STRANDED ASSETS

PROGRAMME

SMITH SCHOOL OF ENTERPRISE AND THE ENVIRONMENT

UNIVERSITY OF OXFORD

Summary of Proceedings

Stranded Assets Forum, Waddesdon Manor

14th – 15th March 2014

In Partnership with

THE ROTHSCHILD FOUNDATION

Authors: Ben Caldecott | Jeremy McDaniels | Gerard Dericks

Introduction

The University of Oxford's Smith School of Enterprise and the Environment and The Rothschild Foundation held the first Stranded Assets Forum at Waddesdon Manor, Buckinghamshire, on the 14th and 15th of March 2014 (see Annex A for full agenda and Annex B for list of participants).

The goal of the Forum was to discuss recent developments and key issues pertaining to stranded assets. Assets across a wide range of sectors are becoming increasingly at risk from stranding due to environment-related factors – from climate change through to new environmental regulations, developments in clean energy technology, resource constraints, evolving social norms and litigation. In order to respond to these issues, the Forum brought together a select number of high-level participants to better understand risks across the investment chain, the possible consequences of asset stranding, and the potential solutions to these challenges.

Sixty global leaders and experts discussed shifting risk landscapes and potential discontinuities created by stranded assets, the likelihood of significant disruptive impacts, and the management of costs and benefits arising as part of the transition to a low-carbon economy. Participants also examined whether key organisational and structural elements of the financial system – including investment risk metrics, valuation tools, benchmarks, and standards – may pose barriers to effective risk management, strategic actions, and the development of effective policies.

This report provides a summary of the proceedings and deliberations from the Forum. It outlines the key discussion points and issues that emerged during the five sessions held.

- **Session I: Risk and exposure across commodities and sectors**
- **Session II: Long term risks and returns in equity markets**
- **Session III: Banks, project finance and risk exposure**
- **Session IV: Perspectives from across the investment chain**
- **Session V: Systemic risk and regulatory responses**

Session I: Risk and exposure across commodities and sectors

In the opening panel, experts discussed some of the characteristics of stranded assets, how asset stranding should be understood, and current perspectives on their macroeconomic implications.

Framing and definition

Participants discussed the development of thinking regarding stranded assets resulting from economic innovation and transformation, noting the cases of product obsolescence and issues surrounding stranded costs. Discussion examined the changing role of policy action in stranding assets, and how this may represent an "unanticipated change" that the private sector must react to in order to preserve value. Participants noted the significant impacts of recent work on stranded assets within the environmental risk space, including sustainability strategy and metrics for performance and long-term value.

Materiality

Participants discussed the role of policy change as a material risk to asset value in the energy sector, though cautioning that there was limited potential for comprehensive policy action to limit warming to 2 degrees despite commitments within UNFCCC negotiations. Participants discussed potential scenarios for energy demand, energy prices, and regulations that could impact the value and profitability of high-carbon assets in the absence of a 2 degree constraint. The valuation of coal stocks – of particular interest due to high emissions profiles, slack market conditions, and exposure to regulatory risks – are a focal point of interest across the investment chain.

Policy risks are likely to have a range of outcomes across the energy sector – some of them counterintuitive. Discussion focused on the declining fortunes of EU utilities relying on conventional thermal generation, and the higher revenue streams gleaned from clean energy supported by subsidies. Further renewables deployment may have increasingly negative impacts on asset values across the electricity sector.

Implications: political economy and wealth transfer

Stranded assets are likely to have political economy implications, and there would be 'winners and losers' as a result. Political economy implications are already becoming a pressing issue in the context of the power sector. The transition from old business models to new ones dominated by variable renewable energy sources demanding high flexibility and intermittent backup capacity would bring forward many such issues.

Wealth transfers originating from technological transitions may have significant implications at an international scale, for example China's growth in solar PV manufacturing. There might be risk transfers from the private to the public sector – for example, as utility revenues become increasingly eroded by distributed generation. Subsidies (if socialised across consumer bills) could be regressive, as they benefit homeowners with capital to spare on distributed generation infrastructure.

Potential systemic dimensions

Drawing on the experience of subprime mortgages and global financial crisis, discussion touched on

the potential for emerging systemic risks arising from stranded assets, and how such risks may build up over time (refer to Session V for more detailed discussion). Participants discussed the potential for catastrophic events to inspire aggressive action on climate change, the difficulties of attributing extreme weather events to anthropogenic climate change, and the increasing need to communicate the risks of non-incremental catastrophic changes (including "tipping point" dynamics) to the financial sector.

A key issue identified was the apparent "second mover advantage" which faces financial stakeholders in addressing potential systemic risks. Risk-averse investors are unlikely to move out of a profitable carbon-heavy asset class early due to the potential loss of competitiveness against conventionally oriented portfolios. As the timescales for climate change are much greater than previous bubbles (such as subprime mortgages), developing appropriate timelines for action on carbon and related environmental risks is difficult in the absence of appropriate long-term investment metrics – or a significant external climatic shock.

Participants discussed the challenges of relating stranded assets to policy risks, and highlighted the importance of focusing on more immediate transitions – such as technological innovation – which are having impacts today. A focus on technological transitions (including increased financing for R&D) was seen as a key priority for efforts to facilitate the decarbonisation objectives within the economy. Energy efficiency and related resource efficiency efforts were also noted as important areas of concern.

Session II: Long-term risk and return in global equity markets

The second panel brought together asset owners and asset managers to discuss the implications of stranded assets for global equity markets. Panelists highlighted a range of structural and organisational barriers preventing the integration of ESG and natural capital risks into asset valuation.

Misalignment of objectives and incentives, performance and metrics

Participants noted the "serious disjunction" between asset owners and asset managers in relation to ESG risks, which is partly driven by different structural constraints and behavioural biases. A key dimension is the widely cited disconnect between investment timeframes considered "long-term" by institutional investors and the 2-3 year remuneration incentives of asset managers. Panelists agreed that asset owners have so far failed to systematically integrate environmental externalities and risks into their mandates. Addressing this governance gap could potentially inspire others along the investment chain to respond, and would hardwire environmental objectives into the agreements governing asset management.

Participants discussed how conceptions of relative performance (and relative risk) based upon benchmarks have divorced public equities from reality, and muted the ability of stakeholders to implement metrics and benchmarks that are more appropriate indicators of real performance. Over the long term, the continued fixation with relative performance within global equities may diminish long-term returns from portfolios.

Risk management in equities – first mover disadvantage

Panelists agreed that stranded asset risk is not currently considered an important issue by asset managers working within equity markets. Many institutional investors are skeptical about implementing proactive de-risking through divestment from carbon across a portfolio due to the potential downside risk of overambitious early action. Some asset managers may be caught between environmental and profit-related objectives that appear to be conflicting, and feel unable to properly reduce risk exposure to environment-related risks in equities. Integrating these issues into the accepted norms within the sector will continue to be a challenge in the absence of external regulatory actions or exogenous shocks.

Strategies for improving engagement

Participants discussed a number of potential strategies for improved engagement with these issues across the investment chain. Within the investment management industry, asset owners and managers should work together to define how ESG risks translate across asset classes (e.g. equities, fixed income, infrastructure, real estate). Tailoring the characteristics of ESG risks to ensure that they are relevant to different asset classes is likely to improve clarity in portfolio decision-making.

Participants noted the pressing need to be more strategic on engagement actions and to look beyond asset owner-led engagement. Educational institutions and professional bodies (such as the CFA) were noted as prime candidates, due to their influential role within both the practice and culture of the financial industry. Participants also highlighted the need to work directly with mainstream organisations, including market regulatory bodies, stock exchanges, and other international institutions addressing macro-prudential risk.

Role of investors in the policy process

The panel concluded with a discussion on the role of investors within the policy-making process, highlighting the potential engagement opportunities that could be harnessed by different financial actors. Participants agreed that financial stakeholders should contribute much more to the policymaking process in order to bring balance to the lobbying of industry incumbents.

Session III: Banks, project finance and risk exposure

The third panel brought together representatives from banks and international financial institutions (IFIs) to discuss the implications of stranded assets within bank lending and project finance. Discussions assessed risk exposure, impacts on national accounts, risk transfer, and risk mitigation strategies and tools.

Risk exposure: examples, dimensions and impacts

Participants discussed the exposure of banks to current and potential stranded asset risk in different sectors, focusing on energy. Recent asset stranding across the EU electricity sector was discussed as evidence of indirect risk to lending institutions. Characteristics of stranded assets within the EU electricity sector illustrate counter-intuitive dynamics resulting from market and policy interactions. Key examples include high-efficiency German and Dutch gas-fired power stations being rendered uneconomic by depressed wholesale energy prices, increasing renewable energy support and competitiveness disadvantages from cheap US coal imports. Other examples include renewable assets (e.g. solar farms in Spain) facing policy risks from unanticipated subsidy reform. Broadly, the apparent failure of the current utility model has created significant concern among investors and financial institutions, inspired by both direct policy risk and economic risk.

Panelists noted the limited scope for potential responses to this type of risk exposure, as lenders are constrained to limiting financing for new assets and diversifying risk through financial products. These issues may manifest differently across lenders, as stranded asset risks are not evenly distributed across the banking sector and between public and private financial institutions. Commercial banks may be more insulated from risk as average tenors are shorter.

Beyond economic and policy risks to specific types of assets, reputational risks are an important consideration within project finance. Participants noted that lending to high-risk sectors (including fossil energy) could impact an institution's sustainability reputation. On the whole, disclosure regarding lending to the energy sector remains low in commercial banking, while disclosure around climate and carbon risk in the energy sector is increasing in IFIs.

These changes are affecting the lending activities of banks in a number of ways. Within commercial banking coal companies are beginning to pay more, due to higher risks that are acknowledged across industry. Participants agreed that commercial bank lending mandates may broaden to specifically focus on risks associated with stranded assets, but this is likely to be incremental. Participants stressed the importance of new opportunities for first-movers in this area. Those banks that can finance clients that are well positioned to access opportunities arising from the stranding of assets are likely to achieve significant returns.

Stranded countries: implications for state-owned enterprise and reserves

Panelists mentioned a number of considerations of interest to IFIs regarding risks to national accounts posed by natural capital losses, natural resources degradation, and over-reliance on high-carbon resource revenues. Specifically, participants noted the potential for national governments to be left with significant stranded assets, leading to potentially "stranded countries." Governments in high-carbon resource economies may see rents from state-owned enterprises or state-owned reserves decline as markets shift.

Participants noted that the significance of stranded assets for countries would largely stem from their position on global cost curves for fossil fuels. Many countries that rely on extractives are not least cost producers (oil sands, central Asia, etc.), and these could be negatively impacted by reductions in global prices. From a sectoral perspective, participants agreed that coal reserves are significantly weighted towards SOEs and national reserves – representing a more important risk than various types of oil products. Concern was expressed regarding the (remote) potential that global mitigation efforts could reduce export revenues, resulting in macroeconomic competitiveness risks that could potentially affect global financial stability. Participants noted that a significant amount of risk is carried by sovereigns in terms of natural capital deficits; some of the preliminary work on environmental risk to sovereign credit illustrates this.

Risk transfer

Participants discussed different dimensions of risk transfer from firms to national governments, and further to IFIs. Participated noted how different regulatory actions at a national level (including actions on air quality and water scarcity in emerging market and developing economies (EMDEs) may have impacts on lending, and potential impacts on macroeconomic stability. Many IFIs have very little remaining risk absorption capacity, and increasing mitigation and adaptation financing may further reduce the potential to absorb risks posed by stranded assets.

Management approaches: tools and strategies

Participants noted that most public and private banks do not have specific policies on stranded assets, and that a constellation of different climate and ESG risk assessment tools could support the development of appropriate risk management mechanisms. Potential strategies and tools manage risks related to stranded assets include:

- Stress testing growth models and resilience strategies against a wider range of risk variables;
- Incentives to redirect from high carbon pathways, focusing on resource efficiency;
- Social protection, including mechanisms to shield populations from economic risks stemming from environmental change, and safety nets to help people cope with shocks;
- Implementation of performance standards across industrial infrastructure linked to lending.

Session IV: Perspectives from across the investment chain

The Forum's fourth panel opened day two with perspectives from advisers along the investment chain – actuaries, accountants, lawyers and data providers. Discussions covered recent work and developments pertaining to stranded assets in these professions.

Natural capital value and risk

Panelists presented recent findings on the impacts of natural capital risk and accounting (in terms of the monetisation of key environmental externalities) and how these issues may relate to stranded assets across the economy. Participants noted the importance of a wider range of natural capital degradation issues beyond policy-based carbon risk to the energy sector. Discussions highlighted new corporate responses to natural capital issues (including shadow pricing of carbon, water resources, and other environmental costs), and examined the potential benefits of this type of disclosure from a stranded assets perspective.

Accounting dimensions

Participants examined whether the issue of stranded assets could be considered new or unique from the point of view of standard accounting practice. Key issues in terms of operational definitions of stranded assets, and the role of value claims linked to an asset (assessing risk to an asset vs. risk from an asset) were noted as important in the accounting context. Similarly, assessing the materiality of stranded assets risks relies on subjective judgment and accounting practice that relates to uncertainty and behavioural convention. At a higher level, participants noted the importance of accounting practice and the role of standards in the stranded assets debate, particularly in terms of motivating institutional change in the reporting of impairment losses.

Legal dimensions

A widespread stranding of assets could inspire a range of legal responses, from lawsuits aimed at compensation to the use of legal means to reorient the development of carbon intensive infrastructure. Participants discussed recent developments in the legal sphere pertaining to high-carbon assets and infrastructure, discussing potential strategic litigation regarding new build infrastructure, state aid to energy infrastructure, company and securities law regarding disclosure, and environmental liability cases. Although participants agreed that lawsuits stemming from environmental liability are a less likely driver of asset stranding than other more direct impacts on value, precedent around strategic environmental law in the EU appears to be developing with regard to carbon risk and infrastructure. Outside of the EU, developments around stranded assets in regions with strong environmental liability regimes could lead to changing roles and legal responsibilities for firms and regulators.

Session V: Systemic risk and regulatory responses

The purpose of the final session was to assess whether stranded assets resulting from environment-related risks could pose systemic risks to financial systems, and what the responses to these risks might be. Panelists examined the likelihood of systemic risk; tests of materiality; the role of financial regulators; and practical actions on key issues (disclosure requirements, misaligned incentives, etc.) that could be undertaken as next steps. Discussions concluded with identifying key policy priorities, and elements of a framework to achieve high-leverage outcomes across the investment chain.

Potential for systemic risk within the financial system

Panelists agreed that stranded assets from environment-related risks do not currently pose a systemic risk to the financial system, but highlighted that this may change in the future. This conclusion was due to projections for continued fossil fuel use, the political linkage of the fossil fuel industry, and the weak state of climate policies.

Policy actions at the national level resemble the first-mover disincentive faced by various other financial sector actors in integrating environmental risks into valuation frameworks and investment decision-making – fears of competitiveness disadvantages prevail. On the whole, policy risks facing carbon intensive assets may be remote due to entrenched interests, public ownership, and a lack of economic diversification.

Participants largely agreed that stranded assets can and are likely to have broad implications that have ripple affects across the economy. While not currently systemic, participants noted that risks posed by stranded assets are becoming increasingly material to portfolio value. Such risks may manifest themselves over much shorter timeframes than currently forecast (as based upon the current status of carbon pricing and other emissions mitigation policies). Asset stranding will unevenly affect firms or sectors. Specific sectors – principally coal – are more vulnerable to government regulation, due to higher visibility and greater potential for negative public and environmental health outcomes.

The role of governments and regulators

Risk timelines represent a key issue – while prospective damages and losses may be temporally remote, tipping points within the climate system (and within economic growth trajectories, as noted below) may be quite immediate. A lack of agreement and political recognition of thresholds, tipping points, and timelines related to these risks stands as an important barrier to communicating risk.

Participants noted the poor results of emissions mitigation actions so far, including attempts at carbon pricing and the disclosure of carbon-based and climate-based risk within corporate regulatory filings. In this context, participants largely agreed that short-term risks to vulnerable assets are likely to not arise from climate or environmental policy but from technological, social, reputational, and behavioural changes that affect markets. Some of these changes are related to policy imperatives, but are likely to affect value in indirect and hard to predict ways (as evidenced by the recent fate of gas CCGTs).

Getting the impacts and interactions between climate, energy, technology, and social policy "right" (i.e. stranding polluting, high-risk assets as opposed to cleaner alternatives) represents a key challenge, with a range of potential policy implications. Regulation and design of market structures

for industries with significant environmental impacts (such as energy or agriculture) will need to consider transformative approaches which meet the needs of consumers, yet inspire significant reorientation of business models. Power sector reform is a good example of this.

Participants largely agreed that other actors (predominately NGOs and research institutions) are having the greatest impact within the carbon risk and stranded assets debate. Some recent collaborations between public institutions, NGOs, universities, and investors have been comparatively successful in this regard. Future efforts should focus on increased stakeholder engagement across multiple groups to magnify the potential for positive impacts from research and analysis.

Civil society

Participants held divergent perspectives on the potential mechanisms to facilitate greater public momentum around regulatory actions within the financial sector pertaining to environmental risk. The public's lack of understanding of risks posed to the financial system (and how these risks should be managed) may limit the potential of civil society activism. This being said, the rapid and broad spread of the fossil fuel divestment campaign illustrates the potency of the stranded assets concept within public debate.

Participants agreed that it is a key priority to examine where damages from unabated environmental risk may lie, and communicate these potential scenarios to the public. If damages and value transfer do not fall on the asset bases of large firms (resulting in value destruction), they may fall on the livelihoods of vulnerable populations at heightened risk of climate and natural capital damages. If not managed strategically, risks posed by stranded assets that shifted from firms to governments (through compensation and financialisation of losses) may be transferred then from governments to populations through inadequate investments in climate risk management and adaptation.

Annex A: Agenda

Friday, 14th March 2014

11:05 – 11:15 – **Welcome and Opening Remarks**
Professor Gordon L. Clark, Director, Smith School, University of Oxford

11:15 – 11:30 – **Introduction to Stranded Assets and the Forum**
Ben Caldecott, Director, Stranded Assets Programme

11:30 – 13:00 – **Session I: Risk and exposure across commodities and sectors**
Chair: **Professor Bob Hahn**, Director of Economics, Smith School, University of Oxford
Panelists:
Nick Robins, Co-Director, UNEP Inquiry into a Sustainable Financial System
Mike Wilkins, Managing Director, Infrastructure Finance Ratings, Standard & Poor's
Professor Rick van der Ploeg, Oxford Centre for the Analysis of Resource Rich Economies
Guy Turner, former Chief Economist, Bloomberg New Energy Finance

13:00 – 14:00 – **Lunch**

14:00 – 14:30 – **Keynote: Roger Urwin, Global Head of Investment Content, Towers Watson**

14:30 – 16:00 – **Session II: Long term risks and returns in equity markets**
Chair: **Professor Gordon L. Clark**, Director, Smith School, University of Oxford
Panelists:
Mark Fawcett, CIO, NEST Corporation
Mark Walker, Global Chief Investment Officer, Unilever Pension Fund
Adeline Diab, Head of Responsible Investment Integration, Aviva Investors
Ian Simm, CEO, Impax Asset Management
Seb Beloe, Partner, WHEB

16:00 – 16:30 – **Coffee Break**

16:30 – 18:00 – **Session III: Banks, project finance and risk exposure**
Chair: **Abyd Karmali**, Managing Director, Climate Finance, Bank of America Merrill Lynch
Panelists:
Erik Berglof, Chief Economist, European Bank for Reconstruction and Development
Chris Knowles, Head, Climate Change and Environment Division, European Investment Bank
Vikram Widge, Head, Climate Finance and Policy, International Finance Corporation
Andrew Buglass, Head, Energy, Structured Finance, Corporate and Institutional Banking, Royal Bank of Scotland

19:15 – 22:30 – **Dinner hosted by Lord Rothschild**
Keynote: Professor Robert Barro, Paul M. Warburg Professor of Economics, Harvard University

Saturday, 15th March 2014

09:30 – 11:00 – **Session IV: Perspectives from across investment chain**
Chair: **Richard Mattison**, CEO, Trucost
Panelists:
Professor Richard Barker, Professor of Accounting, Saïd Business School, University of Oxford
Mike Clark, Institute and Faculty of Actuaries, also Director, Responsible Investment, Russell Investments
James Thornton, CEO, Client Earth
Anthony Hobley, CEO, Carbon Tracker Initiative

11:00 – 11:30 – **Coffee Break**

11:30 – 13:00 – **Session V: Systemic risk? – Regulatory responses**
Chair: **Nick Robins**, Co-Director, UNEP Inquiry into a Sustainable Financial System
Panelists:
Simon Upton, Director, Environment Directorate, OECD
Nick Mabey, CEO, E3G
Paul Simpson, CEO, Carbon Disclosure Project
Lance Pierce, Executive Director and Chief Operating Officer, Ceres

13:00 – 13:10 – **Closing Remarks and Next Steps**
Professor Gordon L. Clark, Director, Smith School, University of Oxford

13:10 – 14:30 – **Lunch**

Annex B: Participant List

Maria Allen, Special Adviser to Rt Hon Gregory Barker MP, Minister of State, Department of Energy and Climate Change

Atif Ansar, Lecturer, Public Policy and Management, Blavatnik School of Government, University of Oxford

Richard Barker, Professor of Accounting, Said Business School, University of Oxford

Robert Barro, Paul M. Warburg Professor of Economics, Harvard University

Seb Beloe, Head of Sustainability Research, WHEB Asset Management

Erik Berglof, Chief Economist and Special Adviser to the President, European Bank for Reconstruction and Development

Fabia Bromovsky, CEO, The Rothschild Foundation

Andrew Buglass, Head, Energy, Structured Finance, Corporate and Institutional Banking, Royal Bank of Scotland

Ben Caldecott, Director, Stranded Assets Programme, Smith School of Enterprise and the Environment, University of Oxford

Gordon Clark, Director and Professor, Smith School of Enterprise and the Environment, University of Oxford

Mike Clark, Director, Responsible Investment, Russell Investments

Edward Davey, Programme Manager, International Sustainability Unit, The Prince of Wales's Charitable Foundation

Adeline Diab, Head of Responsible Investment Integration, Aviva Investors

Mark Fawcett, CIO, NEST Corporation

Robert Hahn, Professor of Economics and Senior Research Fellow, Smith School of Enterprise and the Environment, University of Oxford

Kirsty Hamilton, Head of Policy, Low Carbon Finance Group

Thomas Heller, Executive Director, Climate Policy Initiative

Anthony Hobley, CEO, Carbon Tracker Initiative

Paul Jefferiss, Head of Policy, BP

Abyd Karmali, Managing Director, Climate Finance, Bank of America Merrill Lynch

Christopher Knowles, Head, Climate Change and Environment Division, European Investment Bank

Karsten Löffler, CFO, Allianz Climate Solutions

Nick Mabey, CEO, E3G

Edward Mallinckrodt, The Schroder Foundation

Richard Mattison, CEO, Trucost

Jonathan Maxwell, CEO and Co-Founding Partner, Sustainable Development Capital LLP

Ben Moxham, Director, Clean Energy and Infrastructure, Investment Management, Capital Dynamics

Justin Mundy, Director, International Sustainability Unit, The Prince of Wales's Charitable Foundation

David Nussbaum, CEO, WWF-UK

Georgina Parr, The Rothschild Foundation

Stephanie Pfeifer, CEO, Institutional Investors Group on Climate Change

Lance Pierce, Executive Director and Chief Operating Officer, CERES

Nick Robins, Co-Director, Inquiry into a Sustainable Financial System, UNEP

Lord Rothschild, The Rothschild Foundation

David Russell, Co-Head of Responsible Investment, USS Investment Management

Laura Sandys MP, Member of Parliament for South Thanet

Bill Seddon, CEO, Central Finance Board of the Methodist Church

Ian Simm, Founder and CEO, Impax Asset Management

Paul Simpson, CEO, Carbon Disclosure Project

Lady Elise Smith, Founding Benefactor, Smith School of Enterprise and the Environment, University of Oxford

Sir Martin Smith, Founding Benefactor, Smith School of Enterprise and the Environment, University of Oxford

Erik Jan Stork, Senior Sustainability Specialist, APG Asset Management

James Thornton, CEO, ClientEarth

Sophia Tickell, Founder and Director, Meteos

Guy Turner, Non-Executive Director, Rezatec

Simon Upton, Director, Environment Directorate, OECD

Roger Urwin, Global Head of Investment Content, Towers Watson

Rick Van der Ploeg, Professor of Economics, University of Oxford

Lisa Walker, VP Environment & Climate Change, BG Group

Mark Walker, Global Chief Investment Officer, Unilever Pension Fund

Faith Ward, Investment Manager, Environment Agency

Adam Whitmore, Chief Advisor, Energy and Climate Policy, Rio Tinto

Vikram Widge, Head, Climate Finance and Policy, International Finance Corporation

Michael Wilkins, Managing Director, Infrastructure Finance Ratings, Standard & Poor's

STRANDED
ASSETS

PROGRAMME

Smith School of Enterprise and the Environment
University of Oxford
South Parks Road
Oxford, OX1 3QY
United Kingdom

E enquiries@smithschool.ox.ac.uk
T +44 (0)1865 614963
F +44 (0)1865 275885
www.smithschool.ox.ac.uk/research/stranded-assets/

SSEE SMITH SCHOOL OF ENTERPRISE AND THE ENVIRONMENT

UNIVERSITY OF OXFORD