carbon intensity of their investment and lending portfolios. In addition, banks are also considering the impacts of climate policy (transition risks) and physical impacts (physical risks) on their asset portfolios.

Bank-specific challenges:

- Currently, climate risk is treated as reputational risk, rather than as credit risk. Because this system is unable to assess business wide exposure to systemic risks from climate change, banks need to consider the total exposure to different sectors in different locations, jurisdictions and countries and how these could be impacted by climate risks.
- Environmental risks are managed through an Environmental and Social Risk Management (ESRM) framework, which looks at environmental risks at the transactional level, rather than across the entire sector or portfolio.
- Credit risk analysis typically will perform forward modelling of up to 1-5 years for specific activities and is not geared to account for longer term climate policy or climate impact scenarios.
- Banks do not typically collect climate risk related data on their clients and there are large data gaps in client sub-sector and location of operations. Furthermore, credit ratings do not currently incorporate climate risk and can therefore not be used as a proxy.
- Exposure can be material and difficult to prioritise.
- Calculating financed emissions is difficult for complex or intangible asset classes e.g. bonds and derivatives.

Market-wide challenges

- Companies – Particularly those that are not publically listed – Do not disclose key pieces of data for understanding credit implications of climate risk, resulting in significant data gaps.
- There is currently no standard for managing climate risk, leading to a lack of consistent approaches that can be applied 'off the shelf'.
- The TCFD recommendations are unlikely to be initially implemented uniformly across countries and sectors, so data availability and quality will continue to be issues in the short term.

How we can help?

2

Our climate risk assessment approach

Our approach filters down to the greatest exposure to risk and can consider a range of climate risk variables relevant to different levels of assessment.

Select climate risk assessment scope (1/2)

We have defined four key areas that need to be considered when deciding how to prioritise the scope of assessment.

Select climate risk assessment scope (2/2)

We tailor the climate risk assessment approach depending on whether a client is interested in a project, counter party or portfolio sector.

Identify material climate risks and determine scenarios

We help our clients differentiate and interpret climate risks so that any assessment can focus on the material financial impacts across different climate scenarios.

Review portfolio exposure

Portfolio revenue and exposure data is analysed (by credit rating, product, industry, region, tenor etc.) so that concentrations of exposure can be identified and mapped to climate risk scores.

Quantify climate risk

We have developed climate risk assessment tools that underpin our climate risk services for FS clients.

Translate into credit risk

Using both climate and financial data, Credit Models can be adjusted to quantify credit risk associated with different climate scenarios.

Develop climate risk response

Gradual portfolio 'decarbonisation' can be achieved by adjustment of existing portfolio balance combined with investment in additional low carbon opportunities.

Disclose climate-related financial risk

Our approach is aimed at meeting the FSB Task Force recommendations on climate-related financial risk disclosures.

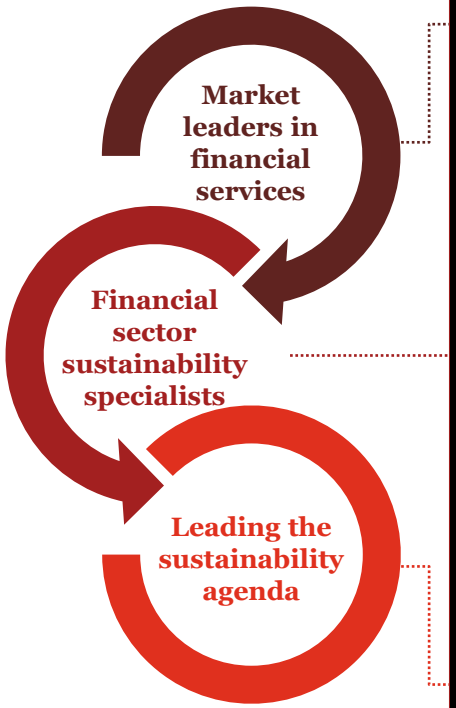
Our FS climate risk services and team

3

Summary of our FS climate risk and opportunity services

Our team combines FS sustainability, reporting and risk management experts.

Bringing you our expertise



How to find out more

Low carbon economy index

http://www.pwc.co.uk/services/sustainability-climate-change/insights/low-carbon-economy-index.html

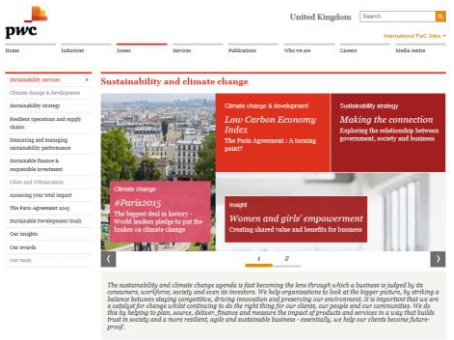
Climate policy risk

http://www.pwc.co.uk/services/sustainability-climate-change/financing-the-future/identifying-climate-risks-in-financial-services.html

Task Force on Climate-related Financial Disclosures

https://www.pwc.co.uk/sustainability-climate-change/assets/tcfd-phase-2-report-final-jan-17.pdf

PwC's Sustainability and Climate Change team



http://www.pwc.co.uk/services/sustainability-climate-change.html

Appendices

4

Physical risk assessment – Our approach

Policy risk assessment – Our approach

Technology risk assessment – Our approach

This index of case studies serves to illustrate our climate risk services

Case study 1: Climate change strategy review

Case study 2: Portfolio policy risk assessment (1/4)

Case study 2: Portfolio policy risk assessment (2/4)

Case study 2: Portfolio policy risk assessment (3/4)

Case study 2: Portfolio policy risk assessment (4/4)

Case study 3: Project finance climate risk analysis (1/2)

Case study 3: Project finance climate risk analysis (2/2)

Case study 4: Physical climate risk assessment

Case study 5: Technology scenarios analysis

Case study 6: ESRM development

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