

OIES

Annual Report 2019

About the Oxford Institute for Energy Studies

The Oxford Institute for Energy Studies (OIES), a non-profit-making charity was founded in 1982 as an independent centre for advanced research into the social science aspects of international energy.

In addition to conducting leading-edge research on a wide range of current energy questions, the Institute is committed to exploring these through dialogue – between consumers and producers, government and industry, and academics and decision makers. This is reflected in the membership of the Institute and in the diversity of its research team, drawn from different national, academic, and professional backgrounds. Our aim is that co-operation between researchers and interaction with benefactors and external stakeholders will lead to a more informed and balanced understanding of the behaviour, motivations, and objectives of the various economic forces, agents, and policy makers that operate in or influence the performance of international energy markets.

Research carried out at the OIES is designed to encompass the following disciplines:

- the economics of primary and secondary energy sources, including petroleum, gas, coal, electricity, and renewable energy
- the economics of electricity market design and regulation of electricity networks
- the evolution of oil and gas price formation, market structures, and trading
- the politics and social aspects of energy
- the international relations of oil and gas producing and consuming nations;
- the economic development of oil-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 Institute concentrates on research in energy issues of international significance.



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MESSAGE FROM THE CHAIRMAN

I am pleased to report that throughout 2019 – and also throughout the ensuing pandemic - the Institute continues to provide commentary and analysis to help inform the public debate and to provide insights into the workings of energy markets and of the prospects for future energy demand.

The Institute has expanded its research and remains unique in conducting academic research at the highest standard focused on oil, gas, and electricity, and on their markets and industries as well as on the policies that affect them.

Of particular note in 2019 was the launch of the China Energy Research Programme. The Programme offers insights into the factors that inform China's energy policies and choices and their pivotal role in global energy markets.

There were over 80 pieces of research published last year in the form of papers, insights, comments, podcasts and the quarterly *Oxford Energy Forum*. There are now over 6,000 subscribers to the Institute's publication notification service, an increase of over 20 per cent on the previous year. Unique visits to the website number 130,000 and total traffic to the site was close to half a million visits, drawn from all but six countries of the world. The Institute's social media following continues to grow rapidly, with follower numbers increasing by over 78 per cent in 2019.

The Institute continues to build its research capacity. The quality, breadth, depth, and number of publications it has produced this year, as well as its increasing presence online, is evidence of the hard work and dedication of the Institute team I wish to thank all the staff of the Institute for their continued hard work and dedication in 2019.

On behalf of the Board of Governors I want to convey our appreciation to Prof. Sarah Whatmore, University of Oxford on her resignation from the Board and to welcome Prof. Peter Battle, St, Catherine's College, University of Oxford, to the Board.

The Institute's capacity to continue with its research activities depends heavily on the continued generosity and support of its funders. We were therefore very pleased to welcome as sponsors of the Institute: Mr William Callanan and the Ministry of Petroleum & Energy, Norway.

Mr Laurence Whitehead – April 2020

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 OIES is committed to the dissemination of the results of its research as widely as possible, both in academia and in the world at large, through its website, attendance at seminars and conferences around the world by its fellows, its own seminars and events, and its interaction with the media. The Institute's work is detailed in this report.

Programmes

Launched in July 2019 the OIES China Energy Research Programme, is a center of analytical excellence offering insights into the factors that inform China's energy policies and choices and their pivotal role in global energy markets.

China is the world's second largest economy, biggest importer of crude oil, the fastest growing consumer of natural gas as well as the world's top coal producer and emitter of CO₂. The country is endowed with vast reserves of oil, gas and coal all of which it aims to develop in order to enhance its energy security, but, it is also seeking to spearhead a technological revolution in support of its energy transition.

In light of its voracious appetite for energy, its domestic resource potential and its technological ambitions, the way in which China chooses to develop its domestic resource base, consume energy and engage with global markets is of extreme importance to producers, consumers and traders of energy. But the country's command economy, alongside the dominance of state-owned companies still inform policy design and implementation and are key to understanding the evolution of China's energy mix and markets. The China Energy Programme at OIES delves into these developments and offers insights into the factors that inform China's energy policies and choices.

The Oil and the Middle East Programme and the Natural Gas Research Programme (Gas Programme) are well established and continue to produce high-quality research of international significance, as well as work with a more regional and national focus.

The Electricity Programme, whose body of research and publications continues to expand is involved with a number of collaborative research projects both with institute colleagues and external collaborators.

Research and dissemination

The Institute publishes a range of research publications and commentaries, all of which are made freely available on its website, with the exception of published books. This report highlights a selection of the Institute's 2019 publications. In addition to research papers, the Institute now publishes *Oxford Energy Insights* and *Oxford Energy Comments* – shorter papers, often devoted to current policy issues – as well as the now well established *Oxford Energy Podcast* series, which covers a variety of topics and provides in-depth interviews with some of our authors. The Institute continues to publish its quarterly magazine, the *Oxford Energy Forum*, now in its 30th year.

Staffing

We were pleased to welcome Dr Michal Median as Director of the China Energy Research Programme, and Mr Vitaly Yermakov as Senior Research Fellows in 2019 and to bid farewell to Dr Thierry Bros who moved on from the institute.

Priorities for recruitment include further appointments relating to the economics and regulation of electricity, and decarbonisation.

The OIES-Saudi Aramco Fellowship, made possible by the generosity of Saudi Aramco, attracted numerous applications in 2019. Three OIES-Saudi Aramco Fellows joined us:

Christine Brandstätt is research associate in energy economics at Jacobs University and Fraunhofer IFAM in Bremen. Her main research interests are regulation and pricing. She analyses the interactions of different regulatory and market designs in energy systems. She participated in research projects on network regulation and pricing, smart grids and energy sector coupling. Christine holds Master's degrees from Royal Institute of Technology in Stockholm, École des Mines in Nantes and Polytechnic University of Madrid resulting from the Erasmus Mundus programme Management and Engineering of Environment and Energy. She currently pursues a PhD in Energy Economics at Jacobs University.

Jonas Graström defended his doctoral thesis in May 2017 at Luleå University of Technology with a dissertation entitled "Technological Change in the Renewable Energy Sector – Essays on Knowledge Spillovers and Convergence". He is a researcher at The Ratio Institute in Stockholm Sweden and an assistant professor in Luleå. He has been a visiting scholar at George Mason University. In 2018, he was selected by the Publication "Current Sustainability" as one of the top sustainability professionals under the age of 33 in Sweden. His research interests include issues such as technological change and labour markets, Carbon Capture and Chinese wind power.

Aliaksei Patonia is currently reading for a Master's in Public Policy at the University of Oxford specializing in sustainable energy policy. Prior to that, Aliaksei was a fellow at the Open Development Cambodia, an NGO focusing on promoting sustainability in the Greater Mekong Sub-region, where he participated in drafting the Environment and Natural Resources Code of Cambodia while being a policy advisor to the local authorities on achieving SDG 7. Alex holds an MSc in International Management (Oil and Gas) from the University of Liverpool and an MSc in Sustainable Development from the University of St Andrews (both with distinction).

We were also pleased to welcome Julian Bowden, Nikolai Drahos and Sam Geall and Jonathan Walters as Senior Visiting Research Fellows, and Adi Imsirovic, Ahmed Mehdi, John Richardson and Jorge Blasquez as Research Associates. In addition, we were pleased to host six visiting researchers during the year:

Cintha Guerrero, Chair of Power Plant Technology, Brandenburg University of Technology in Germany

Leo Paulis Klie, Masters candidate, RWTH Aachen University, Germany

Evgenia Laznik, an M.A. Candidate in Business Management & Development Student Associate at 50Hertz Transmission (TSO) Scholarship of Friedrich Ebert Foundation, Germany

Veronika Lenivova, a Masters student and scientific assistant from the Brandenburg University of Technology (BTU)

Manuel Monge, Francisco de Vitoria University, Department of Economics and Business Administration, Spain

Wei Zhou, a fourth-year PhD student at the Energy Policy Research Group, University of Cambridge

We have been fortunate to work with a number of contributing authors throughout the year, and we extend our thanks to the following for their contribution to the work of the OIES:

Fadekunayo Adeniyi, School of Oriental and African Studies (SOAS), University of London.

Richard Barltrop, is a consultant and researcher, specialised in political, economic, conflict and peace analysis on the Sudans, Somalia, the Sahel and Northern Africa, and the Middle East.

Karel Beckman, freelance journalist and contributor to Natural Gas World.

Jilles van den Beukel, independent energy analyst.

Rolando Fuentes, KAPSARC.

Ekaterina Grushevenko, Research Fellow, Skolkovo Energy Centre, Moscow.

Nnaziri Ihejirika, Vienna University of Economics and Business (WU) Executive Academy.

David Ramin Jalilvand, freelance analyst and consultant.

Baltasar Manzano, KAPSARC.

Eesha Muneeb, Crude Oil Pricing Specialist [Middle East], S&P Global Platts

Gbemi Oluleye, Sustainable Gas Institute (SGI), Imperial College, London.

Zuzana Princova, independent gas specialist.

Roxanne Rahnama, consultant in the Macroeconomics and Growth Division of the World Bank's Development Economics Research Group

Marijke Welisch, senior researcher, Energy Economics Group (TU Wien).

Activities and events in 2019

In April the annual 'Middle East Day' was held, entitled 'Positioning for Energy Transition and Key Strategies in the GCC' with support from KFAS. The annual 'Gas Day' was held in October and kindly supported by Argus Media. The 'Oil Day', kindly supported by Aramco and Argus Media, entitled 'Oil Markets in Flux', and the 'Electricity Day' were both held in November 2019. All our events were full to capacity reflecting the quality, depth, and breadth of the programme for each event and the calibre of speaker that the Institute's events attract.

The Institute's annual 'Brainstorming Meeting' took place in Rome, Italy, in May; we are very grateful to Tellurain for their generous sponsorship and support of this event.

General

As a research institute, the OIES continues to depend on the dedication of all involved. As shown in this report, the research productivity of the OIES is extraordinary, and its reputation and influence continue to increase. The relaxed but productive research atmosphere, one of the main characteristics of the OIES, owes a huge amount to the administrative staff: Kate Teasdale, Susan Millar, Karen Clark, Jo Ilott, and Hannah Shipton. The interactive and networking aspects of the OIES continue to benefit greatly from the close historical and current relationships with its two sister institutions, the Oxford Energy Policy Club, which meets annually in St Antony's College, and the Oxford Energy Seminar, held annually at St Catherine's College.

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.

Dr. Bassam Fattouh

April 2020

RESEARCH

The Institute publishes a range of research publications and commentaries, all of which are made freely available on its website, with the exception of published books. This report highlights a selection of the papers published by the Institute in 2018 and provides an overview of ongoing research. For a full list of published research in 2018, please see the end of this report or visit the OIES website, where a full list of published and planned research can also be accessed.

The **Oil and the Middle East Programme**, established in 2009, has cemented its reputation as a leading source of independent academic research on oil market issues. The programme is structured around four main themes: global oil market dynamics; production; the policy and the economics of resource-rich economies; and consumption and the development of emerging energy markets.

The programme's 2019 research on *global oil market dynamics* continued to build on our core understanding of oil price cycles, the behaviour of oil market participants, and the impact of new supply sources. The programme also published several *Comments* throughout the year looking at OPEC behaviour and its impact on oil markets. The programme's traditional strength lies in analysing *the policy and economics of resource-rich economies*, which is its third thematic area. In keeping with the continuing wave of energy pricing and other reforms in Middle Eastern and North African (MENA) countries, in 2019 we continued tracking and analysing developments in the region and the interplay between domestic reforms, dependence on oil revenues, and efforts at economic diversification. The programme's another thematic area – *consumption and the development of emerging energy markets* – focuses largely on Asia. We published multiple papers on China including a comment that explores some of the market misconceptions about China's oil demand in 2019 and assess what they tell us about 2020.

While the programme will continue to expand upon its traditional strengths (in oil market dynamics, production, and the policy and economics of resource-rich economies), in 2020 we also plan to expand our research on the energy transition and the impact of COVID-19 on oil markets and policy.

It should also be mentioned that we significantly expanded our coverage of the Chinese oil market thanks to the arrival of Michal Meidan and the formation of the China Energy Research Programme. There has been significant cooperation between the two programmes and a number of papers covering both demand and supply in China were published during the year.

In addition to our written output the Oil Programme also continued its podcast series in which research fellows were interviewed on their latest papers.

The foundation of the research output of the Gas Programme in 2019 has continued to be the future of gas in a de-carbonising energy system. The primary analysis on this topic has been continued to be led by Jonathan Stern, although a number of new authors have also now published on the topic. In particular we have developed our analysis of green gases such as biomethane and hydrogen and have begun a detailed analysis of the future of gas networks and the regulatory changes that will be needed in a decarbonising European energy system. We have also been researching the importance of methane emissions in the gas value chain, as well as creating a database of decarbonised gas projects in order to help understand what companies are doing in this field.

Another relatively new area of research has been the development of a Gas Quarterly which focuses on shorter-term issues and prices. We have developed a number of pricing themes that we monitor each quarter, while also asking our research fellows to contribute short articles on issues that have been

particularly interesting over the past three months. As a result, the Gas Quarterly has provided a route to keeping our research topical and relevant while also creating a key commercial link to the pricing environment that is so important to all our sponsors.

We have also continued our more traditional research topics, with gas supply issues being particularly topical as the gas sector awaited the potential surge in LNG supply. Our research included work on traditional sources of supply, such as Norway, Russia and Algeria, as well as emerging players such as the US, Egypt and Canada. Meanwhile on the demand side of the equation China remained a topic of continuing interest due to its size and growth trajectory, and we produced research covering a range of topics from pricing to LNG imports. Two publications of particular note were the Oxford Energy Forum in September which covered the issue of LNG in Transition and featured articles from OIES research fellows and invited guests, while in the same month we also published a book entitled “The Future of Gas In the Gulf – Continuity and Change” edited by Jonathan Stern. The book analysed the region on a country by country basis, highlighting the huge gas demand growth potential and also assessing the prospects for indigenous supply to both meet demand and allow for LNG and piped gas exports.

In common with many of our events, Russia, Ukraine and gas transit to Europe was also an important theme, as we monitored the negotiations over a transit deal throughout the year and assessed the potential impact of a crisis in the winter. We also produced research on the markets affected by Russia’s new sport pipelines, with papers on the gas markets of SE Europe and also on industrial demand in Central and Eastern Europe. We also published on Russia’s new LNG projects, highlighting how they are helping the country to diversify away from its traditional focus on Europe but are also loosening Gazprom’s grip on its export monopoly.

Finally, it should also be mentioned that we significantly expanded our coverage of the Chinese gas market thanks to the arrival of Michal Meidan and the formation of the China Energy Research Programme. There has been significant cooperation between the two programmes and a number of papers covering both demand and supply in China were published during the year.

In addition to our written output the Gas Programme also continued its podcast series in which research fellows were interviewed on their latest papers. Topics included the Russian and Ukraine, the outlook for hydrogen, Chinese gas demand, Russian LNG, gas in the Gulf, floating LNG and Canadian LNG. The podcasts are intended to provide an accessible insight into the work produced by the Programme and last around 25-30 minutes each, taking the form of a conversation between the author of the work and one of the senior fellows at the institute, and they can be found at the OIES website at <https://www.oxfordenergy.org/publication-topic/multimedia/>.

The Electricity Research Programme seeks to inform public and private sector decision-making by improving understanding of the electricity supply chain. The Programme studies the role of public policy, regulation, and markets to support the energy transition, along with implications for end-users, companies and their business strategies. In 2019, given the growing importance of the electricity sector in the global energy system, and the move by many governments to extend the focus on decarbonization from the electricity sector to the electrification of wider economies – with implications for sectors such as transport and heating – the Programme’s research focus was restructured into three clear themes to cover a spectrum of relevant issues. These themes are:

- Market design, renewable integration, and electricity networks;
- Electricity pricing, electricity access and energy sector fiscal policy; and,
- Decarbonization of heat and transport and implications for the electricity sector

The Programme, established in 2015, has gained a strong reputation for its output on issues around electricity market design, feeding into policy debates on the subject, and this continued to be evident in 2019. Research published under the first theme included new work on the topic of auctions. This included a paper evaluating the UK's Contract-for-Difference (CfD) auctions for offshore wind contracts, suggesting design measures to improve the deployment rate of low carbon technologies without increasing support costs. It also included a paper evaluating the use of one-sided central-purchaser auctions by governments for the procurement of new conventional generation capacity and renewable energy sources (with potential further extensions into network expansion) based around two questions: are auctions of this kind a useful market-based tool to complement other methods of resource development? Are they a type of second best – a symptom of the fact that electricity markets themselves are broken and can no longer give appropriate signals? It concluded that governments should also be thinking about alternatives which include new energy market designs that reflect twenty-first century technologies and economics, especially those reflecting the high penetration of renewables and active participation of consumers. Other research on market design included a paper looking at the experience around liberalised retail electricity markets, arguing that the reference design of the retail market in the post liberalization era has not only failed to achieve its original objectives but has also not kept pace with technological change, consumer preference, and the energy transition. The paper outlined a number of problems including unfair distribution of system and public policy costs, and a lack of consumer engagement due to factors such as complexity of market and electricity tariffs and transaction costs – for which remedial proposals based on individual switching have often ended up being less effective for the most disengaged consumers. The paper argued that retail market design and regulations need to be rethought to enable innovation and deliver the decarbonised, resilient, and affordable electricity that all consumers need. Research on market design also included a paper on decentralized flexibility sources. In order to enable cost-effective renewable energy integration and realize decarbonization targets, the power system requires the efficient utilization of resources on both sides of the market, and not just on the supply side. The paper focused on addressing two questions: How can decentralized flexibility sources participate in the electricity markets? And, what could be the dedicated market design to enable decentralized flexibility? An important conclusion was that the aggregation of decentralized flexibility and its participation in the electricity market can help enable system reliability, aided by explicit demand side management programs.

Research published on the second theme (electricity pricing, access and energy sector fiscal policy) included a paper on the importance of encouraging efficient consumer decisions through pricing, in particular with respect to investment and use of distributed energy resources Behind The Meter (BTM). The accelerated decentralization of the electricity sector is introducing an additional dilemma to ongoing issues around electricity market design for systems with high shares of variable renewables. Distributed energy resources are key to renewable penetration and electrification, for instance through rooftop solar, battery storage, electric vehicles, heat pumps and more flexible consumption. The paper argued that current electricity markets, fiscal policy and regulations do not provide efficient price signals for BTM investment and operations. It outlined policy options within specific areas (including fiscal policy reform, redesigning network access tariffs, establishing local congestion markets, and opening access for BTM participation in all markets) to eliminate existing price distortions in certain liberalized electricity markets in the European Union, and on creating or changing markets to reflect new economic and technological conditions. The Programme also published thematic research extending beyond OECD countries – this included a paper investigating the Determinants of the Willingness-to-Pay for electricity among energy-poor households in India, using survey data from six states to analyse socioeconomic, behavioural, and technical factors that correlate with variations in household valuation of electricity access and reliability in rural municipalities. It also included a paper which analysed and explained the constraints to on-grid renewable energy (RE) investments in Nigeria. Using a 'Structure-Conduct-Performance-Regulation' framework, this research moved past the prevailing argument that

establishes a dichotomy between an emerging RE niche and a dominant resistive hydrocarbon-intense regime.

Going forward, the Programme has planned papers in the pipeline to extend research output not just in the first and second thematic areas but also on the decarbonization of heating and transport and implications for the electricity sector, which in addition to being a growing area of new research applicable in different contexts, also links in with an overarching theme of decarbonizing energy systems and implications for other energy vectors such as oil and natural gas. Planned research includes work on the integration of EVs into the electricity system using Vehicle to Grid Technologies, and providing incentives to grid users for the same; options for large-scale electricity storage; energy systems thinking in relation to the decarbonization of heat, research on market design for system security in low-carbon electricity grids; and, further work on auctions relating to distribution networks as the distribution sector is likely to be ‘the next frontier’ within the electricity sector, in terms of the disruptive impact of the emergence of distributed energy sources and technologies.

The China Energy Research Programme, established in July 2019, seeks to offer insight into the factors informing China’s energy policies and choices and their pivotal role in global energy markets. Research is structured around three main themes:

- Macro: the programme analyses the macroeconomic and political environment in China: what are the government’s policy priorities and how do they impact energy demand? To what extent do the country’s political and governance frameworks help or hinder market liberalisation? How will the state of play between state owned incumbents and private and foreign companies evolve? How does China’s foreign policy relate to its energy goals?
- Mix: what will China’s energy transition mean for its energy mix? How does China think about peak coal and oil and what are the implications for gas consumption? Are the government’s environmental policies sustainable in a low growth environment? Can China replicate its PV success with EVs and more advanced technologies?
- Markets the programme also monitors short term developments in the oil and gas markets in China. It assesses how China is shaping short term prices and market sentiment and also considers Beijing’s efforts to establish pricing hubs and become an active price maker.

In 2019, the programme published nine research papers, spanning oil, gas, power markets as well as broader macroeconomic and geopolitical dynamics. Research papers explored the energy implications of US-China tensions and how US sanctions are shaping global oil flows while also discussing how the changing geopolitical landscape is informing China’s views on energy security. With “energy security” emerging as a dominant theme and a rising political priority in China, additional research continues to be devoted to this question. Ongoing research is looking at how China’s concerns about energy security shape policies in oil, gas and power and how it is shaping China’s choices with regards to the energy transition. Given the importance of China as a producer of clean technologies, further research is devoted to the intersection of industrial and energy policies, looking at China’s hydrogen development plans, for example, and the broader priorities ahead of the upcoming five-year plan.

At the same time, research papers have analysed Chinese-language policy documents in order to bring to the fore thinking in China about its energy pathways. One paper assessed the outlook for natural gas market reform and the feasibility of the priorities put forward while another discussed how China views its energy future. The China programme also published an insight into China and IMO 2020 ahead of the introduction of new regulations globally, identifying some of the key trends in both supply and demand for bunker fuels and the potential role natural gas can play in the sector.

A number of research papers have analysed oil or gas specific dynamics, benefitting from insights and support from other programmes and, in turn, supporting the work of both the oil and natural gas programmes. Other papers, however, have looked at the regulatory framework and identified the implications for the energy sector more broadly, with an equal focus on short term market dynamics and on longer-term impacts. The programme will continue to conduct research spanning oil, gas and power markets as well as analysis on price reform and market liberalisation. Already in its first year, the programme has made significant progress in establishing itself as a world leading source of analysis and debate about China's energy markets and policies. It has welcomed one visiting research fellow, a research associate and a visiting researcher which have allowed it to widen and deepen the breadth of knowledge and analysis on China.

JOURNAL AND WEBSITE

Oxford Energy Forum

The Institute's discussion journal, now in its 30th year, continues to tackle topical issues facing the energy world. Issues covered in 2019 included: LNG in transition, economic diversification in MENA, Africa's oil and gas scene after the boom. Our thanks to the authors of all articles that appeared in *OEF* in 2019, 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 OIES Gas Research Programme, Oil and the Middle East Research Programme, Electricity Research Programme, and China Energy Research Programme. The site also has information on the research interests of our staff, many of whom provide assessments of important energy events for the website's Publications section.

The catalogue of papers and comment pieces on the OIES website continued to grow during 2019, with over 70 new publications and 15 podcasts added.

There are now over 6,300 subscribers to the Institute's publication notification email service, an increase of 14 per cent on the previous year. Visitor numbers to the website increased by 19 per cent in 2019. The Institute's Twitter following increased in 2019 to nearly 6,400 followers, and the Institute's LinkedIn page has over 6,000 followers.

In 2019 the Institute was mentioned in the press, on average twice per day, by, amongst others: *Arab News*, *Bloomberg*, the *Daily Telegraph*, *Die Welt*, the *Financial Times*, *The Guardian*, the *Gulf Times*, the *Irish Times*, *LNG World Shipping*, *Natural Gas World*, the *New York Times*, *Nikkei Asian Review*, *Oil & Gas Journal*, *Platts Gas Daily*, *The Standard*, the *Washington Post*, and *World Gas Intelligence*.

LECTURES AND SEMINARS

As part of its commitment to education and its mandate, the OIES strives to disseminate the results of its research as widely, and in as many ways, as possible. Lectures and seminars enable the Institute's researchers to present the findings of completed projects and to expose work in progress to the criticism of colleagues in industry, government, and academia. In 2018 the Institute's research fellows, Director, and programme directors gave numerous presentations and talks at many conferences, workshops, seminars, and meetings across the globe.

XXX Annual Brainstorming Meeting

Since 1990 the Institute has held an annual 'Brainstorming Meeting', which draws together people from producing and consuming countries, national and private oil companies, governments, financial institutes, and other research organizations. The 30th such meeting was held on 16 & 17 May in Rome, Italy, with the kind support of Tellurian Inc. Participants engaged in lively discussions on a wide range of energy issues. These included: the global economy; the geopolitics of energy; oil market dynamics; crude oil pricing; the dynamics of gas markets; and climate change, technology and the electricity sector.

2019 OIES Workshop – Positioning for Energy Transition and Key Policy Strategies in the GCC

In April 2019 the Institute co-hosted a workshop on positioning for energy transition and key policy strategies with a focus on the GCC. The event, which was held in Kuwait, was kindly sponsored by the Kuwait Foundation for the Advancement of Sciences (KFAS). There were four sessions covering: Transformations in Global Energy Markets and Implication for Kuwait's Energy Sector; New Perspectives on Diversification in the GCC; What role would policy, markets and regulation need to play to get to at least 400-500 million EVs globally by 2040? and How will the electrification of vehicles shape business models and the role of consumers? The workshop was attended by 35–40 academics, industry professionals, and policymakers.

2019 Oil Day – Oil Markets in Flux

In November 2019 the OIES successfully held its annual 'Oil Day'. This year's event, kindly supported by Aramco and Argus Media, focused on four main themes: a deep dive into China's oil sector; US shale; Iraq's oil sector and IMO 2020. The conference was attended by 35–40 key oil industry figures, representatives from national and international oil companies, financial institutions, price assessment agencies, the energy business community, and OIES Fellows.

2019 Gas Day

The OIES Natural Gas Research Programme organized its twelfth annual 'Gas Day' in October 2019, with three sessions dedicated to discussing current issues in the gas sector. The first session focused on Russia, Ukraine and the Implications for Europe, addressing the key issue of whether there would be a supply interruption in December 2019 as a result of negotiations over Gazprom's transit contract with Ukraine. A broad range of Russian, Ukrainian and EU speakers created a lively debate around the negotiating process, the positions of all the parties and the potential outcome, which has had a significant impact on the European gas market in 2020. The second – entitled 'LNG in Transition – managing uncertainty' – discussed the prospects for LNG in a world of oversupply and slower demand growth than expected. Panellists discuss the importance of Europe as a balancing market for LNG, the prospects for new developments in a low price environment, the potential for China to drive demand growth in future and the level of prices that could be expected over the next decade. The final session was called "Gas prices – is a global gas price imminent?" and discussed price formation in Asia, the development of European hubs, the emergence of JKM as a key benchmark for LNG in Asia and the impact of the

Henry Hub price on the global market. Representatives from across the global gas industry were represented and the Gas Day provided its usual mix of interesting presentation and lively discussion.

2019 Gas Programme Sponsors' Meetings

The OIES Natural Gas Research Programme held its bi-annual sponsors' meetings on 2nd-3rd April and 22nd-23rd October 2019 at St Hugh's College, Oxford. The meetings, attended by the gas programme sponsors and authors from a range of countries and backgrounds, including academia, industry, and energy journalism, discussed ongoing research projects and current industry themes.

The April meeting started with a review the LNG market, including discussion of our new FID barometer, a look at LNG supply from the US and Algeria, some research on LNG costs and a discussion about floating LNG. Session 2 was split in two with one group discussing the interaction between gas and renewables, based on new research by Anouk Honore and Anupama Sen, while the second group focussed on the Chinese Gas Market, with presentations from Michal Meidan and a number of invited guests. The following day the meeting started with a session on Europe, focussed on a review of demand prospects across a number of sectors before turning to the prospects for indigenous supply, especially from the UK and Norway. The fourth session then focussed on Russia, Ukraine and the impact of sanctions, looking at the development of the Ukraine transit dispute, the impact of new Russian export pipelines such as Nord Stream 2 and the development of Russian export strategy to Europe and Asia. The afternoon discussion was then led by Mike Fulwood as he introduced the new Global Gas Model and outlined our plans for scenario modelling and the development of specific model runs for sponsors.

The October meeting started with an update on the LNG market, including reviews of a number of key projects, discussion of some key new markets for LNG in Asia and a presentation on the emergence of Russia as a major LNG producer. The next session was split into two break-out groups, one discussing Russian exports and Ukraine transit and the other focussing on demand uncertainty and the European market. At the evening dinner, OIES Director Bassam Fattouh gave his usual update on the global oil market and faced enthusiastic questioning on his oil price forecast. The following day the first session again featured two break-out groups, one led by Michal Meidan as she introduced her research from the new China Programme while the other looked at environmental issues in India and the potential role for gas. Guest speakers from other institutions were included in both session and greatly added to the debate. The final session in the main meeting covered the impact of decarbonisation on the gas sector, including research on gas networks, emissions from the LNG sector, green gas and hydrogen and a first look at a decarbonisation scenario from our global gas model. Our traditional discussion group then met in the afternoon to discuss gas pricing on Asia, with the major focus being on the potential development of an LNG spot market.

2019 Electricity Day

The third annual Electricity Day was held on 14 June 2019. The Electricity Day focused on the overarching theme of an integrated energy systems approach to decarbonisation policy, there were three sessions covering; integrated energy systems approaches – what is the rationale?; the role of storage in an integrated energy system and policy & commercial challenges of adopting integrated energy systems. The event was attended by 35–40 from academia and the electricity, oil, auto, mobility, finance and technology sectors.

LIBRARY

In 2019 the Institute's library continued to support researchers and supply key publications. Requests for information by OIES researchers and associates continued to increase.

DOIs (digital object identifiers) offer the opportunity to advertise research papers on multiple online platforms, including databases, repositories, search engines, and in the citation elements of major journal publishers. DOIs also provide permanent and stable links, which encourage their use in citations, online bibliographies, and other library systems.

In 2019 there were 5,900 clicks on DOI links bringing readers to papers on the OIES website, and increase of nearly 50 per cent on 2018.

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.

New visitors continued to discover the OIES and its library by way of OLIS (Oxford Libraries Information System), where it fills a hole in the academic library collections of other university libraries. Requests were made by other university libraries throughout the UK and abroad for material held by the OIES library and made discoverable through OLIS.

The OIES would like to offer thanks to the following organizations 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: Argus Media; Blackwell's; The Institute of Energy Economics, Japan; Live Media & Publishers, India; MEES and S&P Global Platts.

RESEARCH TEAM AND STAFF

Thierry Bros joined the Institute in 2016 as Senior Research Fellow for the Gas Programme. From 2010 to 2016, Thierry was Senior European Gas and LNG Analyst for Société Générale. He joined Société Générale in 2007 as a senior financial analyst to provide recommendations on listed pan-European gas stocks and in-depth research on gas issues. From 2002 to 2007, Thierry was a senior oil and gas expert at the French Ministry of Economy, Finance and Industry, where he represented France on oil markets and advised on emergency issues at the International Energy Agency (IEA), the European Commission and the Energy Charter. His responsibilities included providing global oil and gas industry reviews to senior French officials and negotiating European directives. As a gas specialist, he reviewed the regulations governing the liberalization of the French gas market and supervised the Contingency Gas Plan. Prior to that, Thierry worked, for eight years at IFPEN, an oil and gas research institute. Thierry Bros holds a Master's in Chemical Engineering from ESPCI ParisTech and a PhD from Ecole Centrale Paris. Thierry is the author of the book *After the US Shale Gas revolution* (2012) and a co-author of the books *The European Gas Markets: Challenges and Opportunities* (2017), *Géopolitique du gaz russe* (2017), and *The Oxford Handbook of International Security* (2018), in September 2019 he move on to a new job in the industry.

Andreas Economou, Senior Research Fellow, joined the Institute in July 2015. His research interests lie in natural resource and energy economics with a particular focus on the empirical analysis of crude oil markets, the dynamics of oil prices and OPEC behaviour. The central topic of his research is largely the causes and consequences of oil price shocks, using advanced econometric techniques to model the world oil market. Other aspects of his research focus on OPEC's behaviour and pricing power in the oil market, the relationship between oil prices and the global economy, and the real-time analysis of oil price risks using forecast scenarios. Previously he was an OIES-Saudi Aramco Fellow. Andreas is currently completing his PhD in Energy Economics at UCL Energy Institute. He holds an MSc (Hons) in Oil and Gas Enterprise Management from the University of Aberdeen with specialization in petroleum economics and international fiscal systems analysis, and a BSc in Business Administration from the University of Macedonia, Greece.

Bassam Fattouh was appointed Director of the OIES in January 2014. He is also a professor at the School of Oriental and African Studies, University of London. He specializes in international oil pricing systems, OPEC pricing power, security of Middle Eastern oil supplies, and the dynamics of oil prices and oil price differentials. He has published a variety of articles on oil and gas topics and his publications have appeared in academic and professional journals. Dr Fattouh served as a member of an independent expert group established to provide recommendations to the 12th International Energy Forum (IEF) Ministerial Meeting for strengthening the architecture of producer–consumer dialogue through the IEF. He also acts as an adviser to governments and industry, and is a regular speaker at international conferences.

Mike Fulwood, Senior Research Fellow, joined the OIES in October 2017. Mike has 40 years of experience in the gas industry. Before joining the OIES, Mike worked as a consultant with Energy Markets between 1997 and 2008 and then with Nexant as Director, Global Gas & LNG. Before working as consultant, Mike worked for British Gas from 1979, latterly as a Director at British Gas Transco in charge of the price control review, and prior to that as President of British Gas Americas during which time he oversaw many successful acquisitions and projects, including the acquisitions of Metrogas (Argentina), NGC (now Dynegy), the Bolivia–Brazil pipeline and a Trinidad LNG project. While working as a consultant Mike undertook a wide range of projects in all areas of the gas chain, covering regulatory matters, gas pricing and tariffs, gas sales and transportation contracts, market studies, and price forecasting, as well as helping develop Nexant's World Gas Model. Mike is a past

chairman of the International Gas Union's Gas Pricing Group, which undertakes the Wholesale Gas Price Survey. He also speaks widely at gas conferences all over the world, particularly on gas markets, gas trading matters, and gas pricing.

Patrick Heather, Senior Research Fellow, joined the institute in June 2006. His works include: 'The Evolution and Functioning of the Traded Gas Market in Britain' (August 2010); a co-authored comment with Jim Henderson, 'Lessons from the February 2012 European gas crisis' (April 2012); and the paper 'Continental European Gas Hubs: are they fit for purpose?' (June 2012). His paper, 'The evolution of European traded gas hubs' (December 2015) focused on the evolution of the gas markets across the continent in the context of the European Commission's vision of a Single Energy Market (in gas); the paper described the 'path to maturity' of traded gas hubs and analysed their stages of development using both objective and subjective measures; he has since brought the results of that research up to date in a co-authored Insight with Beatrice Petrovitch, 'European traded gas hubs: an updated analysis on liquidity, maturity and barriers to market integration' (May 2017). Since 2004, Patrick has been an independent consultant focusing on the gas market evolution in Europe, supply and demand dynamics, the impact of regulation on market outcomes, contracting strategy, and marketing strategies to take advantage of new market opportunities. Patrick has advised and given presentations to many different organizations, including the European Commission, the APX and ICE futures exchanges and various producer and end user companies, financial institutions, regulators, and governments in Australia, Austria, Brazil, Britain, China, Estonia, France, Greece, Holland, India, Italy, Japan, Norway, the Philippines, Poland, Russia, Sweden and Turkey. In 2006, he was appointed commercial adviser to South Hook Gas to assist them through the long commissioning phase of their world-leading LNG import facility in South Wales, which was successfully achieved in 2009. Patrick has over 35 years' experience of broking, trading, and risk management in the natural gas, power, oil, and oil products markets, and working as a gas market expert for European utilities and gas suppliers, British investment banks, and international oil majors.

James Henderson, Director of the Natural Gas Research Programme, succeeded Howard Rogers in October 2016. He produces research for both the Gas and Oil Programmes covering Russia and CIS issues as well as global energy matters that affect the region. He is a Visiting Professor at Masaryk University in the Czech Republic and has lectured on energy economics and security of supply at a number of universities in Europe and the US. He has worked in the oil sector for US company Amerada Hess, as well as spending time as a consultant and investment banker. He obtained a PhD in Social Sciences from London University in 2010. With OIES he initially published a monograph on "Non-Gazprom Gas Producers in Russia" before contributing numerous working papers on the Russia oil and gas sectors and their connection with the global energy economy. In particular he co-edited the 2014 book entitled "The Russian Gas Matrix: How Markets are Driving Change" and has more recently published papers on the future of Russian oil production, tight oil in Russia, Arctic oil, East Siberia's hydrocarbon export potential, Russia's gas export strategy and Russia's energy relations with China. He has also published a book on "International Partnership in Russia" (Palgrave Macmillan) and is currently writing a book on the history of Rosneft for Columbia University Press.

Anouk Honoré, Senior Research Fellow, joined the OIES Natural Gas Research Programme in 2004. Her research focuses on European natural gas issues, with particular emphasis on gas market fundamentals, energy policies, power generation, and the heat sector. Her main areas of expertise include building scenarios on natural gas demand and supply in 36 European countries (the 28 member countries in the European Union plus Albania, Bosnia and Herzegovina, Montenegro, Norway, Republic of North Macedonia, Serbia, Switzerland, and Turkey). She also works on the natural gas markets in South America (Argentina, Brazil, Bolivia, Chile, Colombia, Ecuador, Peru, Uruguay, and Venezuela). She is the author of various research papers and book chapters, and of the book *European*

Natural Gas Demand, Supply and Pricing: Cycles, Seasons and the Impacts of LNG Price Arbitrage (OIES/OUP, 2010). Before joining the Institute, she worked at the IEA in Paris. Her work focused mainly on natural gas issues in the IEA's 29 member countries, but also in China and in 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) from universities in Paris.

Malcolm Keay, Senior Research Fellow, joined the OIES in January 2005. His career has ranged widely across the energy scene, including roles in: the public sector, as director of energy policy at the UK Department of Trade and Industry (1996–9) and division head at the IEA; the private sector, as senior managing consultant at Oxera; and the non-profit sector, working at Chatham House and the World Coal Institute. He has acted as an adviser for many energy studies, including as special adviser to a 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 liberalization 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 Wright (OIES/OUP, 2011). This updated the analysis and conclusions of his 2006 monograph for the OIES, *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. His research interests also include EU energy policy; with David Buchan, he co-authored a book published by OUP in 2016 entitled *Europe's Long Energy Journey: Towards an Energy Union?* Recently his research has focused on electricity market design and the decarbonization of heat, with an emphasis on a whole system approach.

Maggie Kumar joined the Institute in September 2018 as OIES-UNITEN Supernumerary Research Fellow in Malaysian Energy Studies. Her research addresses the liberalization of gas and electricity markets in Malaysia, focusing on the evolution and design of competitive gas and electricity markets. Her previous research expertise includes working on energy system models for nuclear power planning in Malaysia. Her PhD work focused on optimal and near-optimal decarbonization strategies and technology transition pathways for energy and climate policy analysis.

Martin Lambert, Senior Research Fellow, works as an independent consultant specializing in the international gas and LNG business. His areas of expertise include commercial strategy, project development, economics, and gas and LNG marketing and trading. At the OIES he has been focusing on options for the decarbonization of gas, including publishing papers on biogas and power-to-gas.

Martin's 34-year career with Shell included several senior leadership positions in the gas, LNG, and biofuels businesses. His overseas assignments included Japan, where he was responsible for marketing Shell's LNG to gas and power companies, the Philippines where he was commercial manager during the development of the Malampaya gas field, and Australia where he was seconded to North West Shelf Australia LNG as Senior Vice President Marketing. From his UK base, his career also included frequent international travel, and he was a key member of the team that closed a major LNG project in the Middle East. Martin holds an MA in Economics and Engineering from the University of Cambridge.

David Ledesma, Chairman, Natural Gas Research Programme and Senior 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 its 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), and he was co-editor of *LNG Markets in Transition, The Great Reconfiguration* (2016). David has also published a number of OIES papers, including: ‘The changing relationship between NOCs and IOCs in the LNG chain’ (July 2009); ‘East Africa gas – potential for export’ (March 2013); and ‘The future of Australian LNG exports: Will domestic challenges limit the development of future LNG export capacity?’ (September 2014). He also contributed the chapter ‘Project Financing LNG Projects’ to *The Principles of Project Finance* (Gower Publishing, 2012).

David 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 nearly 40 years in the energy and utilities 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, 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 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 (formerly EconoMatters Ltd), David worked on and managed LNG and gas consulting assignments around the world. In May 2013 David was appointed as a non-executive director of Pavilion Energy, a subsidiary of the Singapore investment firm Temasek Holdings, and in August 2017 as a member of the Energy Advisory Committee of JERA. He has a degree in Economics and Geography from the University of Exeter.

Michal Medidan, Director, China Energy Research Programme, joined the institute in July 2019, before joining the institute she headed cross-commodity China research at Energy Aspects. Prior to that, she headed China Matters, an independent research consultancy providing analysis on the politics of energy in China. Michal also held senior analytical roles at Eurasia Group in New York and London, and at Asia Centre-Sciences Po, Paris. She taught undergraduate courses on China’s political economy at the Hebrew University in Jerusalem and has authored numerous academic articles. Michal also regularly provides comments for a wide variety of media outlets and is featured as a speaker at industry conferences. Michal holds a PhD in Political Science and East Asian studies from Sciences Po, Paris. She is fluent in Mandarin and French.

Tatiana Mitrova, Senior Research Fellow, is scientific advisor at the Energy Research Institute of the Russian Academy of Sciences (ERI RAS), Research Scholar at the Center on Global Energy Policy at Columbia University, Associate Research Fellow at Russia/NIS Center in Institut Francais des Relations Internationales (IFRI), Distinguished Research Fellow at Institute of Energy Economics, Japan (IEEJ). She has more than twenty years of experience in the analyses of the Russian and global energy markets, including production, transportation, demand, energy policy, pricing and market restructuring. She is head of the annual “Global and Russian Energy Outlook up to 2040” project; Board Member of Schlumberger NV; Member of the Governmental Commission of the Russian Federation on fuel and energy complex. Dr. Mitrova is a graduate of Moscow State University’s Economics Department. Visiting Professor at the Institut d’Etudes Politiques de Paris (Sciences Po) Paris School of International Affairs. She has more than 120 publications in scientific and business journals and four books.

Mostefa Ouki, Senior Research Fellow and independent energy consultant, has 30 years of experience in developing, executing, and managing gas- and energy-related techno-economic projects throughout the world. He has led numerous consulting and advisory assignments commissioned by governments, national and international energy companies, and international financial institutions. He has also executed and led a number of assignments on the planning and implementation of oil, gas, and

petrochemical infrastructure projects in key hydrocarbon producing countries in the Middle East and North Africa region. Dr Ouki has worked closely with government and private-sector policy decision makers in a number of countries on the formulation, funding, and implementation of energy and infrastructure projects and policies. He has advised project lenders and financial advisors on the development of energy and infrastructure projects, including gas-to-power projects, gas-based petrochemical projects, and cross-border gas pipeline and LNG projects. He is also involved in work sponsored by international organizations on energy for sustainable development.

Dr Ouki started his career with the gas exports division of Algeria's national oil and gas company, Sonatrach, in Algiers, and worked in Washington, DC as a consultant on gas development projects for the World Bank. He was vice president of Nexant's Energy & Chemicals Advisory division based in London. Prior to Nexant, he was with Bechtel and Penspen. Dr Ouki holds a diplôme d'ingénieur d'état in Petroleum Engineering Economics from Algeria's Institut National des Hydrocarbures and an MSc in Energy Resources, and an MA and PhD in Economics from the University of Pittsburgh, Pennsylvania. He is a member of the American Economic Association, Association of International Petroleum Negotiators, the International Association of Energy Economics, and the Society of Petroleum Engineers.

Luke Patey, Lead Senior Research Fellow of the Africa Oil and Gas Programme, is also senior researcher at the Danish Institute for International Studies and fellow at the Rift Valley Institute. He is author of *The New Kings of Crude: China, India, and the Global Struggle for Oil in Sudan and South Sudan* (Hurst, 2014), which was shortlisted for the Africa-Asia Book Prize, and co-editor of *Sudan Looks East: China, India, and the Politics of Asian Alternatives* (James Currey, 2014) with Daniel Large. Patey has written for the *Financial Times*, *Foreign Policy*, *Foreign Affairs*, *The Guardian*, *The Hindu*, and *VICE News*. His commentary has appeared in *Bloomberg*, the *Wall Street Journal*, the *New York Times*, the *Financial Times*, *Reuters*, *Al Jazeera*, China Central Television (CCTV), the BBC World Service, and Radio France. He has also published scholarly articles in *African Affairs*, the *Journal of Modern African Studies*, *Journal of Contemporary China*, *Middle East Policy*, and *Third World Quarterly*. He has been a visiting scholar at the Centre d'études et de recherches internationales (Paris), Peking University (Beijing), and the Social Science Research Council (New York). He holds a BSc (Hons.) in Commerce from Queen's University (Kingston, Ontario) and an MSc and PhD from the Copenhagen Business School.

Rahmatallah Poudineh, Lead Senior Research Fellow of the Electricity Programme, joined the Institute in November 2014 to lead the Electricity Research Programme. He has several years of industrial experience and is the author of numerous academic articles, book chapters, and reports with a focus on industrial organization, policy, and regulation of the electricity sector. He is also co-author of a recent book on the economics of offshore wind power. Rahmat holds a PhD in Energy Economics from Durham University, for which he received the best thesis prize. He also has an MSc in Energy Economics and Policy from the University of Surrey, a graduate diploma in Economics and Finance from Queen Mary University of London, and a BSc in Aerospace Engineering from Amirkabir University of Technology (Tehran Polytechnic).

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. His recent research published by the Institute includes analysis of the following issues, among others: the role of central auctions to support investment in the power sector; the future design of decarbonized electricity markets; electricity and electric vehicles; experience of meeting the challenges of electricity sector decarbonization in the UK and Spain; phasing out coal in the Chinese power sector; a comparison of US and European electricity prices; the implications of the COP21 agreement for the natural gas

industry; electricity demand response in Shanghai, China; the challenges of integrating renewable power in Europe; the prospects for coal and natural gas in the US electricity sector; and problems with regulation of wind power in Colombia. David runs his own consulting company (DR Associates), is an academic adviser to The Brattle Group of Economic and Financial 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 IEA, and wrote his doctoral dissertation at the University of Oxford on the vertical disintegration of the international petroleum industry.

Howard Rogers, Distinguished Research Fellow, joined the Institute in January 2009 and succeeded Jonathan Stern as Director of the Natural Gas Programme in October 2011, he was appointed Chairman and Senior Research Fellow of the Programme in October 2016 and Distinguished Fellow in November 2019. Prior to joining the Institute Howard was with BP for 29 years, mostly in business development, strategy, planning, mergers and acquisitions and negotiation roles in upstream oil and gas in European, North American, Middle East and FSU locations. In 1999 Howard joined BP's Gas and Power division and in 2003 he became Head of Global Gas Fundamental Analysis. He has a degree in Chemical Engineering and is a Fellow of the Institution of Chemical Engineers. Howard has published research papers and authored book chapters on LNG price arbitrage between the regional markets of Asia, Europe and North America, shale gas in the US and UK, The interaction between wind power generation and gas in the UK and the outlook for gas with CCS. More recently Howard and Jonathan Stern have jointly written papers on the transition to hub-based pricing in Europe and the changing roles and risks of key players and also on the challenges to JCC pricing in Asian LNG markets.

Anupama Sen, Senior Research Fellow, joined the Institute in 2009. She is Executive Director of the Electricity Programme and Senior Research Fellow. Her research interests lie in the applied economics of energy in developing countries and her research has spanned the oil, gas and electricity sectors, focusing largely on non-OECD Asia. In addition to OIES Papers, her work has appeared in peer-reviewed academic journals and professional publications, as well as in several book chapters and Op-Eds. Anupama is a Fellow of the Cambridge Commonwealth Society and has been a Visiting Fellow at Wolfson College, Cambridge. She holds a B.A. (Hons) from the University of Mumbai, M.Sc. from the London School of Economics and Ph.D. from the University of Cambridge.

Jack Sharples, Research Fellow of the Natural Gas Research Programme, joined the Institute in January 2018. He holds a PhD and MSc in Russian and East European Studies from the University of Glasgow, and a BA in politics from the University of York. Prior to joining the Institute, he spent four years as a lecturer in Energy Politics and International Relations at the European University in St Petersburg. Outside the OIES, he has been the author of the *Gazprom Monitor* monthly analytical reports for the European Geopolitical Forum (Brussels) since June 2012. In addition to his publications for the OIES, he is the author of several academic journal articles and book chapters, including: 'The international political economy of Eastern European energy security: Russia, Ukraine, and the European Union' (2018); 'Europe's largest natural gas producer in an era of climate change: Gazprom' (2017); 'Energy transitions in carbon-producing countries: Russia' (2016); 'Building the Energy Union: the problem of cross-border gas pipeline interconnections in Baltic, Central, and South-Eastern Europe' (2016); 'The importance of gas storage facilities in the European gas and power markets' (2016); 'The shifting geopolitics of Russia's gas exports and the impact on EU Russia gas relations' (2016); and 'Russian gas supplies to Europe: The likelihood, and potential impact, of an interruption in gas transit via Ukraine' (2016).

Manal Shehabi, OIES-KFAS Supernumerary Research Fellow, researches the economies of resource-rich countries, focusing on the Middle East and the Gulf states, economic and energy sustainability, applied macroeconomics, economy-wide modelling, the political economy of energy, and economic

reform. She is also an SCR member of St Antony's College, University of Oxford. Dr Shehabi's current research projects include the construction of an economy-wide model for Kuwait and examining economic diversification and energy transitions in the Gulf. Using economy-wide modelling with oligopoly and political economic analyses, her research made important contributions to the analysis of economic adjustment, economic diversification, and policy alternatives in the face of petroleum price volatility and recent economic reforms in the Middle East and the Gulf region. Her OIES publications quantified the impact of petroleum price volatility on the Kuwaiti economy, and examined economic and energy policies. Her other research covers the development and sustainability of energy from the ocean, and she was an invited contributing author to the Intergovernmental Panel on Climate Change (IPCC) Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC).

Prior to her current position at the OIES, she was a researcher at the University of Western Australia, where she also taught introductory and advanced undergraduate courses in economics, as well as being a Visiting Research Fellow at the OIES since 2016 and an economic consultant. In addition, Dr Shehabi has expertise in energy and mining multinationals' transfer pricing, gained while working as an economist consulting for a Big Four professional services firm in the USA and Australia and then as the in-house expert for a multinational oil and mining services company. Prior to that, she successfully launched and managed a business public policy project in Texas, and researched investments in the hydrocarbon industry in West Asia at UNCTAD. Dr Shehabi holds a PhD in Economics from the University of Western Australia; an MIA-Economics from Texas A&M University; a BA (Hons) *magna cum laude* from Ursinus College where she was Queen Noor-Ursinus College Scholar; and diplomas from Harvard Business School Publishing and France's Université Marc Bloch. A polyglot, her language capabilities include Arabic, English, French, Spanish, and Mandarin Chinese.

Jonathan Stern, Distinguished Research Fellow of the Natural Gas Research Programme, founded the Gas Programme in 2003 and was its Director until October 2011 when he became its chairman and a Senior Research Fellow; he became a Distinguished Fellow in October 2016. He is honorary professor at the Centre for Energy, Petroleum & Mineral Law & Policy, University of Dundee; visiting professor at the Centre for Environmental Policy, Imperial College London; fellow of the Energy Delta Institute and a Distinguished Research Fellow of the Institute of Energy Economics, Japan (in Tokyo). From 2011-16 he was the EU Speaker of the EU–Russia Gas Advisory Council. He is the author and editor of several books, including: *Natural Gas in Asia: The Challenges of Growth in China, India, Japan and Korea*, 2nd Edition (OUP, 2008); co-editor with Bassam Fattouh of *Natural Gas Markets in the Middle East and North Africa* (OUP, 2011); editor of *The Pricing of Internationally Traded Gas* (OUP, 2012) and *The Future of Gas in the Gulf: continuity and change* (OIES, 2019). He is author of two chapters in: eds. Anne-Sophie Corbeau and David Ledesma, *LNG Markets in Transition: the Great Reconfiguration*, (OIES/KAPSARC 2016). His major OIES papers include: *Reducing European Dependence on Russian Gas – Distinguishing Natural Gas Security from Geopolitics* (2014); *The Dynamics of a Liberalised European Gas Market: Determinants of Hub Prices and Roles and Risks of Major Players* (2014); *Challenges to JCC Pricing in Asian LNG Markets* (2014); *The Future of Gas in Decarbonising European Energy Markets and Challenges to the Future of Gas: unburnable or unaffordable?* (2017); *Narratives for Natural Gas in Decarbonising European Energy Markets* (2019).

Claudio Steuer, Senior Research Fellow of the Natural Gas Research Programme, focuses his research on African and South American countries' natural gas, LNG, floating LNG (FLNG) and power generation activities. He is a faculty member of the International Human Resources Development Corporation (IHRDC) from Boston, USA, and a leader in energy training and competence development, and compliance and assurance systems. Mr Steuer is the founder and Director of SyEnergy, an energy consultancy focused on strategy, gas master/supply planning, project development, commercial negotiations, economic evaluation, dispute resolution, senior management advice involving natural gas, LNG, FLNG, regasification terminals (onshore and offshore), and power generation projects.

Mr Steuer has over 30 years of international energy experience with Shell, ENI, Nigeria LNG, New African Global Energy, Saipem, Centrica, Gas Strategies and consulting clients, having worked and advised on energy projects in North America, South America, Africa, Europe, Central Asia, and Australia. Mr Steuer presents at energy conferences focused on upstream gas, LNG and FLNG, and has lectured on energy courses at ENI Corporate University, Alphatania, CWC School for Energy, and IHRDC. Claudio has provided analysis and commentary featured in articles by *ICIS Global LNG*, *Interfax Gas Daily*, *Bloomberg*, *Gas Matters*, *LNG Business Review*, and *Maritime Executive*. Mr Steuer has a BSc in Computer Science and Marketing from Boston College, an MBA in International Business from Babson College, and completed courses from Harvard Law School and Lax Sebenius/Harvard Business School, IHRDC, and the Institute of Directors (London).

Keun-Wook Paik, Senior Research Fellow, joined the OIES in January 2007. He is an acknowledged authority on Eurasian energy, in particular on Sino-Russian oil and gas cooperation, China's natural gas industry, and North Korea's offshore oil exploration. His recent research interest extends to Russia's Arctic onshore gas development and LNG exports, gas development in Iraq and Nigeria, LNG exports and related infrastructure development, and East Africa's offshore gas development and related domestic infrastructure development. 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* (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 over 50 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* (OIES/OUP, 2012) has also been published in Chinese (in January 2013), Korean (in March 2014), and Japanese (in January 2016). In 2018 his new book entitled *Handbook of Energy Politics* (Edward Elgar) was published. In 2013 he was invited to become an adjunct professor by both Yonsei University (South Korea) and China Petroleum University (Beijing). In 2015 he was also invited to become a guest professor by Jilin University.

Katja Yafimava, Senior Research Fellow, joined the OIES Natural Gas Research Programme in November 2006. She holds a D.Phil. in Geography and an M.Phil. in Russian and East European Studies from Oxford University. She was an expert at the EU-Russia Gas Advisory Council during 2012-2016. Prior to joining the Institute in 2006 she was an intern at Shell and at the Energy Charter Secretariat. 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. She is also the author and co-author of chapters in other books including *The Russian Gas Matrix: how markets are driving change* (OUP 2014), *Research Handbook on International Energy Law* (Edward Elgar 2014), *The Pricing of Internationally Traded Gas* (OUP 2012), *Russian and CIS Gas Markets and their Impact on Europe* (OUP 2009). She is also the author and co-author of several working papers on Russia-Ukraine, Russia-Belarus, and Russia-Moldova gas transit disputes, the latest in these series is a co-authored paper 'Russian Gas Transit across Ukraine Post-2019: pipeline scenarios, gas flow consequences, and regulatory constraints' (2016). She has published several working papers on EU and Russian gas regulation including 'The Evolution of Gas Pipeline Regulation in Russia – third party access, capacity allocation and transportation tariffs' (2015), 'The EU Third Package for Gas and the Gas Target Model: major contentious issues inside and outside the EU' (2013), 'The OPAL Exemption Decision: past, present, and future' (2017), 'The EU Competition Investigation into Gazprom's Sales to Central and Eastern Europe: a detailed analysis of the commitments and the way forward' (co-authored) (2017),

‘The Council Legal Service’s Assessment of the European Commission’s negotiating mandate and what it means for Nord Stream 2’ (2017), ‘Building New Gas Transportation Infrastructure in the EU: what are the rules of the game?’, ‘Gas Directive Amendment: implications for Nord Stream 2’ and, most recently ‘Finding a home’ for global LNG in Europe: understanding the complexity of access rules for EU import terminals’.

Vitaly Yermakov, Senior Research Fellow, joined OIES in April 2019. He has over 20 years of oil and gas industry experience. Prior to joining OIES Vitaly worked as Head of Centre for Energy Policy Research at Higher School of Economics, Moscow, Commodity Strategist for Sberbank CIB, Visiting Researcher at KAPSARC, Saudi Arabia, Director of Research at Cambridge Energy Research Associates (CERA) and IHS CERA. Before that he was a manager at TNK-BP, an oil company.

Vitaly’s recent publications include papers for Oxford Institute of Energy Studies on the issues of spare gas productive capacity, gas demand flexibility, and gas taxation in Russia. He also published a paper for KAPSARC, Saudi Arabia on price competitiveness of US LNG and Russian pipeline gas in Europe. Mr. Yermakov is also the author of over 50 CERA and IHS CERA analytical private reports, including analysis of gas demand issues and gas price regulation in Russia and Ukraine, analysis of tax changes for Russian oil and gas industries, regulatory reform in the Russian energy sector and comparative analysis of oil and gas transportation tariffs in Russia and North America. He also led numerous consulting projects for the CERA and IHS CERA clients, including Russian tax reform for the oil sector, developing gas strategy and developing strategy of marketing LPG for major Russian companies, analysing gas transportation in Russia for a major Western company.

Vitaly has been lecturing for Energy Delta Institute’s executive MBA program on a wide range of topics, including natural gas and LNG developments and pricing, China’s gas demand, and Russian gas developments. He is a frequent speaker at major industry conferences in Russia and abroad. Mr. Yermakov holds a master’s degree from Duke University and a PhD from Samara State University.

The following staff contributed to the work of the OIES in 2018. Their dedication and professionalism are essential to its continued smooth running.

- **Karen Clark** is responsible for the Institute’s accounts.
- **Jo Ilott** provides administrative support for the OIES Natural Gas Research Programme.
- **Susan Millar** manages the Oxford Energy Policy Club and Oxford Energy Seminar.
- **Andrew Hudson** is responsible for the Institute’s library.
- **Hannah Shipton** provides administrative support.
- **Kate Teasdale** is administrator and Company Secretary.

VISITING RESEARCH FELLOWS, RESEARCH ASSOCIATES

Ali Aissaoui, Visiting Research Fellow, returned to the OIES, while also acting as an independent consultant, having retired from a long and fulfilling career in the energy and banking sectors. After serving at energy policy level in Algeria, including representing the country on the OPEC board of governors, he seized on the opportunity offered to him by the late Robert Mabro in the mid-1990s to move to Oxford and conceptualize his experience. The books, book chapters, and research papers he has since authored provide key insights on how history, economic policy, and international relations combine to shape the political economy of oil and gas in developing countries. During his last full-time position, working for an energy investment-oriented regional multilateral bank as its head of research, he developed original approaches to policy and decision-making, including a systematic mapping of the investment climates as well as the risks and financeability of large-scale energy projects across the MENA region. In addition to sharing his research findings through regular publications, he has sought to put his ideas to the test whenever involved as a speaker, discussant or peer reviewer. Ali has also been involved in relevant professional societies, including the Oxford Energy Policy Club, the Paris Energy Club, and the Arab Energy Club. Regular attendance at their reunions has allowed him to interact with international fellows and debate emerging trends and their likely impact.

Robert Arnott, Research Associate, is currently Executive Chairman of Norway-based Petrolia NOCO plc and IOT AS. He has previously held board-level positions at various exploration and production companies, most recently with Hurricane Energy plc, Rocksource ASA, Core Energy AS, and Spring Energy AS. He worked as a Senior Fellow at the OIES from 2001 to 2005, focusing 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. After working as a geologist and economist with Royal Dutch Shell, he began working in the City of London in 1991, holding senior positions as an oil and gas equity analyst at Goldman Sachs and Morgan Stanley for ten years.

Farhad Billimoria, Visiting Research Fellow, is an energy professional with over 14 years of global energy experience. He has covered electricity (renewable and conventional) and gas markets across Australia, New York, and California. He is currently with the Australian Energy Market Operator (AEMO) responsible for the design and analysis of electricity and gas markets in Australia, focusing on decarbonized market design for reliability and security. Prior to AEMO, Farhad was an active energy investor in US and international markets, as an energy and infrastructure specialist at the State of California (CalPERS) managing a \$5 billion portfolio of energy and infrastructure assets, and as Vice President at AMP Capital in New York. Farhad has Bachelor's degrees in Electrical Engineering and Laws (both with Honours), and holds a Masters in Energy Systems from the University of Melbourne with a focus on energy market modelling, forecasting, and system design.

Jorge Blazquez, Research Associate, is a senior economist specialized in energy transitions. Currently, he works as lead economist for power, renewable energy, and carbon markets at BP. Previously, his professional career developed in both the private and public sectors. He worked as senior researcher at King Abdullah Petroleum Studies and Research Centre in Saudi Arabia. He also worked as economic advisor to the Cabinet of the Minister of Energy and at the Prime Minister's Economic Bureau in Spain and at the Spanish Strategic Petroleum Reserve. Jorge worked as a senior economist in a construction company and in an international bank. Jorge holds a doctoral degree in Economics from the Universidad Complutense de Madrid and has published in top journals in the field of energy and economics.

Michael Bradshaw, Senior Visiting Research Fellow, joined the OIES in August 2008 and is also a professor at Warwick Business School, teaching in the Global Energy MBA Programme. Before taking up this post in January 2014, he was professor of Human Geography at the University of Leicester. His PhD is from the University of British Columbia, Canada. His research is at the interface of economic and political geography, business and management, and international relations. In 2007, he was awarded the Royal Geographical Society's Back Award for his applied research on economic change in post-socialist economies. 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, globalization, and climate change. This led to the publication of his book, entitled *Global Energy Dilemmas* (Polity Press, 2013). He has also completed projects on the *UK's Global Gas Challenge* (2014) and *The Future Role of Gas in the UK* (2016), funded by the UK Energy Research Centre. He is co-editor of *Global Energy: Issues, Potentials, and Policy Implications*, published by OUP in 2015. He is currently writing a book on the geopolitical economy of natural gas for Polity Press. He is editor-in-chief of Wiley–Blackwell's *Geography Compass* and contributing editor of *Eurasian Geography and Economics*. In addition to his involvement with the OIES, he is an honorary senior research fellow at the Centre for Russian, European and Eurasian Studies at the University of Birmingham.

Julian Bowden, Senior Visiting Research Fellow, worked for BP for four decades in a variety of mainly planning, strategy and business development roles in downstream oil and international gas. His international roles included postings to BP's offices in Moscow and Brussels. He was involved in the planning for Caspian crude oil exports (culminating in the BTC pipeline) and latterly in the development of the southern gas corridor. Publications include chapters on Azerbaijan and Georgia in an OIES book on CIS gas, a chapter on SE Europe's gas markets in an European Commission sponsored book on gas in the EU's energy union and research papers on gas pricing for the IGU. He has also published an academic journal article on Soviet oil marketing in the UK in the 1930s. Principle interests remain in gas and broader energy issues in Eurasia.

David Buchan, Research Associate, joined the OIES in January 2007 as Senior Research Fellow, became Senior Visiting Research Fellow in August 2017 and Research Associate in 2018. 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 (2000–02). He was a foreign correspondent posted in Brussels, Washington, DC, and Paris, and when based in London he covered energy, defence, the Soviet bloc, and diplomacy. At the OIES, he specializes in the energy and climate policies of the European Union. Aside from writing *The Rough Guide to the Energy Crisis* (Penguin, 2010), he has written two books for the Institute, namely: *Energy and Climate Change: Europe at the Crossroads* (OIES/OUP, 2009) and, with OIES colleague Malcolm Keay, *Europe's Long Energy Journey – Towards an Energy Union?* (OIES/OUP, 2015).

Michael Xiaobao Chen, Senior Visiting Research Fellow, is a leader at Equinor's marketing and trading division, after having previously worked with Equinor's global upstream strategy and business development. Before joining Equinor, Michael worked as a senior energy economist in the Chief Economist's Office of the IEA, leading on the Asian/China energy outlook, G20 global fossil fuel subsidy initiatives, global oilfield decline rate analysis, and energy poverty. Michael is an editorial board member of the prestigious journal *International Petroleum Economics* of the China Petroleum Society and a senior advisor of the China Energy Research Society. Michael is also an advisor to Enrupt Energy Startup Accelerator in Singapore. His areas of expertise include: the Chinese gas markets and origination; energy reforms and economic transition; national oil company strategy; ASEAN energy markets; offshore wind partnerships; and oil industry upstream trends. Since joining the Institute in 2011, he has contributed a chapter to *The Pricing of Internationally Traded Gas* (OIES/OUP, 2012) and published a paper entitled 'The development of Chinese gas pricing: drivers, challenges and

implications for demand' (July 2014). Michael holds an MSc in Economics from University College London and an MSc in Development from the London School of Economics.

Trisha Curtis, Research Associate, is the president and co-founder of PetroNerds, LLC. She co-founded the company in 2015 and began working full time at PetroNerds in January 2016. She was formerly the Director of Research, Upstream and Midstream at the Energy Policy Research Foundation, Inc. (EPRINC) in Washington, DC. Since 2010, she has led extensive research efforts and major consulting projects, and has authored several reports on the North American upstream and midstream markets.

Ralf Dickel, Senior Visiting Research Fellow, has worked as an independent expert on international energy trade since leaving the Energy Charter Secretariat in October 2010. In October 2004 he joined the Energy Charter Secretariat as Director for Transit and Trade, after heading the Energy Diversification Division at the IEA from 2001, being responsible for policy analysis of energy markets and energy market reform. Before joining the IEA, he worked as Senior Specialist for Oil and Gas Policy at the World Bank, after a long career with Ruhrgas from 1980 to 1998, where he held various management positions both in the gas purchase and the gas sales departments. He managed and co-authored several publications at the IEA and the Energy Charter, amongst them: *Security of Gas Supply in Open Markets* (IEA, 2004) and *Putting a Price on Energy* (Energy Charter, 2007).

Nikolai Drahos, Visiting Research Fellow, is a senior economist at the Office of the Chief Economist in the Australian Department of Industry, Innovation and Science. His work focuses on Australia's domestic gas market, global LNG markets and resources and energy forecasting. Nikolai holds a Bachelor of Arts (Honours) and a Graduate Diploma in Economics from the Australian National University, where he is currently undertaking a Master of Environmental and Resource Economics. He is a co-author of the OIES paper *Prices and crisis – LNG and Australia's East Coast gas market* and the Department of Industry, Innovation and Science's *Resources and Energy Quarterly*.

John Elkins, Research Associate, joined the OIES in January 2008 and has edited many of the Gas Programme working papers since then. He wrote the paper 'Natural gas in the UK: an industry in search of a policy?', 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 was for a number of years 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, the Office of Fair Trading, and the Monopolies Commission.

Peter Findlay, Research Associate, based in Calgary, Canada, is vice-president of the energy group EY Parthenon, EY's global corporate finance strategy practice. He has supported and analysed major acquisition and divestiture decisions, as well as developed strategic initiatives across the global energy value chain. At OIEA he has been charged with analysing Canada's oil sands since 2015 and, more recently, Canadian natural gas. Mr Findlay has extensive experience in energy strategy consulting, numerical modelling, mechanical engineering and technology, and mergers and acquisitions (M&A). While working as strategy and management consultant with AT Kearney from 2008 to 2014, he managed and led large-scale strategy, investment, analytic, and operations engagements for supermajors, national oil companies, and private equity firms, including making M&A recommendations on midstream, upstream, petrochemical, and LNG assets. He has also worked in non-oil and gas sectors such as utilities and renewable power generation, including disruptive technology.

He started his career designing aircraft engines as an aerodynamics engineer for Pratt & Whitney and is today registered as a professional engineer. Mr. Findlay earned a BSc degree in Mechanical Engineering from University of Alberta, an MSc degree in Fluid Dynamics and Numerical Methods from McGill University, and an MBA degree from the ESSEC, Warwick and Mannheim business schools. In addition to his OIES contributions, Mr Findlay has contributed energy insights to the *Financial Post*, the *Daily Oil Bulletin*, *Alberta Oil Magazine*, the *Wall Street Journal*, and *Petroleum Economist*.

Andy Flower, Distinguished Fellow, has been working as an independent consultant since 2001. He specializes in the LNG business, where his areas of expertise include: strategy marketing, project structures, shipping, pricing, supply and demand, and project economics. He retired from BP in 2001 after 32 years, including 22 years working in the company's LNG and natural gas businesses.

Sylvie Cornot-Gandolphe, Research Associate, is an independent consultant on energy and raw materials, focusing on international issues. Since 2014 she has collaborated with the OIES as a Research Associate. She also works with the Energy Centre of the Institut français des relations internationales (IFRI) as a Research Associate, with *CyclOpe*, the reference publication on commodities, and with CEDIGAZ, the international centre of information on natural gas of the Institut Français du Pétrole (IFPEN). Sylvie has a long and proven experience in global gas and energy markets, gained during her past positions at IFPEN/CEDIGAZ, the UN/ECE, the IEA, and ATIC Services. She is the author of several reference publications on energy markets.

Sam Geall, Senior Visiting Research Fellow, is executive editor of chinadialogue.net and associate faculty at the Science Policy Research Unit (SPRU) at the University of Sussex. His research focuses on climate policy and politics, energy transition, environmental governance and civil society in China. He edited *China and the Environment: The Green Revolution* (Zed Books, 2013). Sam's writing has appeared in many leading publications, including BBC Chinese, the Guardian, Foreign Policy, Index on Censorship and Nikkei Asian Review. He has been interviewed extensively by media outlets including the BBC, PRI, Al Jazeera and Monocle 24.

Sam was formerly departmental lecturer in Human Geography of China at the University of Oxford. He has a PhD in Social Anthropology from University of Manchester, a BA in Modern Chinese Studies from University of Leeds and was a Kennedy scholar at Harvard University. He is a fellow of the RSA and on the board of the EU-China NGO Twinning Exchange.

Ieda Gomes, Senior Visiting Research Fellow, is a researcher and consultant specializing in energy strategy, natural gas and LNG supply, pricing, contracts, and market fundamentals. In a career spanning 30 years in the gas and energy industry, Ieda spent more than 13 years with BP, where she held senior positions such as: vice president of new ventures for South Asia and the Middle East, president of BP Brasil, and vice president of regulatory affairs for BP 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, a member of the advisory board of Comgas, and sits on the boards of directors of Bureau Veritas, Saint Gobain, Exterran Corporation, Odebrecht SA, and InterEnergy Holdings. Ieda is a senior adviser of the Brazilian think tank FGV Energia and is an active member of International Gas Union (IGU), having served on the executive committee and currently being vice-chair of the Task Force, Strategic Communication and Outreach. She has presented at several energy conferences and training courses and she is a member of the programme committee of LNG 19. She is a regular columnist for the specialist magazine *Brasil Energia*. Ieda has a degree in

Chemical Engineering from Universidade Federal da Bahia, an MSc in Energy from Universidade de S. Paulo, and a troisième cycle diploma from École Polytechnique Fédérale de Lausanne.

Marshall Hall, Senior Visiting Research Fellow, spent 35 years working in and around the European oil and gas industry between 1981 and 2016. He began his career in oil trading and refining at BP and worked as an oil analyst at the IEA, an equity and commodity analyst at SG Warburg/UBS in the financial sector, and in gas and LNG markets analysis at BG Group until 2013. He then moved to Oil & Gas UK as Energy Policy Manager, dealing principally with EU energy and climate policy and gas market regulation until late 2016. He joined the Natural Gas Research Programme of the OIES in 2017 as a Visiting Research Fellow and published a paper on the prospects for Norwegian gas production and export in March 2018. He is currently preparing a second paper on the outlook for gas production from the UK continental shelf and the potential impact on future gas output of the regulatory and fiscal reforms introduced in 2015–16.

Marianne Haug, Distinguished Fellow, teaches energy policy and sustainable development at the University of Hohenheim in Stuttgart, Germany, and serves as a member of the HORIZON 2020 Advisory Group on Energy at the European Commission. Following a career at the World Bank in Washington, DC (inter alia as director and senior adviser to the president), she served as a director at the IEA in Paris (2001–05), and as chairman of the board at the Forum für Zukunftsenergien in Berlin (2006–09). 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, Distinguished Fellow, 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 former member of the Monopolies and Mergers Commission.

Paul Horsnell, Research Associate, is head of commodities research at Standard Chartered plc. He was previously managing director and head of commodities research at Barclays Capital, joining in 2003 from his role as JP Morgan's 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: Markets, Trading, Refining and Deregulation* (OIES/OUP, 1997), and (with Robert Mabro) *Oil Markets and Prices: The Brent Market and the Formation of World Oil Prices* (OIES/OUP, 1993). He holds a degree in Philosophy, Politics, and Economics, and a doctorate in Economics, both from Keble College, Oxford.

Adi Imsirovic, Research Associate, is a Head of Oil at Gazprom Marketing & Trading. Prior to this, he held a number of senior trading positions in London and Singapore where he lived and worked for many years. He taught part time at Surrey University: Energy Economics as well as Resource and Environmental Economics for several years. He has an honours degree (B.Sc.) in Economics and a Master of Science (M.Sc.) degree in Energy Economics from Surrey University. He is a Fulbright Scholar and he studied at the Graduate School of Arts and Sciences, Harvard University.

David Ramin Jalilvand, Research Associate, is a Berlin-based analyst and consultant. His work focuses on the interplay of energy and international politics in Iran and the Middle East. Between 2015 and 2018 he led the Iran programme of the Friedrich-Ebert-Stiftung in Berlin. He earned a PhD in Political Science from the Free University of Berlin in 2016 with a thesis on the energy sector, politics, and the economy in Iran. Previously he studied at the London School of Economics, the Moscow State Institute for International Relations, and Erfurt University. Most recently he co-edited *The Political and Economic Challenges of Energy in the Middle East and North Africa* (with Kirsten Westphal, Routledge, 2018).

Chris Le Fevre, Senior Visiting Research Fellow, joined the OIES in September 2012. He has published working papers on gas storage in Great Britain (January 2013), the potential for natural gas as a transport fuel in Europe (March 2014), the impact of UK energy policy on the gas sector (September 2015), methane emissions in the gas industry (July 2017), a review of demand prospects for LNG as a marine fuel (July 2018), and a review of prospects for natural gas as a fuel for road transport (April 2019). Chris has worked in the oil and gas industry for over 35 years, having held a variety of positions up 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 for the introduction of domestic competition. His roles at British Gas included 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 has worked as an independent energy consultant since 2002 and, until 2011, sat on the boards of the Northern Ireland Utility Regulator and the South Central Strategic Health Authority.

Mari Luomi, Research Associate, is a Senior Research Fellow at the Emirates Diplomatic Academy (EDA), Abu Dhabi, where she leads a research programme on energy, climate change, and sustainable development and teaches on climate change negotiations. Specializing in the politics and political economy of natural resources and the environment, Dr Luomi is an expert on international climate politics and climate and sustainable energy policy in the GCC nations. She holds a PhD in Middle Eastern Studies and has worked for research institutes in the fields of international affairs, regional studies, and energy studies in Finland, Qatar, and the UK. Dr Luomi was formerly the vice-president of the Finnish International Studies Association, researcher at the Finnish Institute for International Affairs, and post-doctoral fellow at Georgetown University in Qatar, to name just a few. Over several years, as part of a team of thematic experts, she has provided independent on-site reporting from intergovernmental negotiations on climate change; she has also written hundreds of news stories on multilateral developments in the fields of climate change and sustainable energy policy globally. Her research publications include a broad range of working and briefing papers, academic journal articles, essays, books, and book chapters. She is also the co-editor of the recently-published volume *From Bali to Marrakech: A Decade of International Climate Negotiations* (IISD, 2017).

Richard Mallinson, Research Associate, leads analysis of geopolitics and global energy policy at Energy Aspects, where he is also a founding partner. He is a specialist on the MENA region, and follows developments in Libya, Iran, and Iraq particularly closely. Richard focuses on how geopolitical events and trends impact on energy market fundamentals, particularly global oil markets. Prior to joining Energy Aspects, Richard spent more than six years working in central government functions in both the UK and Australasia. He has a deep understanding and track record of impact in all aspects of policy-making and analysis. He regularly provides media comment on geopolitical events and energy markets in publications such as the *Financial Times* and *Wall Street Journal*, as well as appearing on CNBC, Bloomberg, the BBC, Sky News, and others. Richard holds a BA in Politics and International Studies from the University of Warwick and is a member of the Royal Institute of International Affairs (Chatham House).

Ahmed Mehdi, Research Associate, is an energy consultant who advises oil companies and trading houses on oil and gas pricing, country strategy and energy economics. He previously acted as an advisor to BHP Petroleum's strategy division and spent several years working with PricewaterhouseCoopers (PwC) in London. Ahmed comments widely on energy issues in the media, including the New York Times, Bloomberg, Foreign Affairs, Middle East Economic Survey (MEES), Petroleum Economist and

S&P Global Platts. He is the founder of the London-based Commodities Intelligence Network. Ahmed was educated at the University of Oxford and University College London.

Robin Mills, Research Associate, is CEO of Qamar Energy (Dubai). He is an expert on Middle East energy strategy and economics. He is the author of two books: *The Myth of the Oil Crisis* (Praeger, 2008) and *Capturing Carbon* (Hurst, 2011), columnist on energy and environmental issues at *The National*, and comments widely on energy issues in the media, including the *Financial Times*, *Foreign Policy*, *Atlantic*, CNN, BBC, Bloomberg, and others. He worked for a decade for Shell, concentrating on new business development in the Middle East, followed by six years with Dubai Holding and the Emirates National Oil Company. He is a Fellow of the SIPA Center on Global Energy Policy at Columbia University, Senior Fellow of the Iraq Energy Institute, and was non-Resident Fellow for Energy at the Brookings Institution. He holds a first-class degree in Geology from the University of Cambridge and speaks five languages, including Arabic and Farsi.

John Mitchell, Distinguished Fellow, is also an associate research fellow at Chatham House. In November 2007 he received a lifetime achievement award for research from Saudi Arabia's King Abdullah at the opening of the Third OPEC Summit in Riyadh. He retired in 1993 from BP, where he held roles including: special adviser to the managing directors, co-ordinator for BP's subsidiaries in the western hemisphere, and head of BP's Policy Review Unit. In 1976–77 he was an academic visitor in the Department of Economics at the University of Cambridge. Mitchell is the author of numerous reports and briefing papers.

Stephen O'Sullivan, Senior Visiting Research Fellow, began his oil and gas career with several years' experience as an oil trader, economist and corporate planner in the downstream and trading divisions of BP, as well as the North Sea upstream and gas divisions of Total. In 1989 he joined Coopers & Lybrand as a strategy consultant in the oil and gas consulting business, working on the privatization and restructuring of the energy sectors across emerging markets, as well as in the nuclear power and transport sectors. He lived and worked in China, Russia, Central Asia, Eastern Europe, Southern Africa and the Middle East. In 1995 he was appointed Head of Research and Oil & Gas Analyst at MC Securities in London, where the team was ranked number one in EMEA oil and gas. Following the sale of that business to JP Morgan in 1998, he moved to Moscow as a Partner and Head of Research at United Financial Group, where he and his team were ranked the number one oil and gas research team and the number one Russia country team for seven years in a row.

After the sale of UFG to Deutsche Bank in 2005, Stephen became Head of EMEA and Latin American Research where his research team was ranked number one across all sectors, in Russia and South Africa and across the broader EMEA region in 2006 and 2007. In 2007 he moved to Hong Kong as Head of Asian Research for the Australian bank Macquarie. In 2009 he joined Barclays to lead the build-out of its Asia ex-Japan equity research business. In 2013 he joined Trusted Sources, focusing on China energy based in Hong Kong. His major research themes include China's gas sector reform and nuclear renaissance. In 2016, following the merger between Trusted Sources and Lombard Street Research to form TS Lombard, he took on an additional role as CEO of TS Lombard Research Partners, TS Lombard's market-facing independent analyst platform.

Donna Peng, Research Associate, is an associate at Aurora Energy Research where she provides customised power market forecast, asset valuation, and transaction support for clients in Ireland, Great Britain, and Australia. Before joining Aurora, she worked with the OIES as a Research Fellow, specializing in the analysis of extended gas-to-power value chains under different institutional and political contexts. Donna holds degrees in Engineering, Policy Analysis, and Economics from Delft

University of Technology, Comillas Pontifical University, University of Waterloo, and McGill University.

Simon Pirani, Senior Visiting Research Fellow on the OIES Natural Gas Research Programme, joined the Institute in September 2007. His research focuses on natural gas markets and changing consumption patterns in the former Soviet Union. Recent publications include *Russian Gas Transit through Ukraine after 2019: The Options* (Energy Insight, 2018) and *Let's Not Exaggerate: Southern Gas Corridor Prospects to 2030* (2018). He was editor of, and contributor to, *The Russian Gas Matrix: How Markets are Driving Change* (OIES/OUP, 2014) and *Russian and CIS Gas Markets and their Impact on Europe* (OIES/OUP, 2009), and has authored many OIES publications on the Ukrainian gas sector and the Russo-Ukrainian gas trade. His book *Burning Up: A Global History of Fossil Fuel Consumption* (Pluto Press) was published in August 2018; his prior publications as a historian include *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 covering the Russian and Ukrainian economies.

John Richardson, Research Associate, is a highly experienced trainer and chemicals industry analyst, who has been working in the industry for 22 years. Based in Asia-Pacific, John has deep knowledge of the companies and people who have transformed the region into the world's major production and consumption region. His aim is to provide insightful, factually based analysis of the key issues facing the industry. His views are highly valued by senior executives, who appreciate his balanced and independent approach. From 2006 until 2013, John was Director - Asia of ICIS training, in which role he successfully launched the ICIS training business in Asia. This provides a wide range of courses covering petrochemicals, oil refining, fertilisers and base oils. He now works for the ICIS Consulting team. John has also co-authored an e-book, *Boom, Gloom and the New Normal*, with Paul Hodges of United Kingdom-based consultancy, International eChem. The book, which has been published by ICIS, examines how demographic factors and events in financial markets have reshaped the global economy. His Asian Chemical Connections blog has a wide regional and global readership. John is a regular contributor to the ICIS magazine, ICIS Chemical Business and the online ICIS Insight service. Before joining ICIS, John worked for the BBC and UK national and local newspapers.

Gulmira Rzayeva, Research Associate, is an advisor to the World Energy Council's Global Gas Center based in Geneva and visiting research fellow at the Center on Global Energy Policy of Columbia University. She is also on the board of directors of the Institute for Effective Governance and Stabilization based in Stockholm, Sweden, and the Trade Forest trading company based in London. She is a founder and managing director of the London-based Eurasia Analytics Ltd consulting company. She was a senior research fellow at the Center for Strategic Studies (SAM) under the President of the Republic of Azerbaijan for ten years until January 2019. Her area of expertise includes energy security, covering issues such as the energy policy of Azerbaijan and the East Europe/Caspian region, the Turkish domestic natural gas market, SEE gas market.

Ivan Sandrea, Research Associate, is founder and former CEO of Sierra Oil and Gas, the leading upstream player in Mexico post energy reform that participated in the world class Zama discovery. Prior to this, Ivan held a number of entrepreneurial, leadership, and corporate roles such as: Co-head of global oil and gas emerging markets at EY, President of Energy Intelligence, Vice President of Upstream Strategy at Statoil (Equinor), Head of oil supply at OPEC, investment banker at Merrill Lynch, and exploration/operations geologist at BP. He is an active member of the Oxford Energy Policy Club, trustee of the Energy Policy Research Foundation (EPRINC), and has been a regular guest at the Global Business Policy Council of AT Kearney. Ivan's academic activities include being co-founder and guest

lecturer at the Executive Energy MBA programme at Wirtschaftsuniversität (WU) in Vienna, the Executive Energy Program at Mexico's ITAM University, authorship of over 20 research papers, and co-authorship of the recent book entitled "Mexico: History of Oil Exploration, its Amazing Carbonates and Untapped Oil Potential". Ivan holds a BSc in Geology from Baylor University, an MSc and MBA from Edinburgh University, and attended the Berkeley Executive Leadership Program in Stanford.

Amrita Sen, Research Associate, is the founding Partner and Chief Oil Analyst at Energy Aspects. Amrita leads Energy Aspects' analysis and forecasting of crude and products markets. Her specialism is in energy commodities, particularly oil and oil products. Amrita's deep understanding of the complex relationships within the global energy sector and her wealth of industry contacts, together with 10 years of experience, allow for a unique perspective on market outlook. She holds an MPhil in Economics from Cambridge University, a BSc in Economics from the University of Warwick, and is pursuing a PhD in Economics at the School of Oriental and African Studies, University of London. She is a non-resident Senior Fellow at the Atlantic Council and was formerly Chief Oil Analyst for Barclays Capital. She is frequently featured in leading media outlets, including the *Financial Times*, BBC News, *Reuters*, *Bloomberg*, CNBC, *The Wall Street Journal*, and Sky News, and at leading industry events as a speaker, and is regarded as a leading authority on oil markets.

Adnan Shihab-Eldin, Research Associate, is Director General of the Kuwait Foundation for the Advancement of Sciences and former Acting Secretary General and Director of Research at OPEC. He held earlier senior management posts at national and international institutions including UNESCO, the International Atomic Energy Agency (IAEA), the Kuwait Institute for Scientific Research (KISR), and Kuwait University. He has taught and directed research in the physical and engineering sciences, as well as energy technology and economics, at a number of universities and research centres in Kuwait, the United States, and Europe. He is a member of many international boards and advisory committees, including recently: A. T. Kearney Energy Transition Institute, Singapore's International Advisory Panel on Energy (IAP), the King Abdullah Petroleum Studies and Research Center (KASPARC) International Advisory Council, and the Standing Advisory Group on Technical Assistance and Cooperation (SAGTAC/IAEA). He has published extensively in various fields, including nuclear science and engineering, energy economics, markets and technology, and science policy. He is a recipient of many awards and honours.

Ian Skeet, Distinguished Fellow, is 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 to 1985. Widely travelled in the Middle East, his publications include *Oman and Muscat: End of an Era* (Faber, 1974) and *OPEC: Twenty-Five Years of Prices and Politics* (CUP, 1988).

Robert Skinner, Distinguished Fellow, is a former Director of the OIES and has previously held roles as vice president of oil sands TOTAL E&P Canada Ltd, director of the IEA policy office, assistant deputy minister for energy commodities (Canadian government), and senior vice president at Equinor (formerly Statoil) Canada. He is an executive fellow at the School of Public Policy, and energy research adviser, at the University of Calgary, Alberta. He consults for industry, governments, and academic institutions in Canada and abroad through Kimacal Energy Strategies, his private advisory service based in Calgary. He was recently named as Envoy for the Premier of Alberta to advise on actions to reduce the damaging price differential for Alberta's crude oil.

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 50 years of experience in the oil and gas industry, working for engineering contractors, operators, and specialist consultants. He is a past chairman of the Institution of Chemical Engineers Special Interest Group for Oil and Natural

Gas (SONG), which provides technical networking among 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 and gas, refinery, and petrochemical facilities around the world. He recently retired and his last position was director of LNG for London-based consultancy ThyssenKrupp Uhde Energy and Power, for whom he managed 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.

Loftur Thorarinsson, Research Associate, is a doctoral researcher at the National Graduate Institute for Policy Studies in Japan and conducts research on the evolution of national and international oil company strategies, East Asian oil and gas markets, and energy markets in Japan. He was an OIES-Saudi Aramco Fellow and holds an MSc in International Management from SOAS, University of London, an MA in Public Policy from the National Graduate Institute for Policy Studies, and a BSc from Copenhagen Business School. Loftur has worked as a business developer and a project manager for over nine years with leading solar energy companies in Japan and served as director of the Icelandic Chamber of Commerce in Japan, where he was responsible for energy affairs, member outreach, and industry events.

Jonathan Walters, Senior Visiting Research Fellow, is a former Director in the World Bank's MENA department, and has twenty-five years' experience in the energy sector. He has worked on all the countries of MENA, most of the countries of Asia, many of the countries of the former Soviet Union and of Africa, and on the EU energy market. His work has involved him in almost all segments of the energy supply chain, from upstream oil and gas through to renewable electricity. He is currently very focused on global issues of electricity sector reform and on the emerging impact of disruptive electricity technologies, such as solar energy and energy storage. Jonathan has an MA in Politics and Philosophy from St. Catherine's College, University of Oxford, and an MSc (with Distinction) in Economics from Queen Mary's College, University of London. He has researched and published on such topics as solar energy market integration between North Africa and Europe, energy transitions in Central Asia, electricity privatization in the Caucasus, and political risk mitigation for hydrocarbons development in the Caspian region.

Robert West, Research Associate, is the founder of Thunder Said Energy, a new research consultancy into disruptive energy technologies. His main interests are the ascent of shale, renewables, smaller-scale gas, and digital oilfield technologies, to attract capital into the energy industry. Previously, Rob was the Head of Global Energy Research at Redburn, where he advised institutional investors on the 'supermajors' and broader energy sector; and part of Sanford Bernstein's European Oil & Gas team. He has completed 75 modules for the IPIMS Petroleum Geology & Engineering Programme, which is used by 40 upstream oil and gas companies to train internal technical staff. Rob holds a first class degree in Experimental Psychology from University College, Oxford. He is a CFA Charterholder.

ACCOUNTS

STATEMENT OF FINANCIAL ACTIVITIES (INCORPORATING AN INCOME AND EXPENDITURE ACCOUNT)

Independent Auditors' Statement to the Members of the Oxford Institute for Energy Studies

For the Year Ended 31 December 2019

	Notes	Unrestricted funds 2019 £	Endowment funds 2019 £	Total 2019 £	Unrestricted funds 2018 £	Endowment funds 2018 £	Total 2018 £
Income from:							
Voluntary income	3	899,287	-	899,287	763,661	-	763,661
Incoming resources from charitable activities	4	1,338,694	-	1,338,694	1,140,775	-	1,140,775
Incoming resources from investments	5	279,922	-	279,922	220,828	-	220,828
Total income		2,517,903	-	2,517,903	2,125,264	-	2,125,264
Expenditure on:							
Raising funds	6	45,191	-	45,191	44,125	-	44,125
Charitable activities							
Projects and publications	7	1,344,807	-	1,344,807	1,073,394	-	1,073,394
Support costs	7	384,825	-	384,825	327,825	-	327,825
Total charitable expenditure		1,729,632	-	1,729,632	1,401,219	-	1,401,219
Other expenditure	12	44,016	-	44,016	27,811	-	27,811
Total resources expended		1,818,839	-	1,818,839	1,473,155	-	1,473,155
Net gains/(losses) on investments	11	675,392	499,529	1,174,921	(267,741)	(329,759)	(597,500)
Net movement in funds		1,374,456	499,529	1,873,985	384,368	(329,759)	54,609
Fund balances at 1 January 2019		4,552,620	3,910,774	8,463,394	4,168,252	4,240,533	8,408,785
Fund balances at 31 December 2019		5,927,076	4,410,303	10,337,379	4,552,620	3,910,774	8,463,394

The statement of financial activities includes all gains and losses recognised in the year.

All income and expenditure derive from continuing activities.

OXFORD INSTITUTE FOR ENERGY STUDIES (REGISTERED NUMBER: 01676971)

Statement of Financial Position

At 31 December 2019

	Notes	2019		2018	
		£	£	£	£
Fixed assets					
Tangible assets	13		17,749		17,190
Investments	14		9,499,999		7,838,316
			<u>9,517,748</u>		<u>7,855,506</u>
Current assets					
Debtors	16	196,590		220,211	
Cash at bank and in hand		741,470		484,862	
		<u>938,060</u>		<u>705,073</u>	
Creditors: amounts falling due within one year					
Taxation and social security		35,088		21,906	
Other creditors		83,341		75,279	
		<u>118,429</u>		<u>97,185</u>	
Net current assets			<u>819,631</u>		<u>607,888</u>
Total assets less current liabilities			<u>10,337,379</u>		<u>8,463,394</u>
Capital funds					
Endowment funds - general			4,410,303		3,910,774
Income funds					
Unrestricted funds			5,927,076		4,552,620
			<u>10,337,379</u>		<u>8,463,394</u>

OXFORD INSTITUTE FOR ENERGY STUDIES (REGISTERED NUMBER: 01676971)**Statement of Cash Flows****At 31 December 2019**

	Notes	2019 £	£	2018 £	£
Cash flows from operating activities					
Cash generated from operations	24		464,005		161,647
Investing activities					
Purchase of tangible fixed assets		(11,201)		(3,942)	
Purchase of investments		(1,379,800)		(990,309)	
Proceeds on disposal of investments		903,682		315,077	
Interest received		279,922		220,828	
Net cash used in investing activities			(207,397)		(458,346)
Net cash used in financing activities			-		-
Net increase/(decrease) in cash and cash equivalents			256,608		(296,699)
Cash and cash equivalents at beginning of year			484,862		781,561
Cash and cash equivalents at end of year			741,470		484,862

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