



ANNUAL REPORT 2013



THE OXFORD
INSTITUTE
FOR ENERGY
STUDIES

Oxford Institute for Energy Studies



Annual Report 2013

About the Oxford Institute for Energy Studies

The Oxford Institute for Energy Studies (OIES), a Recognized Independent Centre (RIC) of the University of Oxford, was founded in 1982 as a centre for advanced research into the social science aspects of energy. A non-profit making charity, it is distinguished from similar institutions elsewhere in the world in two important ways.

First, the institute is committed to achieving the highest academic standards. The University of Oxford and three of its colleges – St Antony's, St Catherine's, and Nuffield – are Members of the Institute and occupy seats on the Board of Governors.

Second, the institute is committed to the idea of cooperation between scholars representing different sides of the international energy debate. Members of the Institute represent both the oil-producing and oil-consuming nations and this international character is also reflected in the composition of the research team. Such cooperation is intended to lead to a more informed debate on the behaviour, motivations, and objectives of the various agents operating in the international energy scene.

This combination of academic excellence with attention to pressing real-life problems in the energy world provides a unique forum in which study and discussion can take place. Research carried out at the OIES is designed to encompass the following disciplines:

- the economics of petroleum, gas, coal, nuclear power, solar, and other forms of renewable energy
- the politics and sociology of energy
- the international relations of oil- and gas-producing and consuming nations
- the economic development of oil- and gas-producing countries and the energy problems of other developing countries
- the economics and politics of the environment in its relationship with energy.
- As a general policy the OIES concentrates on research into energy issues of international significance or which have implications for the interface of producers and consumers.



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Director's Note

The institute's main objectives are to undertake advanced research on issues currently affecting the world's energy sector, and to help inform the public debate and improve understanding of the political economy of energy. As an educational charity, the institute is committed to the dissemination of the results of research as widely as possible, both in academia and in the world at large, and the wide range of the institute's work is detailed in this report.

Research and Dissemination

The institute publishes a range of research publications and commentary, all of which are made freely available on its website, with the exception of published books and monographs. This report details the 21 papers written in 2013 on a wide range of subjects. OIES also published numerous 'Energy Comments'; much shorter papers, often devoted to current policy issues. The institute also publishes a quarterly journal, *'Oxford Energy Forum'*, edited by Bassam Fattouh. The research content of the OIES website is increasing rapidly, as is its use by people engaged in the energy industries and in policy making bodies all over the world.

This year work began in earnest on a new book, entitled *'The Russian Gas Matrix – How Markets are Driving Change'*, edited by James Henderson and Simon Pirani, which analyses how the dramatic changes in international natural gas markets since the 2008 economic crisis have impacted on Russia, one of the largest gas producers and consumers. The book considers the many challenges faced by Gazprom, Russia's dominant gas company, including: new pricing trends and regulatory regimes in Europe, its main export market; increased competition in Russia itself; far-reaching change in CIS markets; and a long, difficult path to the Asian export market that it hopes to open up. Gas remains a political priority, and government

action will be decisive. In this book, due for publication in spring 2014, the issues are comprehensively analysed by a group of established specialists.

Early 2014 will also see the publication of a book by Elham Hassanzadeh, entitled *'Iran's Natural Gas Industry in the Post-Revolutionary Period – Optimism, Scepticism and Potential'*. The book describes the historical, political, and economic developments which have led to Iran's failure to engage in international gas trade at a material level, despite its world-class reserves. It also outlines the domestic political situation and the dilemmas faced by qualified Iranian authorities, as well as the challenges facing the Iranian government in allocating its vast natural gas resources to competing uses, including the domestic market, exports and oilfield reinjection.

Staffing

In 2013 we were joined by Elham Hassanzadeh and Xin Li, while we bade farewell to Dr Hakim Darbouche, who left the OIES to take up a position at OMV in London.

Dr Hassanzadeh is an expert in petroleum contractual regimes in the Middle East and North Africa (MENA), the politics and economics of the Iranian oil and gas industry, and energy subsidy reform in energy-producing countries. Her current research on the Iranian natural gas industry will be published by OUP in 2014. She completed her PhD in oil and gas law and policy at the University of Dundee's Centre for Energy, Petroleum and Mineral Law and Policy (CEPMLP). She also holds an LLB in judicial law from Azad Tehran University, and an LLM in international commercial law from the University of Cambridge, where she was a Shell Centenary Scholar.

Dr Xin specialises in input-output analysis and hybrid life cycle analysis, and is currently focusing

his research on economic rebalancing and its implications on energy policy in China. He studied at the University of Leeds, where he earned an MSc in management and a PhD in ecological economy.

A new scheme, made possible by the generosity of Saudi Aramco Overseas Company, of awarding three short-term fellowships (maximum six months) to promising researchers at the start of their careers, launched in 2013 with great success. Three OIES-Saudi Aramco Fellows joined us: William Yong, a graduate from the University of Cambridge with master's degrees in social and political sciences and in international management (Middle East and North Africa) from the School of Oriental and African Studies (SOAS) in London; Amrita Sen, a PhD candidate at SOAS, and holder of an MPhil in economics from the University of Cambridge, and a BSc in economics from the University of Warwick; and Nelson Mojarro, a doctoral candidate at the University of Sussex's Science and Technology Policy Research Unit (SPRU), where he earned an MSc in industry innovation and analysis.

During the year numerous scholars and students visited the institute to use its extensive library and to consult with the institute's researchers. Visiting researchers included:

- Etienne Durand, a PhD student from the Université Jean Moulin Lyon 3
- Craig Brown, a senior research analyst on sabbatical from PFC Energy
- Prof. David Mares, from the University of California, San Diego
- Angélique Palle, a PhD student at the Université Paris 1 Patheon-Sorbonne

- Prof. Marcela Lopez Vallejo Oliveira, from Escuela de Relaciones Internacionales, Universidad Popular Autónoma del Estado de Puebla
- Carolina Santos de Oliveira, from Petrobras
- Dr Suleiman Sa'ad, from the Nigerian Defence Academy
- Maksym Beznosiuk, an LLM student from the University of Edinburgh
- Diwakar Jhurani, from Cairn India Ltd.

A search committee was set up by the OIES Board of Governors to identify candidates for the position of Institute Director. The committee interviewed two exceptional candidates in late 2013, and Prof. Bassam Fattouh was officially appointed by the board. From January 2014 he will succeed Christopher Allsopp, who will take up the position of non-executive president.

We continue to seek researchers keen on studying oil and gas, their markets, electricity, and climate change, as well as the Middle East, its central role in hydrocarbons, and the changing structure of industry and its investment challenges. I am confident that with the continued support of our benefactors and sponsors, the institute will build on the solid reputation established so ably by Robert Mabro and continued by Christopher Allsopp.

Relations with the University

As noted in previous annual reports, formal and informal relationships with the University of Oxford are important to the institute. The formal relationship as a Recognised Independent Centre (RIC) continues to work well. OIES continues to work closely with Prof. Sir Chris Llewellyn Smith, the Director for Energy Research, University of Oxford, and others to improve the links between those engaged in energy research across

the university, and to improve the visibility of this research in Oxford.

Activities and Events in 2013

The annual 'Gas Day', held in October 2013, was filled to capacity, with discussions focusing on EU's Third Energy Package. The 2013 'Oil Day' – kindly sponsored by Platts - focused on 'US Oil Shale and its Implications on Pricing Benchmarks'. The institute's annual 'Brainstorming' meeting took place Vienna in April and we are very grateful to the OPEC Fund for International Development for generous sponsorship support of this event.

In March 2013 OIES and Renmin University jointly held a workshop in Beijing to discuss the implications for China of North American energy independence. This workshop was highly successful and we are very grateful for partial funding for this initiative from the FCO's Prosperity Fund (via the British Embassy in Beijing).

The institute continues its programme of internal seminars, which are now advertised throughout the university, while the lecture series, with St Antony's College, continues to attract distinguished speakers and large audiences.

General

The interactive and networking aspects of OIES continue to benefit greatly from the close historical and current relationships with its two sister institutions: the Oxford Energy Policy Club, which meets twice annually in St Antony's College; and with the Oxford Energy Seminar, held annually at St Catherine's College.

Our thanks to the OIES administrative team – Kate Teasdale, Susan Millar, Margaret Ko, Lavinia Brandon and Jo Ilott – who ensure the smooth running of the institute.

Finally, we must acknowledge and thank our benefactors, sponsors and friends for their kind support,

without which the research conducted at the OIES would not be possible.

January 2014

Research

OPEC – What Difference Has It Made?

In this paper, Bassam Fattouh and Lavan Mahadeva link the evolution of OPEC models to some key events in the oil market, and conclude that OPEC's pricing power varies over time. The authors discuss the many instances in which OPEC can lose the power to limit oil price movements, either up or down, due to conditions in both weak and tight markets. The authors argue that because of OPEC's varying conduct, there is no single model that fits its behaviour, thus forcing analysts to choose from a wide range of models to explain certain episodes. This paper, also published in the *Annual Review of Resource Economics* (2013, Vol. 34, No. 3), argues that the empirical literature has not been successful in distinguishing between the various competing models, which offer very similar predictions.

US Tight Oils – Prospects and Implications

Amrita Sen examines the implications of the rapid growth in US tight oil production for US and global energy markets. The behaviour of US crude markets is analysed, with a particular focus on changing arbitrage dynamics. Sen argues that the rapid growth in production of US tight oils was not met with an equally fast response by the US midstream companies, resulting in severe regional crude price dislocations. These lower regional prices impacted on producer profits and, more significantly, benefitted refineries that secured cheap feedstock and sold end products at levels linked to global product markets. However, Sen argues that globally, US tight oil production has primarily impacted price spreads through changes in trade flows, rather than absolute oil price levels, given various offsetting factors such as extremely weak supplies from outside the US. Put another way, Sen argues that the US supply

shock should be seen more as a factor that has prevented significant price rises, rather than as something which should result in a price collapse.

Energy Sustainability in the Gulf States – the Why and the How

For many decades the Gulf States' significant oil reserves have rendered the region among the world's most important oil suppliers, and there is similar potential for the region's natural gas reserves. However, the Gulf states' rapidly rising regional consumption has begun to play a critical role in future export prospects, including the size and longevity of domestic oil and gas production, both for domestic and export market supply. In this paper, Laura El-Katiri discusses the current and future challenges stemming from the region's growing domestic demand and almost exclusive reliance on gas and oil, including future gas export potential and security of domestic energy supply. The author argues that only a more proactive policy response to rising domestic energy consumption can help safeguard the stability of the Gulf's role as a global energy supplier as well as its long-term domestic energy security. El-Katiri suggests that such a policy response would include diversification of the region's energy base and effective management of domestic demand.

NIOC and the State – Commercialization, Contestation and Consolidation in the Islamic Republic of Iran

While Iran's oil industry has long been a subject of great interest for academics, industry analysts, and the news media, surprisingly little attention has been paid to the institutional apparatus of the Iranian hydrocarbon sector and its embeddedness in networks of political

power. The institutional embodiment of Iran's oil industry is the nominally state-owned National Iranian Oil Company (NIOC). However, William Yong argues in this paper that the relationships between NIOC and the political claimants that surround it resist simple definition. Furthermore, it is only in the detailed study of these relationships that developments in the Iranian hydrocarbon sector can be properly understood. The paper draws extensively on Persian language media reports to trace the roots of the current consolidation of oil industry governance under individuals and companies affiliated with the Iran Revolutionary Guards Corps (IRGC).

Tight Oil Developments in Russia

Oil production from Russia's core regions is in decline and the government is keen to encourage the development of fields in new areas in order to keep the country's output above 10mmbpd. A series of joint ventures between state oil company Rosneft and various IOCs offshore in the Arctic has caused much excitement in this regard, but the potential of Russia's unconventional oil resources might provide a shorter-term reason to be optimistic. Russia has the largest estimated shale oil resources in the world, with as much as 100 billion barrels in the huge Bazhenov formation in Western Siberia. In this report, James Henderson analyses the work that oil companies have so far undertaken to assess the real potential of this resource and also assesses the potential impact of tax changes that have been introduced to encourage investment. The study concludes that although the resource base would appear to be enormous, a number of below and above ground issues remain, thus making it unlikely that the government target to produce 1mmbpd within a decade will be met. Key challenges are the need to increase the horizontal drilling capacity and the likely need for further tax incentives once a clearer picture of the real economics of unconventional development has

been formed. Nevertheless, the author concludes, Russia's unconventional oil plays can make a significant contribution to the country's longer term production outlook in tandem with other developments in the Arctic and East Siberia.

Auctions for Oil and Gas Exploration Leases in India – an Empirical Analysis

Anupama Sen and Tirthankar Chakravarty assess the reasons for the inconclusive results of India's 15-year-old New Exploration Licensing Policy (NELP) – both in terms of providing a firm indication of India's resource potential and increased domestic production. The paper argues that a substantial part of the explanation may lie in auctions and market design, and uses data for the period 1999–2010 – covering nine rounds of auctions – to explore some unintended consequences of the NELP. The authors, using a mixture of theory and empirical data, conclude that problems relating to auctions and market design may have led to a cycle of information asymmetry and inefficiency, the net effect of which has been a slowdown in India's domestic production, failure to meet supply targets, and the need for expensive imports. They also suggest some policy options and areas for further research.

The Sectoral Effects of Exchange Rate Fluctuations in Fuel-Exporting Countries: a Case Study of Colombia

Nearly all countries whose exports are highly concentrated in fuel products fix their nominal exchange rate. This is in order to protect the livelihoods of vulnerable workers in other sectors from potential exchange rate changes stemming from variable international fuel prices. The authors, Ricardo Argüello, Juan José Echavarría Soto, Andres González and Lavan Mahadeva, use Colombia as a case study to assess the impact that fuel price-induced exchange rate variability

has on the different sectors of fuel-exporting countries. They document the rich variety of sectoral responses to an oil price-induced appreciation in Colombia and assess different solutions to underperforming sectors, and their analysis points to policies that improve the options available to workers in exposed sectors. The authors also suggest that there may be an additional need for sectoral, countercyclical, macroprudential tools – those that can be used to reduce lending only to non-tradable sectors – in times of fuel price-induced exchange rate appreciation. Such tools include higher loan-to-value ratios and risk weights on mortgages, on the commercial retail sector, and on personal loans, together with regulatory capital ratios, sectoral liquidity buffers, or taxes on housing sales.

Gas-to-Liquid – A Viable Alternative to Oil-Derived Transport Fuels?

A number of high-profile projects and a wave of recent investments have focused attention on the global gas-to-liquid (GTL) industry, suggesting a latent potential for GTL fuels to usher in a new conceptualisation of oil product markets. The clean-burning, high-quality characteristics of GTL diesel fuels lend support to this outlook, seemingly offering a viable substitute to oil-derived diesel in the global transport sector. However, doubts over the long-term viability of large-capacity GTL projects in the absence of heavily subsidized gas feedstock prices lead to an alternative narrative, suggesting that GTL products will have only a limited impact in the global transport sector by virtue of the industry's unsustainable growth potential. The author, Craig Brown, shows that evidence of this is seen in Europe, where despite the favourable market conditions for diesel imports, GTL diesel remains a niche product with relatively narrow commercial applications. As such, the recent wave of GTL investments may not be totally

justified by market context, and the potential for GTL fuels to impact oil product markets may be overstated.

Gas Storage in Great Britain

During the last decade any discussion of Great Britain's natural gas security of supply has touched on the issue of the adequacy, or otherwise, of underground storage capacity. The 'right' level of storage has been elusive, as has the appropriate means by which it can be created. Chris Le Fevre's paper provides a comprehensive review of gas storage in Great Britain, covering storage practicalities, the evolution of the British storage sector, and the attendant debate on supply security. The paper examines the role of storage and other sources of flexibility in recent winters and the factors which will determine future flexibility needs. The suite of potential storage projects is described together with a realistic assessment of the barriers and challenges to their successful implementation. In addressing these issues, the author considers the British situation in the context of increasing infrastructure linkages to continental Europe and to the world LNG market.

Competition for Customers in the Evolving Russian Gas Market

Throughout the post-Soviet era gas prices have been very low, at times even below the cost of production. However, over the past decade the Putin administrations (both as premier and president) have made a concerted effort to increase the domestic gas price towards the export price (netted back to Russia) that Gazprom charges to its European customers. As a result of this price increase a number of new entrants have been attracted to the market place, including 'independent' gas producers such as Novatek and oil companies such as Rosneft, TNK-BP, and LUKOIL, which wish to monetise their gas reserves. To date, these new entrants have been reluctant to challenge the

state-owned quasi-monopoly player, in particular because Gazprom owns the vital trunk pipeline system and has therefore had control of access to domestic customers. However, this reticence from Gazprom's potential rivals now appears to be changing and could herald a fundamental shift in the competitive landscape of the Russian gas sector. This paper, by James Henderson, concludes that the arrival of new entrants is creating the conditions, if not for a revolution catalysed by a dramatic reform process, then perhaps for a gradual evolution based upon the commercial realities facing the Russian gas industry today.

East Africa Gas – the Potential for Export

In the world of upstream oil and gas, the emergence of a major new prospective area always creates a frisson of excitement. Once the discoveries are assessed and we move past the initial question of how the potential resource base was previously overlooked, attention focuses on the likely ultimate scale of the resource, the cost of development, the likely timing of first production, and the impact of the new supplies on regional and global gas markets. In this paper on the prospects for gas in Mozambique and Tanzania, David Ledesma captures the excitement of the confirmation of a major new hydrocarbon play, conveys the pace at which resources were mobilised, and the sheer scale of the discoveries made over a very short time period. The resources, however, are owned by two relatively poor countries with limited institutional capability and capacity, which now face the challenge of making decisions on fiscal and regulatory issues which will impact their economies for several decades. Key policy issues include how to ensure that gas is available for the domestic market in parallel with the build up of the export flows necessary for viable development and how to avoid the 'resource curse' of currency appreciation, which would harm other domestic industrial sectors.

The EU Third Package for Gas and the Gas Target Model: Major Contentious Issues Inside and Outside the EU

When the Third Energy Package, which aims at further liberalisation of the EU gas market, became law in March 2011, it added a new impetus to the process of transforming EU gas market structures started by the previous two packages. Katja Yafimava's paper seeks to understand both the process and its end-point as signified by the Gas Target Model (GTM), which is currently under development. Yafimava's main focus is on the contentious issues of the Third Energy Package and the GTM, as seen by major suppliers of gas to the EU – notably Russia. While not being applicable to non-EU suppliers, the Third Energy Package and the GTM will have an impact on Gazprom investment and trade relations with EU buyers. The paper assesses Gazprom's concerns, including: the mismatch between supply (commodity) and transportation (capacity) contracts under division of the EU into zones and application of 'entry-exit' tariffication model; and regulatory treatment of new pipeline infrastructure.

The Italian Gas Market – Challenges and Opportunities

The Italian gas market is the third largest in Europe and, until the mid 2000s, boasted strong demand growth, especially in the power generation sector. However, projections of demand growth from that era have not been realised, due to the impact of the financial crisis and subsequent recession, and exacerbated by growth in wind and solar generation capacity. Market liberalisation in the 2000s failed to achieve levels of competition in the midstream and downstream sectors to the extent seen in north-west European markets. This resulted not only in some of the highest European end-user gas prices, but also delayed

development of liquid trading hubs. The author, Anouk Honore, concludes that the outlook for Italian gas demand is far from positive. . With no nuclear to phase out and only 2GW of coal and oil plant potentially impacted by the Large Combustion Plant Directive, any upward trend in gas consumption will ultimately rely on future economic activity, tempered by the growth of renewable capacity. Provided that sufficient export capacity can be secured, this could enable Italy to become a transit market supplying adjacent market zones. If import sources remain suitably diverse, the role of Italy's PSV gas trading hub will become more significant with spreads to TTF responding to trans-European fundamentals.

Natural Gas in Pakistan and Bangladesh

Pakistan and Bangladesh's aggregate gas consumption equals that of India, making these significant markets in their own right. Pakistan's gas consumption is almost the same as that of France, while Bangladesh consumes 30% more gas than Poland. Both countries have their own domestic upstream gas industry but suffer from the problem of low regulated domestic market gas prices creating a disincentive for exploration of new indigenous supplies. Author Ieda Gomes provides an in-depth study of the genesis and present situation of these two significant gas-consuming countries, including: the drag on their potential economic output as a consequence of gas supply shortages; their attempts of each to secure gas import projects, be they pipeline gas or LNG; and their lack of success to date due to poor institutional capability, insufficient trust with potential suppliers or merely procedural shortcomings. This is a comprehensive study of these gas markets at a crucial stage of their evolution and as such will be of interest to both academic researchers and to commercial organisations interested in participating in their future development.

Iran's Gas Exports: Can Past Failure Become Future Success?

David Jalilvand examines the status of Iran and the potential for it to engage in international gas trade. From an international gas perspective, Iran is an enigma – a country always expected to become a major exporter, which instead became a net importer. Its resource endowment means that Iran can never be ignored in discussions of potential future gas trade, but such discussions need to be tempered both by the historical experience of pipeline and LNG export projects, which has taught us that since the 1970s the country has never been more than a marginal player in international gas commerce. Current relations with the international community, particularly in relations to the international sanctions regimes in force in 2013, eliminate the possibility of all but regional trade for some years. However, even if the immediate international – as opposed to domestic – prospects may not be encouraging, given Iranian potential it is important for a natural gas research programme to publish this study which reviews the country's gas sector and future prospects.

European Gas Hubs – How Strong is Price Correlation?

From 2008 to 2011 a number of factors catalysed the development of liquidity at European trading hubs: a surge of LNG supply to Europe, growing accessible pipeline connectivity, supplier choice for end-consumers, and a protracted period in which hub prices were considerably below those of oil-indexed contract prices. However, extensive data and quantitative analysis is required in order to assess the extent to which European traded hubs have matured to the point where they can be said to represent a reliable and representative 'market price'. Beatrice Petrovich's landmark approach not only accesses price data available from the various European trading exchanges but, unlike previous research, also

incorporates OTC (Over the Counter) market data. The results demonstrate a level of hub-to-hub price correlation that provides compelling support for the hypothesis that European hubs do provide a reliable price reference, and explains anomalies as either hub immaturity in early periods or to physical connectivity constraints.

Gas to Liquids – Historical Development and Future Prospects

While GTL or ‘Gas-to-Liquids’ is frequently referred to in natural gas circles, apart from project-specific summaries produced by the sponsoring companies, there is little in the way of contemporary literature to set the context for GTL against the backdrop of today’s increasingly connected global gas environment. As with many technological advances, ‘necessity was the mother of invention’ for the Fischer Tropsch Gas-to-Liquid (FTGTL) process in Germany during the Second World War, and in South Africa during Apartheid-era OPEC and UN oil sanctions. Olga Glebova’s paper reviews the genesis of the technology in these countries and also subsequent related applications in Malaysia, New Zealand and Alaska. The major expansion in FTGTL production in Qatar can be seen as a strategic push to diversify market monetisation channels by this major gas resource holder. The Oryx project in particular provides sufficient cost and operating data from which the wider economic characteristics of FTGTL can be broadly assessed.

Regional Dimensions to Europe’s Energy Integration

The European Commission initially encouraged regional groupings as the bottom-up building blocks of energy market integration, at a time when, in the mid-2000s, no further EU-wide energy legislation seemed possible. But, once the Third Energy Package was passed in 2009, the Commission decided to rush the market integration process by means of

top-down centralised harmonisation. This paper by Angelique Palle, argues it is neither feasible nor desirable to try to leap-frog the regional phase of energy market integration and warns that the European Commission will regret neglecting precisely the sort of regional cooperation that Brussels wants to see in the organisation of renewable and capacity schemes.

Why Europe’s Energy and Climate Policies are Coming Apart

David Buchan’s paper argues that the European Union’s integrated energy and climate policy is coming apart because of the effects of the financial crisis – and the impact of national renewable energy and back-up generation schemes – on the EU blueprint for a single energy market. Buchan argues that while new Commission guidelines will seek to Europeanize these national schemes, this effort assumes faster progress in cross-border integration than has been achieved so far. Buchan suggests that meshing intermittent renewables with conventional energy back-up, and maintaining the geographical unity of Europe’s energy sector, may require a new concept of energy markets.

The Oxford Approach: Operationalizing the UNFCCC Principle of Respective Capabilities

The UN Framework Convention on Climate Change implies that countries should shoulder costs and burdens of climate change in accordance with differentiated responsibilities and respective capabilities, but it does not indicate how these fairness parameters are to be quantified. In this paper, Benito Müller and Lavan Mahadeva use a distinctive methodology – the ‘Oxford Approach’ – regarding quantifying the economic capability of countries as a contribution to assessments of fair cost/burden distributions, an issue of central importance in the

upcoming June 2014 international climate change talks in Bonn.

Quantity Performance Payment by Results – Operationalizing Enhanced Direct Access for Mitigation at the Green Climate Fund

Quantity Performance Payments, or QPP, are about rewarding mitigation performance measured in terms of some physical quantity. As part of a wider set of support windows, it could be an effective way for the Green Climate Fund (GCF) to meet its objectives of achieving climate change mitigation at scale, while providing enhanced direct access. Authors Benito Müller, Samuel Fankhauser, and Maya Forstater, argue that this warrants further exploration by the GCF. They begin with an introduction to the GCF and enhanced direct access, and continue with an overview of concepts and classifications regarding Quantity Performance (QP) instruments. The paper then turns to give a detailed description of the main design options and issues regarding QPPs, in particular the issue of resource allocation and four core elements of QPP transactions; namely counterparty selection, definition of results, price setting, and the setting of transaction quantities.

Journals and Website

Oxford Energy Forum

The institute's quarterly debating journal, now in its 24th year, continues to tackle topical issues facing the energy world. In 2013 the journal has covered the issues of Africa's energy outlook, developments in US energy, the changing refining sector and opportunities, and the challenges for East Mediterranean Gas. Our thanks go to the authors of all articles that appeared in OEF in 2013, to the editor, Bassam Fattouh, and to our guest editors.

Website –

www.oxfordenergy.org

The website contains full information on OIES publications, research in progress, and dedicated sections for the institute's *Natural Gas Programme* and *Oil and the Middle East Programme*. The site also has detailed information on the research interests of our staff, many of which provide assessments of important energy events and the website's '*Energy Comments*' section.

During 2013 the catalogue of papers and energy comments on the institute's website continued to grow. The site now holds more than 200 working papers along with over 200 'Energy Comments', all of which are freely available to download. Subscriptions to the institute's email notification service continued to increase.

Lectures and Seminars

As part of its commitment to education and its mandate to promote scholarly cooperation between energy producers and consumers, the OIES strives to disseminate the results of its research as widely as possible. The lectures and seminars enable the institute's researchers to present the findings of completed projects and to subject work in progress to the criticism of colleagues in industry, government, and academia. In 2013 the institute's research fellows, director, and programme directors gave numerous presentations and talks at various conferences, workshops, seminars, and meetings.

Energy Lectures

The 'Geopolitics of Energy' lecture series, organised by Dr Shamil Yenikeeff, ran during the 2013 Michaelmas term, in association with St Antony's College, Oxford. Lectures given included: 'The end of a monopoly? The EU vs. Gazprom and the future of Russian gas', with Dr Andrey Konoplyanik, Prof. Alan Riley, and Androulla Kaminara; and 'After Hugo Chavez: Energy sector and stability in Venezuela', by Prof. Orlando Ochoa. Our thanks go to all those who gave lectures in 2013.

XXIV Annual Brainstorming Meeting

Since 1990 the institute has been holding an annual brainstorming meeting, which draws together people from producing and consuming countries, national and private oil companies, governments, financial institutes, and other research organisations. The 24th such meeting was held in April this year in Vienna, Austria with the kind support of the OPEC Fund for International Development. Participants engaged in lively discussions on a wide range of energy issues including global economic outlook and risks, the US energy scene, oil supply

and demand, refining and products markets, LNG and natural gas, the power sector, renewable energy, the future of nuclear power, and geopolitics with a focus on MENA.

2013 Oil Day – US Oil Shale and its Implications on Pricing Benchmarks

In March 2013, the OIES successfully held its annual 'Oil Day'. This year's event, kindly supported by Platts, focused on three main themes: the implications of US shale oil growth on US benchmarks and US energy pricing systems; the implications of US shale growth on international crude oil and product trade flows, and their impact on global benchmarks, spreads, and producers' pricing policies; and recent regulatory reforms and their implications on the physical oil market. The conference was attended by 30 key oil industry figures, representatives from IOCs, NOCs, financial institutions, price assessment agencies, the energy business community, as well as OIES staff.

2013 Gas Day

The OIES Natural Gas Programme organized its eighth annual 'Gas Day' in October 2013 with three sessions dedicated to discussing current issues in the gas sector. The first session focused on the EU's Third Energy Package and progress to date in the creation of the regulatory framework for an open competitive European gas market. The second, entitled 'Gas Price Reporting in Europe?' discussed differing views of the relative merits of market price disclosure and reporting by brokers, price reporting agencies and exchanges as well as a comparison with the situation in oil markets. The final session on 'LNG from famine to Feast and the impact on Europe' discussed the prospects for new supply from Australia and Russia, LNG pricing and contracting in

Asia and the potential for competition between LNG and Russian pipeline gas in Europe. The event, held at St Anne's College, Oxford, was attended by 98 people including sponsors of the OIES Natural Gas Programme and the institute, and invited guests from the academic, media and corporate sectors.

Gas Programme Sponsors' Meeting

The OIES Natural Gas Programme held its bi-annual Sponsors' Meetings on 23rd and 24th April and on the 16th October 2013 at St Hugh's College, Oxford. The meetings, attended by the Natural Gas Programme sponsors and authors from a range of countries and backgrounds, including academia, industry, and energy journalism, discussed ongoing research projects and progress reports.

The April meeting discussed the forthcoming books on Russian gas and European demand and the EU's Third Energy Package and Gas Target Model, conclusions from a paper on the gas markets of Pakistan and Bangladesh, and the status of other papers in progress and in outline. The meeting also included a presentation of work on the outlook for biomass in Europe, issues for gas storage in the UK, and European traded hub price correlation.

The October meeting focused on further developments to work in progress from the April meeting and also covered prospective research papers on: natural gas in transport; German energy policy; the Turkish gas market; Chinese price reform; Iranian gas; Indian gas price reform; challenges to JCC pricing in Asian LNG; and LNG liquefaction cost evolution. Outlines of prospective papers were also discussed at this meeting, where researchers and sponsors celebrated the 10th Anniversary of the OIES Natural Gas Programme.

Library

In 2013, the OIES continued to expand its collection, which with over 13,000 titles comprises one of the world's foremost public collections of books, journals, and statistical sources within its specialist subject area. In addition, around 150 journals and annuals, many of a statistical nature, were received either through subscription or donation. There are now lengthy back files of some of these serial publications. The library also receives many company reports each year.

The OIES has been fortunate in being able to acquire historical materials from a number of sources over the years. In 1984 the institute purchased the library from the London office of eminent US oil expert Walter J. Levy, and has since gained an extensive collection of periodicals after a generous donation by Shell. The institute has also acquired materials from the late Professor Edith Penrose, from both the Middle East Centre and the Latin American Centre at St Antony's College, and also from the private collections of former research fellow Walter Greaves in 1992 and current fellow John Mitchell in 1993. Historical statistics are of obvious use in research; other publications that may seem no longer useful to commercial companies could still be of worth to the OIES.

The library is used not only by staff, but also by students from Oxford and other universities, and by researchers from abroad. It remains the institute's policy to maintain the collection as a valuable research tool and to ensure it is as widely accessible as possible.

The OIES would like to offer thanks to the following organisations and publications for supplying – either free of charge or at substantially discounted prices – important trade journals, statistical sources, and other materials vital to our research work, which could not have been afforded otherwise: Blackwell's, Elsevier, Energy Intelligence Group, the

European Commission, ICEED, IEA, IFS, IMF, *Gas Matters*, *Global Market Briefings*, the *Middle East Economic Survey*, OAPEC, OPEC, OECD, Oxford University Press (OUP), *Argus Media*, and *Petroleum Intelligence*.

Research Team and Staff

Christopher Allsopp CBE, has been involved with the work of the OIES since its inception and was appointed director in January 2006. He will become non-executive president in January 2014 when he is succeeded as director by Bassam Fattouh. He is also: emeritus fellow of New College, Oxford; editor of the *Oxford Review of Economic Policy*; a director of *Oxford Economic Forecasting*; and author of the *Review of Statistics for Economic Policymaking* – also known as ‘The Allsopp Review’. He has previously worked at HM Treasury, the OECD and the Bank of England – where he was an adviser (1980-83), and a member of the Court of Directors (1997-2000) and of the Monetary Policy Committee (2000-03). He has had extensive involvement with domestic and international policy issues as consultant to international institutions and private sector organisations and has published extensively on monetary, fiscal, and exchange rate issues, as well as the problems of economic reform and transition. His involvement in the economics of oil and other energy issues goes back to the shocks of the 1970s.

Juan Carlos Boué, Senior Research Fellow, is an oil industry consultant, who started his career working at the international trading arm of *Petróleos Mexicanos (PEMEX)*. He rejoined the OIES in 2010, having previously been a fellow at the institute from 2000-04. His professional activities have focused on petroleum, alternating between academia and industry. From 2005 to 2009, he was special advisor to the Venezuelan Minister of Energy and Petroleum and sat on the boards of most of *Petróleos de Venezuela’s (PDVSA)* refining ventures abroad. He has written widely on the industrial economics of oil and gas exploration and production, and petroleum refining industries, as well as on taxation and the political economy of oil in general. His current research concerns the governance

mechanisms and legal structure underpinning the international oil industry. He is author of ‘*A Question of Rigs, of Rules, or of Rigging the Rules? Upstream Profits and Taxes in US Gulf Offshore Oil and Gas*’, (OUP, 2006).

David Buchan, Senior Research Fellow, joined the OIES in January 2007. Educated in Oxford and Geneva, he began his writing career in 1970 with *The Economist*. In 1975 he joined the *Financial Times*, where he remained until 2006, rising to energy editor from 2000-2002. Based in Brussels, Washington DC, and Paris, he covered energy, defence, the Soviet bloc, and diplomacy. In 2012 he published an OIES working paper on Germany’s energy revolution and an OIES energy comment on Europe’s internal energy market. He also wrote a policy brief on integrating renewables into the European energy market for the Centre for European Reform (CER), and edited the official publication for the Kuwait congress of the International Energy Forum (which featured a contribution from our own Bassam Fattouh). He is currently researching the degree to which EU carbon and energy policy costs risk driving energy-intensive industries out of Europe, and what can be done about this, while maintaining an ambitious EU climate policy.

Bassam Fattouh, Director of the OIES Oil and the Middle East Programme, will succeed Christopher Allsopp as institute director in January 2014. He is also a research fellow at St Antony’s College, Oxford and professor at SOAS. He has published a variety of articles on the international oil pricing system, OPEC pricing power, security of Middle Eastern oil supplies, and the dynamics of oil prices and oil price differentials. His articles have appeared in *Energy Economics*, *The Energy Journal*, and *Energy Policy*. Bassam Fattouh has also published in non energy-related areas where his papers have appeared in the *Journal of Development Economics*, *Oxford*

Review of Economic Policy, Economic Inquiry, Empirical Economics, Journal of Financial Intermediation, Economics Letters, Macroeconomic Dynamics, and in other journals and books.

Elham Hassanzadeh, Research Fellow, joined the institute in 2012. She holds an LLB in judicial law from Azad Tehran University, an LLM in international commercial law from the University of Cambridge (where she was a Shell Centenary Scholar), and a PhD in oil and gas law from the Centre for Energy, Petroleum and Mineral Law and Policy (CEPMLP), University of Dundee. Her areas of expertise include petroleum contractual regimes in the Middle East and North Africa (MENA), the politics and economics of the Iranian oil and gas industry, and energy subsidies reform in energy producing countries. Elham is a qualified barrister at the Iranian Central Bar Association, a visiting lecturer in Azad Tehran University, and a researcher to the World Bank on Iranian investment laws and regulations. She is also a visiting fellow at the Global Subsidies Initiative (GSI) of International Institute for Sustainable Development (IISD), where her work focuses on energy subsidies reform in developing countries. Her current project is writing a book on the Iranian natural gas industry which will be published by OUP in May 2014.

Patrick Heather, Senior Research Fellow, joined the institute in June 2006. His most recent work includes: *'The Evolution and Functioning of the Traded Gas Market in Britain'* (August 2010); a co-authored comment with Jim Henderson on the *'Lessons from the February 2012 European gas crisis'* (April 2012); and a paper on *'Continental European Gas Hubs: Are they fit for purpose?'* (June 2012). He is currently continuing his research on the development of the European gas hubs with particular focus on the increasing traded volumes and on the developments in Eastern Europe, the results of which will be published in a new paper in the summer of 2014. Since 2004, Patrick has been an

independent consultant advising and giving presentations to many different organisations, including the APX and ICE futures exchanges and various producer and end user companies, financial institutions, regulators and governments in Austria, Brazil, Britain, Estonia, France, Greece, Holland, Italy, Norway, the Philippines, Poland, Russia, Sweden, and Turkey. In 2006, he was appointed commercial advisor to South Hook Gas to assist them through the long commissioning phase of their world leading LNG import facility in South Wales; this was successfully achieved in Q4-2009. Prior to that he was trading manager at BG Group from 2002 to 2004 and before that he worked at PowerGen plc, where he set up their trading capability and managed the gas and power trading desks. Patrick has over 30 years' experience of broking, trading and risk management in the natural gas, power, oil and oil products markets.

James Henderson, Senior Research Fellow, has been analysing the Russian oil and gas industry for the past 15 years. Having been head of energy for Wood Mackenzie Consultants in the mid-1990s, he moved to Moscow as head of oil and gas research for Renaissance Capital in 1997, and in 1999 became their head of equity research. He returned to the UK in 2002 and is currently head of Russian and CIS energy at Lambert Energy Advisory in London. He completed his doctoral thesis on partnership in the Russian oil and gas industry at University College, London (University of London), receiving his PhD in 2010.

Anouk Honoré, Senior Research Fellow, joined the OIES in 2004 and works in the Natural Gas Research Programme. She is an expert on the Europe, and focuses on natural gas issues, power generation, energy policies, market fundamentals (with an emphasis on natural gas demand), Liquefied Natural Gas (LNG), and security of gas supplies. She also studies the natural gas markets in Latin America and authored the book *'European Natural Gas Demand, Supply*

and Pricing: cycles, seasons and the impact of LNG arbitrage (OUP, 2010). Before joining the institute, Anouk worked at the International Energy Agency (IEA) in Paris, where she worked on natural gas policies in IEA member states as well as China and Latin America. Dr Honoré holds a PhD in economics, an MA in environmental and natural resources economics, and an LLM in international administration (public law).

Laura El-Katiri, Research Fellow, joined the OIES in 2009 and works on the OIES Oil and the Middle East Programme. She formerly taught at the SOAS Department of Financial and Management Studies. Her primary research focuses on energy policy and the management of natural resource wealth in resource-rich economies, with particular focus on the Middle East and North Africa. Laura has published widely on issues including oil and development in the Arab world, domestic energy markets and pricing reform, and energy poverty. She is fluent in English, German, Arabic and French, and holds degrees from the St Cross College, University of Oxford, and the University of Exeter.

Malcolm Keay, Senior Research Fellow, joined the OIES in January 2005. His career has ranged widely across the energy scene, including the public sector (he was director of energy policy at the UK DTI from 1996 to 1999, and before that was a division head at the International Energy Agency), the private sector (as senior managing consultant at Oxera), and the non-profit sector (at Chatham House and the World Coal Institute). He has acted as an adviser on many energy studies, including as special adviser to the House of Lords Committee Inquiry into Energy Security in Europe, and director of the Energy and Climate Change Study for the World Energy Council. His research focuses on the implications of electricity market liberalisation for the achievement of key energy policy objectives, particularly in relation to the environment. He contributed

the chapter entitled '*Can the Market Deliver Security and Environmental Protection in Electricity Generation?*' to '*UK Energy Policy and the End of Market Fundamentalism*' edited by Ian Rutledge and Philip Wrights (OUP, 2011). It updated the analysis and conclusions of his 2006 monograph, '*The Dynamics of Power*', to argue that governments have failed to develop policies which will enable them to meet their environmental targets in the context of liberalized markets, and that more interventionist approaches would be needed.

David Ledesma, Research Fellow, is an independent gas and LNG consultant focusing on gas and LNG strategy along the value chain including the structuring of commercial arrangements, financing, and markets for pipeline gas and LNG projects. Since joining the institute in November 2007 he has contributed chapters to several of the institute's books, namely: '*Natural Gas in Asia*' (2008), '*Natural Gas in the Middle East and North Africa*' (2011), and '*The Pricing of Internationally Traded Gas*' (2012). In July 2009 he published a paper entitled '*The Changing Relationship between NOCs and IOCs in the LNG Chain*' and in March 2013 the paper '*East Africa Gas – Potential for Export*'. David also contributed the chapter '*Project Financing LNG Projects*' to *The Principles of Project Finance*, a book on project financing which was published by Gower Publishing in April 2012. David also gives numerous commercial training courses on gas and LNG in the UK and overseas, writes on gas and LNG, and presents regularly at conferences. During 30 years in the energy and utility sector David has worked on the development of complex integrated energy projects, negotiations at government level, and in the management of joint ventures. With Shell he worked in Malaysia and the Netherlands and travelled extensively to Oman and Asia, and was a key member of the team that closed a major LNG project in the Middle East. He is an experienced commercial manager with hands-on

experience of developing and closing commercial gas transactions as well as developing business strategy. From 2000 to 2005, as director of consulting, then managing director of the Gas Strategies Group (formally EconoMatters Ltd), David worked on and managed LNG and gas consulting assignments around the world. He has a degree in economics and geography from the University of Exeter.

Xin Li, Research Fellow, joined the institute in December 2013. He holds an MSc in management from Leeds University Business School and a PhD in ecological economy from the School of Earth and Environment, University of Leeds. Prior to joining the Oxford Institute for Energy Studies, he worked as a research fellow at the Sustainability Research Institute, University of Leeds. Xin Li specializes in input-output analysis and hybrid life cycle analysis. His research focuses on assessing the environmental impacts of energy technology in both developed and developing countries, measuring emissions embodied in trade and constructing multi-regional input-output table. His current research focuses on economic rebalancing and its implications on the energy policy in China.

Robert Mabro, CBE, Honorary President, was director of the OIES until April 2003. He is an emeritus fellow of St Antony's College and St Catherine's College, Oxford. He is honorary secretary of the Oxford Energy Policy Club. Robert Mabro stepped down as OIES president in November 2005, before the board elected him honorary president in November 2006.

Lavan Mahadeva, Senior Research Fellow, joined the institute in August 2011 and now heads up the institute's macroeconomic research, focusing on the interaction of energy markets with the macroeconomy and international finance. He is working on what constitutes good macroeconomic policy in energy exporting countries and whether global financial market

conditions affect energy prices. Prior to joining OIES, Lavan Mahadeva was a Bank of England economist for 16 years. He began by modelling and forecasting the UK economy before joining the Bank's Centre for Central Banking Studies (CCBS) and worked with other central banks in Africa, Central and Eastern Europe, and Latin America in constructing their monetary policy strategies. His remit was to develop models to guide policy in challenging environments. He was an adviser to the Bank of England Monetary Policy Committee (MPC) 2005–6 and he spent 2007–9 as advisor to the Central Bank of Colombia's governor. Just before coming to the institute, he worked on cross-sectional systemic risk and international finance. Lavan has published on the transmission mechanism of monetary policy, monetary policy frameworks, and interbank contagion. He co-produced an award-winning book on *'Monetary Policy Frameworks in a Global Context'*. Lavan has a BA from Trinity College, Cambridge, an MSc from the University of Warwick, and a PhD from the European University Institute.

Nelson Mojarro, OIES-Saudi Aramco Fellow is a doctoral candidate at the Science and Technology Policy Research Unit (SPRU) of the University of Sussex, where he earned an Msc in industry and innovation analysis and undertook postgraduate studies in international economics. He recently collaborated as a researcher in SPRU in a multinational Technological Foresight Project (TFP). His research interests are related to energy transitions, innovation in energy companies and the use of biofuels in oil firms, particularly in companies such as: BP, Shell, Petrobras, and Pemex. He has presented his research in the UK, US, and several international forums. He has worked in the Mexican Foreign Trade and Investment Office in Chicago as an international trade agent and business intelligence representative.

Benito Müller, Director, Energy and Climate Change, joined the OIES in 1996. He is also managing director of

Oxford Climate Policy (a not-for-profit company aimed at capacity building for developing country climate change negotiators), and director of the European Capacity Building Initiative (ecbi), an international initiative for sustained capacity building in support of international climate change negotiations. Dr Müller is a supernumerary fellow of Wolfson College, Oxford and a member of the Faculty of Philosophy, University of Oxford, and an associate of the university's Smith School for Enterprise and Environment. He has been serving as adviser to the LDC Group Chair (2011-12) and the Africa Group Chair (2012-13). He participated in the deliberations of the Transitional Committee (TC) for the Green Climate Fund (GCF) as adviser to the LDC TC members, who he has also been also advising on the GCF board. Dr Müller received his doctorate (D.Phil.) in Philosophy from the University of Oxford and was formerly a research fellow at Wolfson College and a lecturer in logic at the Queen's College, Oxford. He has a diploma in mathematics from the Eidgenössische Technische Hochschule (ETH) in Zürich, Switzerland.

Keun-Wook Paik, Senior Research Fellow, joined the OIES in January 2007. He is a specialist on north-east Asia's oil and gas issues; in particular Sino-Russian oil and gas cooperation, China's natural gas industry, and DPRK's offshore oil exploration. He is also currently an associate fellow of the Chatham House Energy, Environment and Development Programme. He is the author of *'Gas and Oil in North-East Asia: Policies, Projects and Prospects'* (London: Royal Institute of International Affairs, 1995), and co-author/ supervisor of *China Natural Gas Report* (China OGP, Xinhua News Agency and RIIA, 1998). Dr Paik has contributed well over 40 papers to a myriad of publications including: *'Energy Policy'*, *'Journal of Energy and Development'*, *'Geopolitics of Energy'*, *'The Pacific Review'*, *'Oil & Gas Journal'*, *'Petroleum Economist'*, *'FT Asia Gas Report'*, *China Daily Business*

Weekly, China Brief, and *'Asia-Pacific Review'*. His book *'Sino-Russian Oil and Gas Cooperation – The Reality and Implications'* (OUP, 2012) has also been published in Chinese and Korean, with a Japanese version due for publication in autumn 2014. In 2013, he was invited as adjunct professor by Yonsei University, and by China Petroleum University (Beijing) respectively.

Beatrice Petrovich, Research Fellow, joined the OIES in November 2012, after she conducted research with the institute in August 2012 focusing on European gas hubs. Her paper on European gas hub price correlation was published in October 2013. Beatrice is currently based in Milan where she works as researcher and consultant at REF-E, a leading energy consultancy in Italy. Among other activities, she works for the REF-E Energy Observatory, specialising in the analysis of the natural gas market and energy regulation, and contributes to the editing and writing of the Energy Observatory monthly newsletter. She holds an MSc in economics from the University of Milan Bicocca and completed a one-year exchange at the University of Glasgow. While at university, she collaborated on a research project in the field of experimental economics.

Simon Pirani, Senior Research Fellow on the OIES Natural Gas Programme, joined the institute in September 2007. His research focuses on the development of natural gas markets, and changing consumption patterns, in the former Soviet Union. He was editor of *Russian and CIS Gas Markets and their Impact on Europe* (OUP, 2009), author or co-author of OIES publications on the Ukrainian gas sector and Russo-Ukrainian gas relationships, and author of OIES working papers: *'Elusive Potential: Natural Gas Consumption in the CIS and the Quest for Efficiency'* (2011) and *'Central Asian and Caspian Gas Production and the Constraints on Export'* (2012). He studied Russian at the University of London, wrote a doctoral dissertation at the University of Essex, and is the author

of *'The Russian Revolution in Retreat'* (Routledge, 2008) and *'Change in Putin's Russia: Power, Money and People'* (Pluto, 2009). Prior to joining the institute he worked as a journalist, writing about the Russian and Ukrainian economies for financial and industry publications. Since 2012 he has been teaching Russian and Soviet history at Canterbury Christ Church University.

John Rhys, Senior Research Fellow, joined the OIES in March 2010, having been one of its senior research advisers. He obtained a degree in mathematics while at Jesus College, Oxford, and later obtained his PhD in economics at the London School of Economics. He is a former chief economist at Electricity Council, and a former managing director of NERA UK Economic Consulting, where he was intimately involved in a number of UK energy sector privatisations. As director of NERA's international energy team he worked extensively on energy sector reform projects worldwide with the World Bank, other development agencies, and national governments. He continues to have economic and energy consulting interests, is a non-executive director of an NHS Hospital Trust, and a visiting fellow at the University of Sussex, Energy Group. His current interests include energy policy in relation to climate change, a subject on which he has given written and oral evidence to the Environmental Audit Committee of the House of Commons, and provided evidence to the Joint Committee on the Climate Change Bill.

David Robinson, Senior Research Fellow, joined the OIES in July 2007. He is a consulting economist who advises on public policy and corporate strategy, especially in relation to energy and climate change. He is an academic adviser to The Brattle Group of consultants, and was previously a director of NERA, where he was the co-chair of European Operations and of the Global Energy and Telecom Practices. He also worked at the International Energy Agency (IEA) and wrote his doctoral dissertation

at the University of Oxford on the vertical disintegration of the international petroleum industry.

Howard Rogers, Director, Natural Gas Research Programme, joined the OIES in January 2009 after a long career in BP in upstream oil and gas business development and strategy, including postings to the USA, Kuwait, and Azerbaijan. His last post in BP was head of Fundamental Analysis, Global Gas. In 2010 he published an OIES research paper *'LNG Trade-flows in the Atlantic Basin: Trends and Discontinuities'* on the subject of LNG arbitrage between the regional markets of Asia, Europe, and North America, based on a quantitative modelling framework. With Jonathan Stern he co-authored a paper on the transition to hub-based gas pricing in continental Europe in 2011. He published a paper *'The Impact of Import Dependency and Wind generation on UK Gas Demand and Security of Supply to 2025'* in 2011, and in early 2012 a paper *'The Impact of a Globalizing Market on Future European Gas Supply and Pricing: The Importance of Asian Demand and North American Supply'*. His contribution to the book *'The Pricing of Internationally Traded Gas'* was as co-author of Chapter four and author of Chapter 12.

Amrita Sen, OIES-Saudi Aramco Fellow, holds an MPhil Economics from Cambridge University, a BSc Economics from University of Warwick, and is pursuing a PhD at SOAS. She has over six years of experience covering commodities and specialises in energy, particularly oil. She has also covered coal and freight markets, and investment flows into the commodity markets, and was formerly Barclays Capital's lead on oil research. Amrita is frequently cited in leading media outlets such as *Financial Times*, *Bloomberg* and *CNBC*. She is the Chief Oil Analyst at Energy Aspects, a market analysis house.

Anupama Sen, Senior Research Fellow, joined the OIES in October 2009 to work on the economics of energy in India. She holds a BA (Hons)

in economics from the University of Mumbai, an MSc in economic development from the London School of Economics, and a PhD from the University of Cambridge where she was a Cambridge Nehru Scholar. Her areas of expertise include policy on pricing, taxation, and regulation of oil, gas, and electricity in India, with extensions to other developing economies, and she has carried out extensive fieldwork in India in relation to her research. Her current work focuses on gas pricing, electricity market reform, auctions for the allocation of energy resources in India, and the fiscal regime for exploration. Anupama is a fellow of the Cambridge Commonwealth Society, was previously visiting fellow at Wolfson College, Cambridge, and is now also a region head on the Asia Pacific desk at Oxford Analytica.

Jonathan Stern, Chairman of the Natural Gas Programme and Senior Research Fellow, is also: honorary professor at the Centre for Energy, Petroleum & Mineral Law & Policy, University of Dundee; visiting professor at Imperial College's Centre for Environmental Policy in London; part-time BP Professor at the Moscow School of Management's Energy Centre at Skolkovo; fellow of the Energy Delta Institute; and a member of the Board of Advisers for the Center for Energy Economics, Bureau of Economic Geology at University of Texas at Austin. He is the author and editor of several books, including: *'Natural Gas in Asia: the challenges of growth in China, India, Japan and Korea'*, the second edition of which was published by OUP in 2008,; and co-editor with Bassam Fattouh of *'Natural Gas Markets in the Middle East and North Africa'*, published in 2011. During 2012, Jonathan Stern's major research focused on gas pricing and resulted in the publication of his edited book on *'The Pricing of Internationally Traded Gas'* (OUP, 2012). Following publication he organized launches of the book in London, Milan, Moscow, Houston, and Tokyo, while during the year he continued to work on European

gas pricing developments. He also continued work on general Russian and CIS gas issues in connection with his work as EU Speaker for the EU–Russia Gas Advisory Council, a body set up by EU Energy Commissioner Oettinger and Russian Energy Minister Shmatko to assess future trends in the gas sector in order to reduce risks and to exploit opportunities in EU–Russia gas cooperation.

Katja Yafimava, Senior Research Fellow, joined the OIES in November 2006 to work in the Natural Gas Programme. She holds a DPhil in Geography and an MPhil in Russian and East European Studies from the University of Oxford (Corpus Christi College). She is the author of *'The Transit Dimension of EU Energy Security: Russian Gas Transit Across Ukraine, Belarus, and Moldova'*, a book published by OUP in 2011, which was launched in London (Chatham House) and Brussels (CEPS). She is also the author and co-author of several chapters in *'The Pricing of Internationally Traded Gas'*, edited by Jonathan Stern, (OUP, 2012) and *'Russian and CIS Gas Markets and their Impact on Europe'*, edited by Simon Pirani ((OUP, 2009), as well as co-author of several working papers on Russia–CIS gas transit disputes together with Simon Pirani and Jonathan Stern. She also reviewed several papers for *Journal of European integration* and *The Energy Journal*. In 2013 she began to work on the EU gas regulation and published a working paper *'The EU Third Package for Gas and the Gas Target Model: major contentious issues inside and outside the EU'*, and continued her work as an expert in the EU–Russia Gas Advisory Council. Prior to joining the institute and in parallel with her doctoral studies, she was an intern at Shell (2005) and at the Energy Charter Secretariat (2006).

Shamil Midkhatovich Yenikeeff, Research Fellow, is a Senior Associate Member at the Russian and Eurasian Studies Centre, St Antony's College, University of Oxford. Dr Yenikeeff writes and presents on Russian–European energy relations, Russia and

OPEC, Caspian and Central Asian energy issues, and the development of Arctic hydrocarbons. His publications have appeared in a number of industry and academic journals. Among the latest of these is a book chapter 'Oil and the Corporate Re-Integration of Russia: The Role of Federal Oil Companies in Russia's Center-Periphery Relations' in Douglas Chalmers and Scott Mainwaring, (eds.), 'Problems Confronting Contemporary Democracies', University of Notre Dame Press, 2012 as well as a working paper 'Governors, Oligarchs, and Siloviki: Oil and Power in Russia' (co-authored with Ahmed Mehdi) published in English, French, and Russian by Institut français des relations internationales. His works have also been widely published around the world in various languages, on topics including: the effect of US and Russian domestic politics on European gas markets (Huffington Post 2012), and Vladimir Putin's relationship with big business ('Big business under threat in Putin's Russia?', *openDemocracy Russia*, 23 May 2012, and 'Putin and Russia's Big Business: From Unstable Stability to Stable Instability?', *The Globalist*, 22 May 2012).

William Yong, OIES-Saudi Aramco Fellow, is a graduate from the University of Cambridge with a master's degree in social and political Sciences and has recently completed the MSc in international management SOAS in London. Over the course of six years living in Iran, William worked as a presenter and editor for the Iranian state news network, Press TV, before going on to become Tehran correspondent for the New York Times and a contributor to TIME Magazine. His research addresses the confluence between oil and politics under the Islamic Republic with a particular focus on the consolidation of oil industry decision making under the Islamic Republic Guards Corps (IRGC).

Renfeng Zhao, Research Fellow, joined the institute in 2007 to participate in a project on balanced, clean development in China. His work focuses on China's energy strategy and development policies, and China's

energy diplomacy and its geopolitical implications. He recently advised both Chinese state-owned and private energy companies on their trade and investment issues in Europe.

Previously, he worked at China Daily as an energy correspondent in Beijing. He holds a double master's degree in journalism and global Studies from EU Erasmus Mundus Programme. He was a Parvin/Freedom Forum Fellow at the University of Hawaii and the East-West Center.

The following staff contributed to the work of the OIES in 2013. Their dedication and professionalism was essential to its continued smooth running.

- **Lavinia Brandon** provides administrative support and has responsibility for managing and maintaining the institute's excellent library.
- **Jo Ilott** provides administrative support for the Natural Gas Programme.
- **Margaret Ko** is responsible for the institute's accounts.
- **Susan Millar** manages the Oxford Energy Policy Club and Oxford Energy Seminar.
- **Kate Teasdale** is the OIES administrator.

Visiting Research Fellows, Research Associates and Contributing Authors

Ali Aissaoui, Research Associate, is a senior policy consultant at the Arab Petroleum Investments Corporation (APICORP) where he last held the position of head of economics & research. Before joining the OIES as a senior research fellow, he served as energy policy advisor to the Algerian government and Sonatrach as well as the country's representative in the OPEC Board of Governors. At APICORP his duties include the scanning of the corporation's business environment in the Middle East and North Africa, a region with a wide variety of challenges and opportunities. Obviously, such a task has become much more difficult in the volatile and uncertain aftermath of the Arab uprisings. He is also interested in energy markets and prices, energy investment and financing, and the political economy of the major petroleum-producing countries. His involvement in several professional associations has afforded him the opportunities to interact with fellow experts from around the world. In addition to the International Association for Energy Economics, he is an active member of the Oxford Energy Policy Club, the Arab Energy Club, and the Paris Energy Club.

Robert Arnott, Research Associate, is currently a director of Petroceltic International plc, Rocksource ASA and is chairman of Oyster Petroleum Ltd. Previously he spent four years with Spring Energy AS where he advised the company on upstream corporate strategy. He has also held board-level positions at DNO UK Ltd and Impax Environmental Markets plc. He worked as a senior fellow at the OIES from 2001 to 2005 where his research focused on all aspects of mature oil and gas provinces, as well

as the corporate strategies of the major upstream energy companies. He has a strong background in all aspects of exploration and production and is recognized for his research into the oil and gas industry. He worked as a geologist and economist with Royal Dutch Shell prior to entering the City in 1991, where he held senior positions as an oil and gas equity analyst, at Goldman Sachs and Morgan Stanley for 10 years.

Michael Bradshaw, Senior Visiting Research Fellow, joined the OIES in August 2008, and is also professor of global energy at Warwick Business School. Before taking up this post in January 2014 he was honorary professor of human geography at the University of Leicester, UK. His PhD is from the University of British Columbia, Canada. His research is on resource geography, with a particular focus on the economic geography of Russia and global energy security. In 2007 he was awarded the Royal Geographical Society's Back Award for his applied research on economic change in post-socialist economies. Most recently his research has focused on energy-related issues, including the development of the Sakhalin oil and gas projects in Russia's Far East and energy security in north-east Asia. From 2008 to 2011 he was engaged in a programme of research funded by a Leverhulme Trust Major Research Fellowship that examined the relationship between energy security, globalisation, and climate change, which led – in October 2013 – to the publication of his book entitled *'Global Energy Dilemmas'*. In January 2011 he started a two-year research project on global gas security funded by the UK Energy Research Centre. He is editor-in-chief of Wiley-Blackwell's

Geography Compass, co-editor of European Urban and Regional Studies, and contributing editor of Eurasian Geography. In addition to his involvement in OIES, he is an honorary senior research fellow in the Centre for Russian and East European Studies at the University of Birmingham.

Craig Brown, Contributing Author, was an academic visitor at the institute on a sabbatical from PFC Energy where he is a downstream markets analyst.

Tirthankar Chakravarty, Contributing Author, is a senior consultant at Fractal Analytics. He holds a BA in economics from St Stephen's College, New Delhi, and an MA and MPhil in economics from the University of Cambridge.

Michael Xiaobao Chen, Visiting Research Fellow, is a principal analyst at Statoil where he works with global strategy and business development. Michael started his career at the OECD as an economist, focusing his research on economic development in China and its global impacts. He then joined the International Energy Agency (IEA), where he worked in the World Energy Outlook's long-term global energy forecast team. Michael's main areas of expertise are: the Chinese energy economy and regulations, the ASEAN energy market, global fossil fuel subsidies, and upstream industry trends. Michael holds a BA in economics from Lancaster University, an MSc in economics from University College London, and an MSc in development from the London School of Economics.

Hakim Darbouche, Research Associate, is a commercial adviser with OMV E&P, working on commercial operations and business development in the UKCS and North Africa. He joined OMV in January 2013 after spending three and a half years at OIES where he led research on MENA natural gas markets and North African energy issues. He was also an independent consultant, with clients in the public and private sectors. He holds

a BA from Sussex University and a PhD from the University of Liverpool.

Ralf Dickel, Senior Visiting Research Fellow, has been an independent expert on energy trade since leaving the Energy Charter Secretariat in October 2010 after six years as director for transit and trade. He headed the energy diversification division at the International Energy Agency from 2001, and was responsible for policy analysis of energy markets and of energy market reform. Before joining the IEA he worked as senior specialist for oil and gas policy for the World Bank, after a long career with Ruhrgas from 1980 to 1998 where he held various managing positions both in the gas purchase and the gas sales departments. Dickel managed and co-authored several publications at the IEA and the Energy Charter Secretariat, amongst them: *'Security of Gas Supply in Open Markets'*, IEA 2004, and *'Putting a Price on Energy'*, Energy Charter 2007.

John Elkins, Research Associate, joined the OIES in January 2008 and, in addition to editing many of its gas programme working papers, has written the paper *'Natural Gas in the UK: An Industry in Search of a Policy?'*, which was published in 2010. Elkins was formerly managing editor of the Gas Strategies publications department, responsible for *Gas Matters*, *Gas Matters Today*, and other publications. He is still actively involved as associate editor, and is a regular presenter at the Gas Strategies Gas Chain training course. He joined Gas Strategies as a consultant in 1995 after leaving British Gas HQ, where he held various posts involving liaison with regions on annual and peak forecasting methodology, and preparation of amalgamated national, annual, and peak supply and demand forecasts. He was secretary of the Matching Panel, which advised the British Gas board on supply/demand issues for company plans and negotiations with Ofgas, OFT, and the Monopolies Commission.

Chris Le Fevre, Senior Visiting Research Fellow, joined the OIES in September 2012 and published a working paper on gas storage in Great Britain in January 2013. He is presently working on a study of the potential for natural gas as a transportation fuel in Europe. Chris has worked as an independent energy consultant since 2002, specialising in commercial, strategic, and regulatory issues in the natural gas sector with particular focus on European and former Soviet Union markets. Chris has worked in the oil and gas industry for over 30 years. He has held a variety of positions to executive director level at Transco plc (now National Grid Gas plc) and British Gas. At Transco he was the director responsible for implementing the Network Code and the introduction of domestic competition. His roles in British Gas include establishing operations in a number of European countries including Spain, the former German Democratic Republic (East Germany), Hungary, and the Czech Republic. Before British Gas, he worked for Shell in exploration and production companies in the Netherlands and Malaysia. He is also a region head at Oxford Analytica and, until 2011, sat on the boards of the Northern Ireland Utility Regulator and the South Central Strategic Health Authority.

Andy Flower, Research Associate, works as an independent consultant specialising in the LNG business, particularly: strategy, marketing, project structures, shipping, pricing, supply and demand, and project economics. He retired from BP in 2001 after 32 years of service, which included 22 years involved in LNG and natural gas business activities. His final role was Global LNG Senior Adviser, Global LNG. At various times during his career Flower was involved in liquefaction projects in Nigeria, Abu Dhabi, Australia, Qatar, Indonesia, and Trinidad. He has provided advice to companies planning LNG receiving terminals in North America, Europe, and Asia and has negotiated

LNG sales contracts with buyers in all the major LNG markets.

Floris van Foreest, Research Associate, is an experienced consultant in the field of power and gas market analysis, scenario development, and sustainability. His current research is focused on the role of gas in the energy transition. Earlier in his career he held various roles in multinational companies. Floris has master's degrees in Business Administration and Financial Management from the University of Groningen and Political Science from the University of Amsterdam.

Florence Gény, Research Associate, works in business development and strategy in international exploration and production for Statoil. Her main areas of expertise are upstream contracts (fiscal regimes, production sharing, joint operatorship) and commercial structures, in particular in gas value chains, and energy industry trends. Her research currently focuses on unconventional gas in North America and Europe and impacts on gas markets. She graduated from École des Hautes Etudes Commerciales (HEC) with a master's degree in science of management and from Université Paris XI with a master's degree in business law.

Olga Glebova, Research Associate, In 2013 Olga completed her PhD thesis on Fischer Tropsch Gas-to-Liquid (FTGTL) efficiency and prospects in Russia. She holds a first degree in Russia's principal university of petroleum engineering from the Gubkin Russian State University of Oil and Gas. Olga is currently based in Moscow where she works for the International Business Department of Gazprom. She is the author of articles: '*Large-capacity industrial GTL production: pricing formation*'; '*Economic efficiency of FTGTL production in Russia*'; and '*Estimation of capital and operational expenditures of FTGTL projects in Russia*'. Olga is currently co-authoring a book: '*Synthetic Liquid Hydrocarbons: Technology, Economics,*

Production'. She believes strongly that diversification of gas reserve channels will secure additional market share for countries-producers.

Ieda Gomes, Senior Visiting Research Fellow, is the director of Energix Strategy Ltd, a consultancy specialising in energy strategy, natural gas and LNG supply, pricing, and contracts, and market fundamentals. In a career spanning 30 years in the gas and energy industry, Ieda has spent more than 13 years with BP plc, where she had senior positions, such as: vice president of new ventures for South Asia and Middle East, president of BP Brasil, and vice president of regulatory affairs for gas and power. Prior to BP Ieda was the CEO of the S. Paulo Gas Company (Comgas), the largest gas distribution company in Brazil. Ieda is currently a councillor at the Brazilian Chamber of Commerce in Great Britain, a director at the Department of Infrastructure of the S. Paulo Federation of Industries, and a member of the advisory board of Comgas. Ieda is an active member of International Gas Union (IGU) having served in the executive committee and as the chair of the Task Force on Building Strategic Human Talent. She has presented in several energy conferences and training courses, more recently at the World Gas Conference, and she is a member of the Programme Committee of LNG 17. She is a regular columnist at the specialized magazine *Brasil Energia*. Ieda has a degree in chemical engineering from Universidade Federal da Bahia, and an MSc in energy from Universidade de S.Paolo.

Marianne Haug, Research Associate, teaches Energy Policy and Sustainable Development at the University of Hohenheim in Stuttgart, Germany and serves as chair of the European Commission Advisory Group on Energy. Following a career at the World Bank in Washington, DC, inter alia as director and senior advisor to the president, she served as director at the International Energy Agency (IEA) in Paris, 2001–5, and as chairman of the Board of the

Forum für Zukunftsenergien in Berlin, 2006–9. Her present research and advisory interests focus on the innovation dynamics and growth of clean energy within a rapidly changing global economy.

Charles Henderson CB, Research Associate, retired from the Department of Trade and Industry in 1996, where he was head of the energy directorate. He is a former chairman of Total's oil business in the UK (1998-2005) and a member of the Monopolies and Mergers Commission.

Cameron Hepburn, Research Associate, is an economist with expertise in energy, resources and the environment. He is professor of environmental economics at the University of Oxford, based at the Smith School and the Institute for New Economic Thinking at the Oxford Martin School, and is also professional research fellow at the Grantham Research Institute at the London School of Economics, and a fellow at New College, Oxford.

Paul Horsnell, Research Associate, is also global head of commodities at Standard Chartered Plc. He was previously managing director and head of commodities research at Barclays Capital, joining in 2003 from JPMorgan where he was head of energy research. Prior to that, he was assistant director for research at the OIES and a research fellow in economics at Lincoln College, Oxford University. He is the author of *'Oil in Asia'*, and (with Robert Mabro) *'Oil Markets and Prices: The Brent Market and the Formation of World Oil Prices'*. He holds a degree in philosophy, politics and economics, and a doctorate in economics, both from Keble College, Oxford.

Anil Jain, Senior Visiting Research Fellow, is a member of the Indian Administrative Service of the Government of India. He has over 25 years of administrative experience at the field and policy formulation levels, and has held senior positions in the State and Federal Governments.

Between 2003 and 2008, as Director and Joint Secretary in the Ministry of Petroleum and Natural Gas, he was closely involved with policy formulation and implementation on the upstream and downstream development of the Indian gas sector, including exploration, award of acreages, and the pricing and distribution of natural gas. He has authored a book *'Natural Gas in India: Policy and Liberalisation'*, published by OUP in 2012. As Adviser (Energy) in the Planning Commission of India, he is handling the oil and gas, renewable energy and energy efficiency sectors, as well as international cooperation. Jain will also lead the *'India Energy Security Scenarios, 2047'*, the medium-term energy outlook to be launched by the Indian Government in February 2014. Mr Jain presently co-chairs the energy related working group of the G20. Jain holds a BA in economics and an MBA and diploma from the Indian Institute of Foreign Trade.

David Ramin Jalilvand, Contributing Author, is studying for his PhD at CREES, Berlin Centre for Caspian Region Studies.

Najeeb Jung, Research Associate, is the current Lieutenant Governor of Delhi of the National Capital Territory of Delhi. He joined the Indian Administrative Service (IAS) in 1973 and worked in Madhya Pradesh and with the Indian government. He was vice-chancellor of the Jamia Millia Islamia, a central university in Delhi. He subsequently worked with the Asian Development Bank (ADB). He is an expert on governance and energy, having worked in these areas with different governments, the public sector, and the private sector. He is a member of several committees and special task forces set up by the Indian government to deal with education and governance. He is also a regular columnist writing for several national newspapers.

Yelena Kalyuzhnova, Senior Visiting Research Fellow, founded the Centre for Euro-Asian Studies

at the University of Reading. Prof. Kalyuzhnova is an expert on the economics of energy and transition economies and authored the first book in English about the economy of Kazakhstan. She is involved in collaborations on a wide range of topics with a number of private companies such as BG Group, Burren Energy, ChevronTexaco, and Shell International, as well as international organisations such as UNECE, the World Bank, the IMF, and the EBRD. She has contributed to numerous economic studies for international organisations including the World Bank, European Bank for Reconstruction and Development, Economic Commission for Europe, and the United Nations and is a frequent speaker at international level on economic, environmental, and energy issues. Prof. Kalyuzhnova is an economic adviser to the UK Parliament's All-Party Parliamentary Group on Kazakhstan.

Aleksandar Kovacevic, Senior Visiting Research Fellow, started his professional career in 1986 with the Federal Productivity Institute of the former Yugoslavia, having graduated with a degree in energy economics from Belgrade University. He is principal author of the energy-poverty analysis *'Stuck in the Past'* (UNDP, 2004), co-author of the Western Balkans energy policy survey (IEA/UNDP, 2008) and the Public Expenditure and Institutional Review (PEIR) for Serbia and Montenegro (World Bank, 2003), and author of a number of papers, lectures, and media contributions. For over 20 years he has provided strategic advice, complex energy efficiency solutions, and emergency situation assistance to major institutional, financial, and private clients including assistance to UN OCHA to coordinate rapid reconstruction of the Serbian energy infrastructure after the Kosovo War. He was affiliated to PlanEcon before 1992, project manager for Tagarnog Development project in Russia (1992–8), and a contributor to the Black Sea and Central Asia panel at the Harriman Institute, Columbia

University. Aleksandar has been a member of the Advisory Board to the Russian Power Conference since 2002, and of the UNECE Group of Experts in Sustainable Energy, as well as a regular consultant to the World Bank and contributor to the Oil and Gas Economy and Law (OGEL) network. He won an Innovation Award at the Power-Gen Europe Conference in 2002.

Chris Llewellyn Smith, Research Associate, is a theoretical physicist. He is currently Director of Energy Research, University of Oxford, and president of the council of SESAME (Synchrotron-light for Experimental Science and its Applications in the Middle East). He has served as chairman of the council of ITER (2007–9) and of the Consultative Committee for Euratom on Fusion (2004–9), and was director of UKAEA Culham (2003–8), with responsibility for the UK's fusion programme and for operation of the Joint European Torus (JET). While at Culham he developed and promoted the 'Fast Track' development of fusion energy. He was provost and president of University College London (1999–2002), director general of CERN (1994–8), and chairman of Oxford Physics (1987–92). During his time as CERN director the Large Hadron Collider (LHC) was approved and construction started. After completing his doctorate in Oxford in 1967, he worked briefly in the Physical Institute of the Academy of Sciences in Moscow, before spending periods at CERN and the Stanford Linear Accelerator Center, after which he returned to Oxford in 1984. Chris Llewellyn Smith has written and spoken widely on science funding, international scientific collaboration, and energy issues. He has served on many advisory bodies nationally and internationally, including the UK Prime Minister's Advisory Council on Science and Technology (1989–92). His scientific contributions and leadership have been recognized by awards and honours in seven countries on three continents.

Cyril Lin, Research Associate, is founder and managing director of IFG Development Initiatives (IFGDI), an economics and corporate advisory consultancy specialising in transition and emerging market economies. He received his undergraduate and graduate training at MIT, Harvard University, and the University of Oxford. Until 2001, he was a lecturer in economics at the University of Oxford, director of the Centre for Modern Chinese Studies, and fellow in economics at St Antony's College. He is a member of the team of international economists formed by the China Economic Research and Advisory Programme (CERAP), a non-profit body undertaking economic policy research and advice for Chinese policymakers. In 2006 he initiated the establishment of the Cairncross Memorial Foundation, which aims to support international collaborative research between foreign and Chinese specialists concerning major Chinese public policy issues, including economics, energy, environment, governance, and the law.

Edwin R. Lim, Research Adssociate, was educated at Princeton University (BA) and Harvard University (PhD in economics). He joined the World Bank in 1970 and in the following 30 years, was responsible for the Bank's work in a number of developing countries, including Ghana, Nigeria, Indonesia, Thailand, Vietnam, India, and China. In 1980, Dr Lim was a member of the management team of the World Bank that conceived and directed the bank's programme in China, establishing the organisation's China office and serving as the first chief of mission from 1985 to 1990. He returned to headquarters in 1990 when he was appointed a director, with responsibility for Western Africa. In 1994, Dr Lim took two years external leave from the World Bank to set up China International Capital Corporation (CICC), China's first international investment bank, and served as CICC's first CEO. He returned to the World Bank in 1996 and was appointed the first country director to be stationed in New

Delhi, India. Since 2003, Dr Lim has been directing the China Economic Research and Advisory Programme which provides policy advice, pro bono, to the Chinese authorities.

Joan MacNaughton, Research Associate, is Executive Chair of the World Energy Trilemma for the *World Energy Council*, an annual assessment of the quality of 129 countries' energy policies. She is past president and honorary fellow of the Energy Institute, a member of the International Advisory Board of the Energy Institute of University College London; of the GCCSI's board selection panel; and of the board of governors, Argonne Laboratory at the University of Chicago where she chairs the budget committee. She is a Companion of the Order of the Bath. From 2002, as director general of energy, Joan played a key role in shaping UK energy policy. In that role she led a major change programme and made a significant contribution to international energy policy, including overseeing the energy agenda during the UK presidency of the EU and leading the work on the energy part of the climate change proposals agreed at the G8 Gleneagles Summit. From 2004 to 2006, she was elected chair of the International Energy Agency Governing Board, leading a review of the IEA's strategy and leading the emergency response to the supply disruption caused by Hurricane Katrina. From 2007 to 2011, Joan led Alstom's policy department and spearheaded Alstom's clean power advocacy – to advance clean, sustainable energy and reduce power generation carbon dioxide emissions – and was the company's global adviser on sustainable policies until December 2012.

John Mitchell, Research Associate, is an associate research fellow at Chatham House and honorary fellow at the Centre for Energy, Petroleum & Mineral Law & Policy at the University of Dundee. In November 2007 he received a lifetime achievement award for research from King Abdullah at the opening of the Third OPEC

Summit in Riyadh. He retired in 1993 from British Petroleum, where his posts had included special adviser to the managing directors, regional co-ordinator for BP's subsidiaries in the Western Hemisphere, and head of BP's Policy Review Unit. Mitchell has written three books: *The New Economy of Oil* (2001), *Companies in a World of Conflict* (editor, 1998) both published by Chatham House/Earthscan; and *The New Geopolitics of Energy* (Chatham House 1996). He was a contributor to *Oil Titans* by Valérie Marcel (Brookings/Chatham House, 2006), and has written numerous reports, briefing papers, and journal articles, including *More for Asia: Rebalancing Global Oil and Gas* (Chatham House 2010).

Mari Luomi, Research Associate, is a writer at the International Institute for Sustainable Development Reporting Services. Her core areas of expertise are sustainable development and natural resource and environmental policy and politics, with a special focus on climate change policy in the Gulf Cooperation Council states and international climate politics. Her research currently focuses on the Gulf and Brazil. She holds a PhD in Middle Eastern Studies from the University of Durham. In 2011–2013 she was research associate and CIRS post-doctoral fellow at the Georgetown University School of Foreign Service in Qatar. From 2006 to 2010, she held various research positions, in the Middle East Project and the Research Programme on the International Politics of Natural Resources and the Environment, at the Finnish Institute of International Affairs in Helsinki. She has also worked as advisor and senior researcher for the State of Qatar on environmental governance and international climate politics.

Angelique Palle, Contributing Author, visited the OIES in 2013 as a visiting doctoral research fellow. She is studying for her PhD at University of Paris 1 Panthéon Sorbonne.

Gulmira Rzayeva, Research Associate, joined the Oxford Institute for Energy

Studies as a research associate in 2013. She is a senior research fellow at the Center for Strategic Studies (SAM) under the President of the Republic of Azerbaijan, and a non-resident scholar at the Hazar Enstitutu (HASEN) in Istanbul. Her areas of expertise include the energy policy of Azerbaijan, Black Sea and Caspian region energy security, and the Turkish domestic natural gas market. Ms Rzayeva has published articles on Azerbaijan's gas strategy and energy efficiency policy, and previously worked at the Moscow Carnegie Center as a visiting research fellow and at the Aleksanteri Institute of the University of Helsinki. She has a BA in international relations from the Baku Slavic University and an MA in global affairs from the University of Buckingham, UK.

Ivan Sandra, Research Associate, is currently a senior partner at EY London with responsibility for global oil and gas in emerging markets. Prior to joining EY, Mr Sandra was advisor to the president of Brazil's largest unconventional E&P company and prior to this he served as president at Energy Intelligence in London. Until mid 2011, he was vice president of global strategy and business development at Statoil, where he played an important role in the strategy re-set as well as in the origination of business development and M&A efforts worldwide. Prior to Statoil, Sandra held other positions in industry including: head of oil supply at OPEC, where he also acted as the technical liaison with non-OPEC countries and represented OPEC at the UNECE Expert Group on Resource Classification at the UN in Geneva; associate and vice president in the O&G investment banking team at Citigroup and Merrill Lynch in London; and exploration geologist at BP, working in exploration, operations, and commercial positions in Venezuela, Norway, and Egypt. Mr Sandra is a member of the Oxford Energy Policy Club, co-founder, board member, and lecturer of strategy at Vienna's Wirtschaftsuniversität (WU), and was recently appointed

trustee to the Energy Policy Research Foundation, Inc. in Washington, D.C. He attended the Berkley Executive Leadership Program, and holds a BSc in geology from Baylor University, and an MSc in geology and an MBA from Edinburgh University.

Paul Segal, Research Associate, is an economics lecturer at the University of Sussex. He works on economic development, the economics of resource-rich countries, and the macroeconomics of oil prices. He completed his DPhil in Economics at Nuffield College, Oxford, in 2006, having previously been a consultant economist at the UNDP in New York, and a research fellow at Harvard University. He has been a visiting scholar at the National Bureau of Economic Research in Cambridge, Massachusetts, and at the Centro de Investigación y Docencia Económicas in Mexico City.

Adnan Shihab-Eldin, Research Associate, is Director General of the Kuwait Foundation for the Advancement of Sciences (KFAS). He was former acting secretary general & director of research of the Organization of Petroleum Exporting Countries (OPEC). He also serves as advisor to a number of public and international institutions, including adviser & member of Kuwait National Nuclear Energy Committee (KNNEC), and trustee of the American University of Kuwait. From March 1999 to August 2001, he served as director of the Division for Africa, East Asia & the Pacific, Department of Technical Co-operation, at the International Atomic Energy Agency (IAEA) in Vienna. From 1991 to 1999, he served as director, UNESCO Regional Office for Science & Technology (Cairo) and as UNESCO Representative in Egypt, Sudan, and Yemen. From 1976 to 1986, he was director general of the Kuwait Institute for Scientific Research, serving concurrently (1976-1980) as vice rector for academic affairs at Kuwait University. Dr Shihab-Eldin has taught, lectured and carried out research in physical and engineering

sciences, energy economics and technology, at universities and research centers across the world, including the University of California, Berkeley, the European Nuclear Research Center, Geneva, and Harvard University. He has published extensively and is a regular lecturer and invited speaker at international and regional meetings.

Ian Skeet, Research Associate, is a consultant to the OIES and former editor of *Oxford Energy Forum*. Between 1953 and 1985 he worked for Shell, where he was in charge of government and international relations from 1975–85. Widely travelled in the Middle East, his publications include *'Oman and Muscat: End of an Era'*, and *'OPEC: Twenty-Five Years of Prices and Politics'*.

Robert Skinner, Research Associate, is a former director of OIES and previously vice president of Oil Sands Total E&P Canada Ltd, director of the International Energy Agency's policy office, Assistant Deputy Minister for Energy Commodities (Canadian Government), former senior vice president at Statoil Canada. He is an associate fellow of the Institute for Research on Public Policy in Montreal, energy research strategy advisor to the University of Calgary, and through his private consultancy Kimacal Energy Strategies, also based in Calgary) consults for industry, governments and academic institutions in Canada and abroad.

Brian Songhurst, Research Associate, has an honours degree in chemical engineering from Imperial College, London and is a fellow of the Institution of Chemical Engineers. He has had 45 years of experience in the oil and gas industry working for engineering contractors, operators and specialist consultants. He is chairman of the Institution of Chemical Engineers Subject Oil & Natural Gas group, which provides technical networking between its members to deliver best practices within the chemical engineering community. He has held senior positions in engineering, projects

and sales, and has led engineering and process design teams for gas processing, offshore oil & gas, refinery and petrochemical facilities around the world. He is currently director of LNG within Energy and Power, based in London, and manages a variety of LNG projects for both onshore and offshore (FLNG) applications. He was previously engineering manager with MW Kellogg, one of the world's leading LNG contractors, and facilities engineering manager with J Ray McDermott one of the world's leading offshore contractors.

Paul Stevens, Research Associate, was educated as an economist and specialist on the Middle East at Cambridge and at SOAS. From 1973–9 he taught at the American University of Beirut in Lebanon, interspersed with two years as an oil consultant. From 1979–93 he lectured in economics at the University of Surrey, after which he became professor of petroleum policy and economics at the University of Dundee's Centre for Energy, Petroleum & Mineral Law & Policy (a chair created by BP), and was appointed an emeritus chair in January 2008. He has now joined, on a part-time basis, Chatham House (The Royal Institute for International Affairs) in London as senior research fellow. His role is to take over the energy part of the Energy, Environment, and Development Programme. He has published extensively on energy economics, the international petroleum industry, economic development issues, and the political economy of the Gulf. He also works as a consultant for many companies and governments.

Philip Wright, Research Associate, is a fellow of the UK's Energy Institute and was formerly professor, then honorary professor, of energy policy and economics at the University of Sheffield. Over three decades his research, publications, consultancy and teaching have covered the gamut of energy industries and companies that operate in them. As well as contributing a critical perspective on the liberalisation of gas and electricity

industries, his work has also addressed the UK's oil and gas fiscal regime. His views and expertise have been sought by government organisations, international organisations, companies, trade unions and universities in Europe and Latin America. Fluent in French and Spanish, he has been a visiting professor at the University of Montpellier¹ and at the University of Cartagena de Indias, Colombia. He is currently scientific director at the Observatorio del Caribe Colombiano in Cartagena de Indias, working in collaboration with the Colombian regulators to improve the performance of the electricity supply in the nation's Caribbean region. This has included the development of a monitoring system to provide early warnings of problems which would delay the timely commissioning of new electricity network investment projects. Most recently, he and his colleague Carmen Ocampo have completed an evaluation of the impact of a government electricity subsidy designed to assist the very poorest of households in the Caribbean region of Colombia.

Ian Wybrew-Bond, Company Secretary and Research Associate. After a career in Shell, principally in its international natural gas business, Ian became a gas adviser to the OIES and co-edited and co-authored the publications *Gas to Europe* and *Natural Gas in Asia*. He was a non-executive director of Saipem and a senior associate with CERA for many years.

Accounts

AUDITORS' STATEMENT ON SUMMARIZED FINANCIAL STATEMENTS YEAR ENDED 31 DECEMBER 2013

	Unrestricted funds £	Endowment funds £	31.12.13 Total funds £	31.12.12 Total funds £
INCOMING RESOURCES				
Incoming resources from generated funds				
Voluntary income	630,939	-	630,939	473,366
Incoming resources from charitable activities	716,672	-	716,672	835,680
Incoming resources from investments				
Corporate Bonds	35,300	-	35,300	56,616
Quoted Securities	132,504	-	132,504	117,831
International Bonds	2,032	-	2,032	4,314
Deposit account interest	185	-	185	284
Other incoming resources	5,500	-	5,500	5,500
Total incoming resources	1,523,132	-	1,523,132	1,493,591
RESOURCES EXPENDED				
Costs of generating funds				
Costs of generating voluntary income	18,145	-	18,145	26,557
Charitable activities				
Projects and publications	1,646,919	-	1,646,919	1,602,609
Governance costs	53,108	-	53,108	55,500
Total resources expended	1,718,172	-	1,718,172	1,684,666
NET INCOMING / (OUTGOING) RESOURCES				
	(195,040)	-	(195,040)	(191,075)
Realised gain/(losses) on investment assets	271,839	-	271,839	221,783
Net income/(expenditure)	76,799	-	76,799	30,708
Unrealised gains/losses on investment assets	178,691	263,646	442,337	262,480
Net movement in funds	255,490	263,646	519,136	293,188
RECONCILIATION OF FUNDS				
Total funds brought forward	2,489,747	3,282,324	5,772,071	5,478,883
TOTAL FUNDS CARRIED FORWARD	2,745,237	3,545,970	6,291,207	5,772,071

CONTINUING OPERATIONS

All incoming resources and resources expended arise from continuing activities.

	Unrestricted funds £	Endowment funds £	31.12.13 Total funds £	31.12.12 Total funds £
FIXED ASSETS				
Tangible Assets	27,790	-	27,790	28,429
Investments	2,430,485	3,545,970	5,976,455	5,506,990
	<u>2,458,275</u>	<u>3,545,970</u>	<u>6,004,245</u>	<u>5,535,419</u>
CURRENT ASSETS				
Debtors	6,443	-	6,443	6,107
Prepayments and accrued income	225,605	-	225,605	201,549
Cash at bank and in hand	154,270	-	154,270	228,117
	<u>386,318</u>	-	<u>386,318</u>	<u>435,773</u>
CREDITORS				
Amounts falling due within one year	(99,356)	-	(99,356)	(124,121)
NET CURRENT ASSETS	286,962	-	286,962	311,652
TOTAL ASSETS LESS CURRENT LIABILITIES	2,745,237	3,545,970	6,291,207	5,847,071
PROVISION FOR LIABILITIES	-	-	-	(75,000)
NET ASSETS	<u>2,745,237</u>	<u>3,545,970</u>	<u>6,291,207</u>	<u>5,772,071</u>
FUNDS				
Unrestricted funds			2,745,237	2,489,747
Endowment funds			3,545,970	3,282,324
TOTAL FUNDS			<u>6,291,207</u>	<u>5,772,071</u>

**AUDITORS' STATEMENT ON SUMMARISED FINANCIAL
STATEMENTS YEAR ENDED 31 DECEMBER 2013**

Independent Auditors Statement To The Members of Oxford Institute For Energy Studies

We have examined the summary financial statement for the year ended 31 December 2013.

Respective responsibilities of trustees and auditors

The trustees are responsible for preparing the summary financial statement in accordance with applicable United Kingdom law. Our responsibility is to report to you our opinion on the consistency of the summary financial statement with the full annual financial statements, and its compliance with the relevant requirements of section 427 of the Companies Act 2006 and the regulations made thereunder.

We conducted our work in accordance with Bulletin 2008/3 issued by the Auditing Practices Board. Our report on the charity's full annual financial statements describes the basis of our opinion on those financial statements.

Opinion

In our opinion the summary financial statement is consistent with the full annual financial statements of Oxford Institute for Energy Studies for the year ended 31 December 2012 and complies with the applicable requirements of section 427 of the Companies Act 2006, and the regulations made thereunder. Jonathan Cross FCA (Senior Statutory Auditor) for and on behalf of

Everett & Son
Chartered Accountants & Statutory Auditors
35 Paul Street
London
EC2A 4UQ

Members

The University of Oxford

St Antony's College, Oxford

St Catherine's College, Oxford

Nuffield College, Oxford

Organization of Arab Petroleum Exporting Countries (OAPEC)

Swedish Energy Agency

Institut Français du Pétrole

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Arab Banking Corporation

Arab Petroleum Investments Corporation

The Institute of Energy Economics, Japan

Instituto Mexicano del Petróleo

Rogalandsforskning, Norway

Ministry of Petroleum and Mineral Resources, Saudi Arabia

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