

Institution: Anglia Ruskin University
Unit of Assessment: Geography, Environmental Studies and Archaeology
Title of case study: Resources & environmental loading: assessing risks and opportunities for the finance sector
<p>1. Summary of the impact (indicative maximum 100 words)</p> <p>The research has had significant impact on the design and implementation of public-private partnerships at the international level (theme 1). It has led to new professional groups within the finance sector (theme 2). In particular research has directly influenced the investments of the International Climate Fund (£2.9 billion) set up by the UK Government; the Little Rock Accord signed in December 2012, with the Club de Madrid group of former world leaders; credit rating analysis of energy and water utilities by Standard & Poor's; and a new Board in the UK Institute and Faculty of Actuaries. Collectively these groups influence substantial capital flows into climate and resource solutions globally.</p>
<p>2. Underpinning research (indicative maximum 500 words)</p> <p>Research on the interaction between the financial sector and climate change has been carried out within the Global Sustainability Institute (GSI) since it was set up in early 2011.</p> <p>The main results of the research are divided into two themes:</p> <ol style="list-style-type: none"> Investment opportunity: Understanding how public sector action (regulation and finance) can catalyse substantial private sector investments in climate change solutions in the developing world. The private sector has many barriers to investing substantial capital into climate change solutions, in particular in developing countries. Semi-structured interviews, consultations and workshops with private sector financial organisations, international financial institutions and governmental organisations (see below) were conducted between May 2011 and March 2012 alongside case studies. The research clearly identified the barriers and prioritised the most efficient way to overcome these barriers within public-private partnerships. Investment risk: Understanding the risk associated with climate change and global resource constraints on infrastructure investments. This research used scenario methodology and financial modelling to identify possible risks. This involved two parts. The first part involved scenarios to model investment credit risk of water and energy utilities in the East of England due to climate change projections and water availability. It used climate change projections from the UK Climate Projections (UKCP09) alongside a pricing model for water to explore future requirements for infrastructure demand and supply. The second part involved a set of scenarios and actuarial models to explore long term implications of climate change and resource limits to pension fund returns and economic growth. A clear finding of the research is that the indirect impact on finance from these constraints is potentially significant (one scenario which lowered projected economic growth by 1% reduced the asset value of defined benefit pension funds to zero within 35 years). <p>The research has been led by Dr Aled Jones (F/T Director since 1/3/11, Global Sustainability Institute) in collaboration with Dr Candice Howarth (F/T Senior Research Fellow since 19/9/11) and Dr Irene Monasterolo (F/T Research Fellow since 17/4/12), during the period 2011-2012. The research is supported by Visiting Fellows Nick Silver, Tracey Zalk and Catherine Cameron and Visiting Professor Victor Anderson.</p> <p>The research was conducted by working in close partnership with key stakeholders including business, government organizations and think tanks. Critical to the success of the research, and a key criterion for the funding obtained, has been the translation of the outputs into appropriate language that can be easily understood by these various stakeholders and delivering this in a</p>

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timely manner (to influence key government or business events that were already planned). This includes policy facing documents, detailed financial modelling papers and more general overview documents to allow for common discussion and input by these various groups. For example, the main research outputs for research theme 1 above are two policy papers for the UK Capital Markets Climate Initiative led by the UK Minister for Climate Change which underwent a Delphi method for consultation of stakeholders. The output has focused both at the practical decision making level as well as the higher political and strategic levels to influence short and long term change.

For **theme 1 (opportunity)** the following stakeholders were involved through the Capital Markets Climate Initiative: Merrill Lynch/Bank of America, London Bridge Capital, SwissRe, Jupiter Asset Management, BT Pension Scheme, Climate Change Capital, Morgan Stanley, Sustainable Development Capital, London Stock Exchange AIM, Deutsche Bank, Holden, NEF, Standard and Poors, Innovator Capital, HSBC, Aviva, BNP Paribas, Standard Chartered, Royal Bank of Scotland, Willis Re, Barclays Capital, Goldman Sachs, Lloyds, Clinton Climate Initiative, Climate Development Knowledge Network, Prince of Wales Sustainability Unit, Brookings Institute, Chatham House, E3G, International Investor Group on Climate Change, Climate Bonds, Price Waterhouse Cooper (PWC), Organisation for Economic Cooperation and Development, European Bank for Reconstruction and Development, Infracore, International Finance Corporation, European Investment Bank and the World Bank. For **theme 2 (risk)** external partners included Standard & Poor's, Trucost, GtripleC, Callund Consulting and Agulhas.

3. References to the research (indicative maximum of six references)

Authors in **bold** are currently or have previously been staff members in the GSI between 1st January 1993 and 31st December 2013.

Theme 1 (opportunity):

1. **Jones, A.W.** (2012), 'International climate finance and clean energy investing', Clean Energy Investing: A comprehensive guide for institutional investors focusing on private assets, Private Equity International [*Included in REF 2*]
2. **Jones, A.W.** & Ward, M. (2012), 'Principles for Investment Grade Policy and Projects', Report for the Capital Markets Climate Initiative, UK Department for Energy and Climate Change [*Included in REF 2*]

Theme 2 (risk):

3. **Jones A.W.**, Allen, I., Silver, N., **Howarth, C.**, Cameron, C. & Caldecott, B. (2013), 'Resource constraints: The Evidence and Scenarios for the Future', The Actuarial Profession [*Included in REF 2*] *This research is shortlisted for the Lloyds of London Science of Risk 2013 prize*
4. Jóhannsdóttir, L., Wallace, J. & **Jones, A.W.** (2012), 'Climate risk from primary insurance perspective'. Chapter 3 in: *Managing climate change business risks and consequences: leadership for global sustainability*, A volume in the Stoner/Wankel series on global sustainability, Palgrave Macmillan [*Included in REF 2*]

Papers 1, 2 and 3 were subject to extensive professional and international peer review. Paper 4 was subject to academic peer review by authors of the other chapters in the book volume.

Key research grants and collaborations:

1. Research project entitled '*Investment grade policy and projects.*' Principal Investigator (PI) is Aled Jones, two grants awarded by the UK Department of Energy and Climate Change and held at Anglia Ruskin University. First grant (2011-2012) value £15,000 and second grant (2011-2012) value £40,000. This underpins theme 1.
2. Research project entitled '*Delivery vehicle options for the International Climate Fund.*' PI is Aled Jones. Grant value to Anglia Ruskin £6,000 (total value £70,000). The project is led by Vivid Economics. This was competitively won through tender and forms part of theme 1.
3. Research project entitled '*Resource Constraints: Sharing a Finite World – implications for the Actuarial Profession.*' PI is Aled Jones. Partnership with Callund Consulting, Climate Change Capital and Agulhas. Two grants – first grant from the Institute and Faculty of Actuaries (2011-

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2012) value £49,302 and second grant from Lloyd's of London (2011) value £7,500. This research was competitively won through tender and is part of theme 2.

4. Research project entitled '*East of England water risk*'. PI is Candice Howarth. Co-Investigator (CoI) is Aled Jones. The project involved a collaboration with Standard & Poor's, ARU and Trucost. This is part of theme 2.
5. Research project entitled '*Global Resource Observatory*'. PI is Aled Jones. CoI is Irene Monasterolo. The Dawe Charitable Trust has donated £1 million (2011-2015). This research was competitively won and underpins theme 2.

4. Details of the impact (indicative maximum 750 words)

Theme 1 has had the following impact:

(i) **Influencing UK Government public-private partnerships on climate finance.** The Investment Grade Policy & Projects report (Jones & Ward, 2012) was published in May 2012 by the UK Department for Energy and Climate Change (DECC). It highlights how best to maximise the effectiveness of international public climate finance to increase private sector investment in climate change solutions in the developing world. The main beneficiary is the UK Government, with indirect impact on the private sector. This has been and is now used to influence ministerial discussions with developing country partners and is helping to inform the structure of the UK International Climate Finance (£2.9 billion). In particular the document has been used in bilateral negotiations with India and Kenya under the Capital Markets Climate Initiative (CMCI) by Greg Barker, Minister for Climate Change. The work continues to have significant impact on government. For example, in July 2013 Aled Jones won a tender based on this research, with Vivid Economics, to advise on a pilot phase of a new finance vehicle (an international arm of the Green Investment Bank) as part of the UK International Climate Fund. The aim of this pilot is to invest £200 million of UK development aid over the next 2-3 years.

(ii) **Influencing the work of Club de Madrid.** Aled Jones was invited to be a President Clinton distinguished lecturer and give a keynote address in Little Rock, Arkansas (December 2012) to Club de Madrid. The Club de Madrid is a membership organization of ex-Presidents and Heads of State, chaired by President Clinton, who '*work to strengthen democratic institutions and to offer advice on the resolution of political conflicts in order to enhance development and improve the lives of those most in need*'. As a result of this engagement the Little Rock Accord was signed on 18th December 2012 by Club de Madrid which commits them to convene a group of 12 former heads of state led by President Clinton to help increase the level of engagement on climate change investment solutions in the developing world. The main beneficiaries are therefore developing country governments through Club de Madrid. The Little Rock Accord sets out a work plan for 2013-2015 and brings in the network of the P80 Group Foundation which includes the World Bank, US State Department, Asia Development Bank, Africa Development Bank, International Finance Corporate, US AID, Overseas Private Investment Corporation and others.

Theme 2 has had the following impact:

(iii) **Formation of new international professional investment groups on resource risks.** Aled Jones, Candice Howarth and Irene Monasterolo (with external partners Callund Consulting and Agulhas) have worked with the UK Institute and Faculty of Actuaries and Lloyds of London to develop a set of scenarios and a financial model to understand the implications of resource limits and climate change on investment returns in particular future pension returns. This led to a major report published in January 2013 (Jones et al 2013) at an event chaired by Jo Confino, Executive Editor, Guardian, which has been widely covered in the press including the *Guardian* (18/1/13), *New Scientist* (26/1/13) and *Pensions Insight* (1/2/13) (see section 5). The main beneficiary is the UK actuarial professional body. The research led to several invited keynote presentations including to the International Association of Actuaries (Los Angeles, May 2012), the Organisation for Economic Cooperation and Development (Paris, October 2012), the Asia Forum on Global Government (New Delhi, India, November 2012), the US Society of Actuaries (Chicago, December 2012), the UN Global Compact (Geneva, January 2013), and the Agricultural Investment Summit

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(August 2013) and invited contributions to the HRH Prince of Wales sustainable land management work programme (March 2013). The impact includes the formation of new national and international groups which consider resource risk and contribute to further data gathering and modeling. For example, the UK Institute and Faculty of Actuaries have created a Board (Nick Silver, Visiting Fellow of the GSI, sits on the Board) to report into their Council to take forward the work highlighted as necessary in the report. The Board is looking at including the recommendations from the report in the professional body's Actuarial Code. The US Society of Actuaries have set up a resource group to gather case studies. The GSI co-hosted a workshop in Sweden, in June 2013, with Columbia University and the University of Wisconsin, to build on the actuary report and engage with private and public sector players, particularly insurance companies, pension funds and government agencies, in understanding strategic risk in global food systems. In October 2013 this work was shortlisted as a finalist of the Lloyds of London Science of Risk awards which awards prizes for the most impactful academic research.

(iv) **Challenging conventional thinking on credit risk.** Candice Howarth and Aled Jones have worked with Standard & Poor's (S&P) and Trucost to publish an analysis of the possible investment risk in water and energy utilities in the East of England. The main beneficiary is the credit rating agency S&P and secondly water companies in the East of England. This has already, and continues to, impact the long term thinking of investment credit risk in this sector as well as supported the expansion of this area within the S&P private sector risk team with further work planned across the UK and internationally. Engagement with the water companies in the East of England is ongoing and has led to further research work and partnerships across the sector to help develop responses to future water risk (for example, a European framework project - WE@EU - exploring water efficiency in the urban environment started in July 2013). This research was widely covered in the press including Reuters (1/3/12), ITV1 Anglia (5/3/12) and BBC Radio (2/3/12).

5. Sources to corroborate the impact (indicative maximum of 10 references)

Press and online coverage:

- *CMCI government platform (impact i):*
<https://www.gov.uk/capital-markets-climate-initiative>
<http://www.decc.gov.uk/en/content/cms/tackling/international/cmci/research/research.aspx>.
- *Press coverage of the Little Rock Accord (impact ii):*
http://www.clubmadrid.org/en/noticia/club_de_madrid_and_p80_foundation_sign_little_rock_accord
- *Press coverage of the Institute and Faculty of Actuaries report (impact iii):*
<http://www.guardian.co.uk/sustainable-business/climate-change-resource-scarcity-pension-industry-actuaries>
- *Report & Press coverage of Standard & Poor's report (impact iv):*
<http://www.reuters.com/article/2012/03/01/britain-utilities-water-idUSL5E8E163S20120301>

Corroborating organisations that could provide references or statements:

Theme 1, impact i):

- UK Department for International Development – Under-Secretary of State, UK Government
[letter available from HEI on request]
- UK Department of Energy and Climate Change - Minister for Climate Change, UK Government
[letter available from HEI on request]

Theme 2, impact iii):

- Lloyds of London – Head of Emerging Risks
- UK Institute and Faculty of Actuaries