COUNCIL on BUSINESS & SOCIETY

A GLOBAL ALLIANCE OF SCHOOLS OF MANAGEMENT

WHITE PAPER

ENERGY, BUSINESS, AND SOCIETY



A Council on Business & Society publication

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SCHOOL OF MANAGEMENT FUDAN UNIVERSITY

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Special thanks to Ms Penny Paquette and her media team for collating all speaker quotes during the 2015 Council on Business & Society Boston Forum

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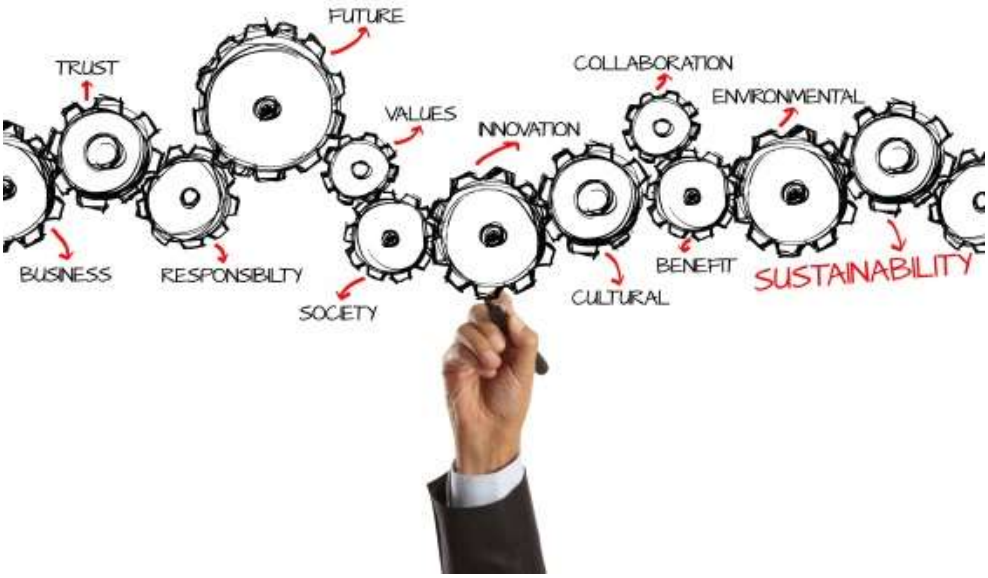

PREFACE

Professor Christian Koenig

As Executive Director of the Council on Business & Society, I'm delighted to invite you to share in the unique adventure represented by the coming together of six leading international business schools across four continents. The Council is committed to bringing together major players from business, society and academia to debate key issues facing the world today; and transferring the outcomes of this to training the responsible leaders of tomorrow. Whether you are a policy-maker, educator, thinker, student or professional, I welcome you to take part in the adventure via our international forums, our Council Community blog and LinkedIn page and contribute to shaping the world for the common good. Together we can change the world.

Sincere regards,

Prof. Christian Koenig
Executive Director, Council on Business & Society

The Council on Business & Society

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COUNCIL on BUSINESS & SOCIETY
A GLOBAL ALLIANCE OF SCHOOLS OF MANAGEMENT

As a global society we face many challenges: Meeting the challenges of global warming. balancing population growth with resources; meeting growing energy demands safely and efficiently; building institutions that foster equity and inclusiveness; making health care affordable and accessible; ensuring human rights and maintaining stable governments; fostering the innovation and entrepreneurship needed to solve global problems.

Recognizing the enormous role business can and must play in helping solve large-scale, global issues facing the world, six business schools from around the world formed a partnership: The Council on Business & Society. Through their individual and collective efforts, they strive to create and disseminate knowledge about those issues and educate future business leaders capable of and committed to solving them.

The schools of the Council on Business & Society:

- ESSEC Business School, France and Asia-Pacific
- FGV/EAESP, Brazil
- School of Management, Fudan University, China
- Keio Business School, Japan
- University of Mannheim, Business School, Germany
- Tuck School of Business at Dartmouth, USA

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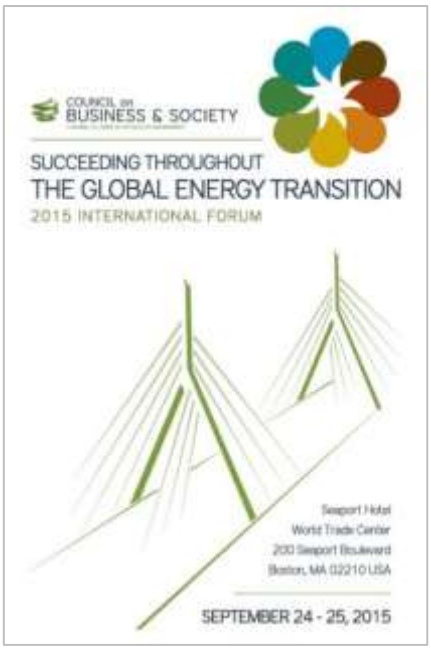
The partner schools share a commitment to and belief in the power of academic excellence, collaboration, innovation, and transformative leadership. Each is a recognized leader in management education and offers a wide range of business-related degrees and executive programs.

The Council on Business & Society 2015 Boston Forum:

ENERGY, BUSINESS, and SOCIETY



INTRODUCTION

Why focus an international forum on energy? Energy is essential to economic growth, and it is a critical part of the world's response to climate change.

Since the energy sector is undergoing tremendous change, there are numerous conferences focusing on the issues facing it. Given the mission of the Council, we decided to focus the international forum on two specific topics related to energy. First, we focused on issues at the intersection of energy, business, and society:

- What are the elements of an efficient and clean energy economy?
- What can and should public policy do to make electricity generation more economical, reliable, and environmentally sound?
- Business, the public sector, and nongovernmental organizations need to work together to achieve these goals. What are the models for doing this?

Second, since the business and regulatory models that worked for the past 100-plus years are unlikely to be adequate in the future, we wanted to explore what capabilities (corporate, strategic, and managerial) were essential to success in the energy sector going forward. As educators, we wanted to learn from the speakers and the audience what we should be doing to prepare our graduates to lead in the future:

- How does one develop corporate capabilities that are dynamic and sustainable in a sector facing extreme volatility, large investment needs, and unprecedented public involvement?
- What sources of competitive advantage are most important in the energy sector? How are those developed and maintained over time?
- It is clear that a tremendous amount of investment is needed in the energy sector, but how should investors determine where to invest? How should they incorporate risk into investment analyses?

- What analytical tools are essential to making business and investment decisions in the energy sector?
- What talent is needed in the energy sector, and how can business schools best prepare their graduates to fill those needs?

Nowhere are the pace of change and the intersection of business and societal interests more evident than in the electric-power industry, where "the way electricity is produced, distributed, stored, marketed, and regulated is being transformed and a top-down, centralized system is devolving into one that is much more distributed and interactive."[11] Power consumers now have options for how the power they use is produced, delivered, stored, and managed.

The EVENT

Planned to coincide with the COP21 talks in Paris in late 2015, the six schools of the Council on Business & Society – ESSEC Business School, FGV/EASP, Fudan School of Management, Keio Business School, University of Mannheim Business School, and Tuck school of Business at Dartmouth – held their annual Forum at the Boston Trade Center end-September 2015.

Energy, Business, and Society: With a difference!

The energy sector is undergoing enormous change, transforming itself from a top-down, centralised system into one that is much more distributed and interactive. This new paradigm necessarily calls for a whole new set of capabilities for the future manager-leaders in the sector, bolstering technical skills with creative thinking, people skills, and a sense of purpose for the wider community and its environment.

Capitalising on the Council's value in terms of its unique intercultural perspective, a wide network of leading academic and industry experts, and a pool of international under and post-graduate students, the Council focused the forum on four main questions:

- What are the corporate, strategic, and managerial capabilities required to meet the challenges of transformation in the energy sector over the next ten years?
- What are the elements of an efficient and clean energy economy and how can these provide a win-win scenario for both business and the wider community?
- What models can be implemented to achieve multi-stakeholder energy projects that include business, the public sector, NGOs and the community?

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[1] Norbert Schwieters and Tom Flaherty, "A Strategist's Guide to Power Industry Transformation," *strategy+business*, July 29, 2015.

- How can business schools tailor their curricula for students wishing to work in the energy sector of the future?

Our future manager-leaders at the heart of the Forum

Putting the student community of the six schools at the heart of the Forum, six multicultural teams were composed with the aim of competing in a student case study competition supervised by Parker Ranch CEO, "Dutch" Kuyper. The case, based on Parker Ranch's own, challenge in competing with traditional energy providers for the Hawaiian market, called for students to attend key-note speeches and parallel debates over the two days of the Forum, compare insights with the issues raised in their case study, draw their conclusions, and present their recommendations for a reply-to-tender that would bring both the interests of business, society and the environment together in a mutual gain.

Keynote speakers included Philippe Joubert, ESSEC alumnus, Executive Chair, Global Electricity Initiative, World Energy Council; Senior Advisor, World Business Council for Sustainable Development; Former Deputy CEO, Alstom Group; Antonio Volpin, Director and senior Partner Electric Power and Natural Gas Practice in Asia Pacific, McKinsey & Company; Peter Smith, CEO, Citizens Energy Corporation; and Thad Hill, CEO, Calpine Corporation. Parallel sessions included further experts from both the traditional and renewable energies sector as well as academics from the six schools.

KEY CONCLUSIONS AND TAKEAWAYS

The following section is designed to highlight the key conclusions and takeaways from the speeches and debates at the Forum.

This section contains excerpts from interviews conducted during the forum with keynote speakers, students, faculty, deans, and other participants.

Each interviewee was asked some combination of these three questions:

1. What attitudes and skill sets do you believe to be necessary in a leader in the energy industry of today and the future?
2. What key courses, experiences, and/or opportunities do you think MBA programs should offer to educate the next generation of energy leaders?
3. What skills, knowledge, and competencies do you look for when hiring future leaders in the energy sector?

Keynote Speakers

Thad Hill, President and CEO, Calpine Corporation

Calpine Corporation is America's largest generator of electricity from natural gas and geothermal resources. Their fleet of 83 power plants in operation or under construction represents nearly 27,000 megawatts of generation capacity.

Energy-domain expertise matters less than raw talent and business literacy—things like finance and accounting.

The best way to answer the question of what attitudes and skills a leader in the energy needs is to look at how I spend my time: people (lots of organizational behavior), capital allocation and investment decisions, and interacting with outside audiences, including customers, investors, and regulators. I'm not sure that at the senior executive level, it is that different in our industry versus any other, with the possible exception that there's an extra focus on the regulatory environment.

Energy is such a huge part of our economy that some background is definitely worthwhile and important to offer in an MBA program. But more broadly, the energy sector sits at the intersection of huge amounts of capital, pure microeconomics, and public policy. All of these need to be appreciated. So that involves finance, economics, and some kind of understanding of how government and quasi-governmental agencies work with industry.

Philippe Joubert, Executive Chair, Global Electricity Initiative, World Energy Council

The World Energy Council is a global and inclusive forum for thought-leadership and tangible engagement, headquartered in London. Its mission is "to promote the sustainable supply and use of energy for the greatest benefit of all people."

People who believe that services rendered by nature will continue to be free and unlimited are ignorant, cynical, or downright crazy.

Business as usual is dead. For energy, this means that we must quickly decarbonize the industry. We have all the technologies available for that. We just need courage and the political will to challenge the current way of doing business.

We cannot continue to teach economics as it was taught 30 years ago. We should go for a true cost accounting that considers externalities, true cost, true price, and true value. More urgent challenges are the cost of greenhouse-gas emissions and the true price of water. And after that, but much more complex, is biodiversity services valuation.

The generation entering universities and business schools now are aware of the real danger our planet is facing and cannot understand why we continue to ignore these limits. They also understand that maximizing individual financial profit without considering social and environmental dimensions, and externalities, is a collective dead end, with growing inequalities and danger for civilization.

Neil "Dutch" Kuyper, CEO, Parker Ranch

Parker Ranch was established in 1847 by John Palmer Parker. Thirteen generations after its establishment, Parker Ranch remains one of the largest cow-calf operations in the United States. Before he died, Richard Smart, a sixth generation Parker descendant, made the forward-thinking decision to leave the ownership of Parker Ranch in the hands of the Parker Ranch Foundation Trust. The trust is designed to benefit and support charitable beneficiaries in the communities surrounding the ranch in perpetuity.

Managing portfolios of research and development projects and converting them from the R&D pipeline through to commercialization are essential skills for a leader in the energy sector.

Energy touches all parts of society. The electricity and transportation sectors will undergo a revolution over the next 20 years as decentralized solutions approach grid-parity. Leadership in the next era of our energy economy will need to understand how to convert ideas to priorities and deliver value to the marketplace. An understanding of strategy, technology, and finance will be key. Yet a premium will be fetched for creativity and resolve.

Coursework should emphasize how transformational investments in innovation are led and managed. Managing portfolios of research and development projects, converting them from the R&D pipeline through to commercialization, are essential skills. Case studies showcasing these success stories, and failures, will be critical for MBA programs to offer valuable opportunities to develop future business leaders.

An understanding of teamwork is absolutely essential. Knowing when to lead and when to follow ... how to collaborate ... is more important than a particular skill or competency.

Dan Revers, Managing Partner and Founder, ArcLight Capital Partners LLC

ArcLight Capital Partners LLC, founded in 2001, is a private equity firm focused on energy-infrastructure investments, with approximately $10 billion under management and more than 100 transactions since its inception.

This is not your grandmother's energy industry. Today's energy industry is increasingly complex, volatile, and global. Successful leaders in energy must be able to understand and synthesize complex economic, commercial, technical, and political factors that drive the global energy markets and domestic and international energy policy. The general-management education provided by today's leading business schools is an excellent training ground for future leaders in energy.

Peter Smith, CEO, Citizens Energy Corporation

Citizens Energy Corporation is a non-profit organization that primarily aids the poor in the United States and throughout the world by organizing projects to provide discounted and free home-heating services and supplies.

A business executive who has donated time and energy to helping others is better poised to integrate such values into business decisions than someone who loves humanity in the abstract.

The fundamental shifts taking place in the energy industry require executive leaders with management skills and knowledge across a broad range of energy sectors. Flexibility, adaptability, and imagination are more important than ever in an energy landscape where historic dependence on fossil fuels to generate power is being challenged by renewable and distributed options. Energy executives of this century must be prepared to engage the new paradigm of power if they expect their enterprises to survive and thrive.

Business schools should regularly teach cases involving energy challenges, in order to prepare students for the complex interplay of regulatory, market, and political factors in the 21st century energy landscape.

I always look for core business competency but also a commitment to social justice—and not just as an abstraction.

Antonio Volpin, Director, McKinsey & Company

McKinsey & Company is an international management consulting firm that helps leading corporations and organizations make distinctive, lasting and substantial improvements in their performance. Over the past eight decades, the firm's primary objective has remained constant: to serve as an organization's most trusted external advisor on critical issues facing senior management.

The capabilities needed to win will be very different from today's, and not every company will be able to adapt—but the winners will be much more diverse, innovative, and dynamic organizations than yesterday's utilities.

Two capabilities that are fundamental to the energy industry today will continue to be so in the future, but in an expanded way:

- First, the ability to build and operate huge infrastructures safely, reliably, and efficiently will continue to be necessary. However, in addition, energy companies will have to learn how to build and install small-scale repeatable projects at low cost. The skills necessary to be a great solar installer are very different from the skills necessary to build a giant coal plant.
- Second, developing and maintaining good relationships with regulators and governments will remain very important, particularly as more and more utility revenues become regulated. In addition, though, utilities will need to understand and deal effectively with public opinion in order to anticipate trends beyond regulatory rules.

Alongside these, there are five fundamentally new capabilities that energy companies will need to develop:

1. Companies must understand users' needs in order to build customized solutions. The widespread diffusion of distributed generation, storage, and demand-management devices means that customers will want customized solutions for specific energy needs, and most of the value will be created around the consumer. For example, customers with rooftop solar panels may be better served by on-site storage, rather than getting the additional power from the grid. Utilities will have to be able to manage supply- and demand-side resources together versus supply only, as is the case today.

2. A fundamental skill that is going to be a source of competitive advantage, if not a "ticket to play" in the industry, is the ability to analyse data in order to make better decisions. According to McKinsey research, utilities could own the largest sets of data about their customers and their infrastructure, but currently they are among the ones that extract the least value from those data. This needs to change.

3. In an industry that is becoming more global and more regulated at the same time, understanding and continuously monitoring macroeconomic risk will become absolutely instrumental. This will help utilities anticipate regulatory shocks, like the

retroactive cuts of incentives to renewables that happened in Europe after the economic crisis hit the financial resources of governments and taxpayers.

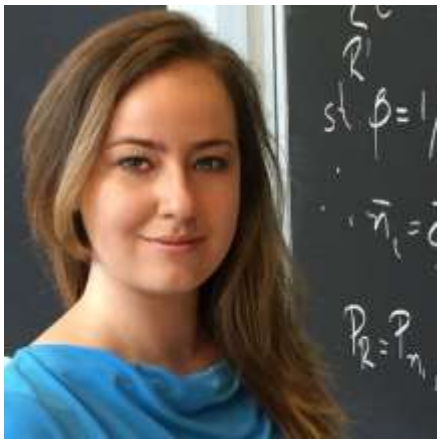
4. Willingness to launch new businesses/technologies, even when cannibalizing existing businesses (e.g., solar versus large generation, or storage versus just about anything) will be essential. A necessary precondition for this is the constant reallocation of capital across opportunities and geographies. Gone are the days of decades' long strategic plans. Nowadays energy companies have to review their choices on a continuous basis and be prepared to shift resources at very short notice.

5. Financial skills will become a source of distinctiveness. Financing will become more and more a key success factor in winning both new customers—e.g., to provide capital at affordable cost to finance solar panels—and big tenders to build new infrastructure.

The energy landscape is changing in a totally unprecedented way. In the energy sector of the future, consumption and production will blur with each other, and there will be much less investment in huge centralized infrastructure and more in small-scale assets and data management.

Moderators and Panellists

Angela Bassa, Data Science Manager, EnerNoc



EnerNOC is among the largest providers of energy intelligence software and services for commercial, institutional, and industrial customers, as well as electric power grid operators and utilities.

"The emerging discipline of data science provides a great framework to tackle complexity, uncertainty, and risk."

Every organization must be data-driven merely to keep up with its competition, and the global energy market requires a complex and ever-increasing knowledge base. I believe that quantitative professionals will be uniquely equipped to tackle these challenges.

MBA students interested in energy should build the skills needed in data science: communications skills (e.g., data visualization, semantics), analytical skills (e.g., statistical inference, decision science), and technical skills (i.e., the coding and language skills necessary to interact with the "big data").

Adam Bernstein, Managing Partner, New Energy Capital

NEC was one of the first private equity investors to focus principally on clean energy and infrastructure assets. The firm focuses on assets which generate stable cash flows based on long-term contracts with utilities and other creditworthy counterparties.

Not everyone in our firm is an engineer, but we focus on an "engineering sensibility"— being able to deconstruct problems and situations, no matter how challenging.

We look for people who can do more than one thing. When we bring people on, we don't know exactly what they'll be doing in five years, but we do know that they'll have to be flexible and have as wide a skill set as possible. We look for people who can rationally and objectively look at a business situation and assess where we stand in terms of assets, weaknesses, and available tools.

Sometimes the best answer to a question is simply: "I don't know." It lets everyone else at the firm know, quickly and efficiently, where we stand knowledge-wise.

There's a very clear next step for following up, and we don't waste time hypothesizing answers when the actual facts could be just a phone call away. As a smaller firm, we have limited bandwidth and must get to the point very quickly in assessing opportunities.

As people progress in their careers, they tend to spend less time on quantitative issues, and more on dealing with government on some level. Though much regulation is country-specific, and business school curricula are more and more global, it would be good to address regulatory frameworks and give students exposure to how to deal with the regulatory process. Many future employers or clients of MBA graduates are heavily regulated, like financial, health care, and—of course—energy firms.

Peter Bogin, Partner, Energy and Industry Practice, Spencer Stuart

Founded in 1956, Spencer Stuart is a privately owned global executive search and leadership consulting firm based in Chicago, Illinois, and operating in 56 offices in 30 countries.

Energy is global, so it's important to have a global perspective. There's a tendency to forget that what we do here impacts the rest of the world and vice versa.

Candidates for this field must be able to think broadly about and be familiar with all parts of the energy value chain. The industry is changing rapidly. What you see today is not how it's going to be tomorrow, so you need to focus on how the industry will look in ten years, and how you're preparing for that.

What do we mean by technical skills? Start by being very strong in your own area. After that, if you're a CFO, you should have a basic understanding of your company's technical operations. If you're the physical plant manager, you should have a basic understanding of the economic drivers. It works both ways.

It's important to have a sense of the history of the industry and the cycles it's gone through—this is great knowledge for an executive going forward in the industry.

Timothy Dunn, Managing Member and CIO, Terra Alpha Investments, LLC

Terra Alpha is an investment firm with a mission to demonstrate that sustainable business practices enhance long-term returns as expressed in real investment results, and to advocate for wide adoption of environmental productivity across the global economic system.

MBA programs need to include and address the value of data, as well as various responsibilities that the past decades of MBA students were not trained to consider.

Currently and in the foreseeable future, the power/energy sector is facing more challenges, yet also more opportunities for innovation than any other sector out there. Managers and leaders will stand out for being flexible, creative thinkers in how they provide their customers what they need, as well as being responsive to the constraints presented by natural resource limitations.

In an increasingly resource constrained world, we see value in incorporating environmental data in order to assess the environmental productivity of companies—both for internal investment decisions and as investors—as part of due diligence for investing in companies that will be around for the long haul.

The next generation of business leaders needs to be able to learn from the past but not be content or complacent in simply repeating decisions, methodologies and "truths" that were held up as business standards but may not be relevant today. The world is a global marketplace and the impacts of operations are no longer just local; we also see this in the need for leaders to perceive their organizations as part of a global business and one global natural environment, where a corporation plays a role in being responsible for lessening its negative impacts as well as increasing the benefit it brings to the world. We look at environmental productivity as an evaluation that companies will more and more be compelled to consider.

Scott Fisher, Principal, The NorthBridge Group

The NorthBridge Group is a leading economic and strategic consulting firm serving the electricity and natural gas industries, including both regulated utilities and other companies active in the competitive wholesale and retail markets.

This isn't the fashion industry or a luxury goods industry—sure, there are ways to customize your product in the energy industry—but energy is inherently a commodity, so micro- and macroeconomic models apply especially well and are especially needed for strategic decision-making in the energy industry.

Until about 20 years ago, a large portion of the energy industry, including the entire U.S. electricity industry, was heavily regulated, from generation to transmission to distribution. Business leaders needed to be good communicators and negotiators, because they were constantly interacting with regulators (and other parties) about what to build, what specific investments were made prudently, and what rates should be charged in order to receive a fair return on the prudent investments. Much of the industry at that time could be characterized as a centralized command and control system.

There have been a few major developments since then that have significantly changed the industry and the skills needed for success. First, the opening of competition has led to an increased need for expertise in the fields of finance, economics, and strategy. Strong communication and negotiating skills are still critical, but leading industry participants now also highly value people who understand competitive business strategy and who can readily apply approaches rooted in economic and financial theory to evaluate opportunities and risks within the industry. Competence in finance is critical, because this is an asset-intensive industry in which projects routinely involve hundreds of millions or even billions of dollars on the line. Participants in this industry must also have the ability to apply economic models to strategic decisions in order to best ensure their future success. Such models are highly respected all the way up to the boardroom level.

Other major drivers of recent substantial change in the industry include significant technological advancements and the increased concern about climate change. The advent of shale gas, smart-grid technology, and the falling costs of solar generation and certain types of distributed energy resources has opened up markets for the future, creating an even greater need for strategic thinkers. The large conventional power plants still have a major role to play, but the advent of new energy technologies has made the industry incredibly dynamic, akin to the high-tech industry. Today's energy executives are constantly grappling with the following questions: What's coming next? What emerging technologies pose the greatest opportunities or the biggest threats? How could this impact me, how should I respond, and/or how can I capitalize on it?

Finally, it is important that energy industry executives have a basic knowledge of the engineering aspects of the industry, as the field of engineering will always have a major influence on the evolution of this incredibly dynamic industry.

Philip Giudice, President and CEO, Ambri Inc.

Ambri is a technology company creating cost-effective, reliable, widespread grid electricity storage solutions, enabling separation of power demand from power supply.

What's needed is a keen sense of technology and science—promises, pitfalls—and a highly attuned BS detector.

What attitudes and skill sets do you believe to be necessary in a leader in the energy industry of today and the future?

Leaders in the energy sector must combine sharp analytics with creativity while remaining cognizant of history and being willing to understand and even honour past decisions.

Beyond the traditional MBA fare, important courses include those on geopolitics and global trade, government/NGO relationships, and policy—law and regulation. Key experiences could include internships at energy law offices, NGOs, or state or federal policy branches, as well as work with startups, utilities, or project development.

Robert Hargraves, Author and Team Member, ThorCon Power

ThorCon Power is a developer of simple molten-salt reactors that provide low-cost, reliable, $C0_2$-free electricity.

We need people who aren't brainwashed by too much exposure to government regulators, rules, processes, and reports.

Today's energy leaders need to have knowledge of the physical and economic realities of producing and delivering energy in a business. MBA programs should offer courses in cost analysis. Reliability payments and costs are greatly undervalued by the industry.

In partnering with others, I look for people who can understand the fundamentals of the business, plus have a flair for communicating ideas.

Thomas Hartkopf, Professor Emeritus, Darmstadt University of Technology

The Technische Universität Darmstadt, commonly referred to as TU Darmstadt, is a research university in the city of Darmstadt, Germany. It was founded in 1877 and received the right to award doctorates in 1899.

What we're missing is the connection between business sense and the more technical aspects.

Engineers understand the electricity industry: for example, how the grid works. But they aren't informed about business. For them, it's just money. On the other hand, businesspeople understand economics, but they have little knowledge of the field of electricity—the difference between power and energy, fluctuations, how power is stored, and, especially, questions of the statistical value of energy.

Opinion leaders should really be able to understand both perspectives so they can argue correctly. They should be totally free from personal feelings. We all have a vision for ideal outcomes, but we need to have an understanding of costs. We're sitting here in a rather good economic situation, but there are many others who are not. For them, even slightly increased costs would pose a serious problem. All this should be taken into account.

Sarah Irving, Executive Vice President and Chief Brand Officer, Irving Oil

Irving Oil was founded in 1924 and is a privately owned refining and marketing company with a history of long-term partnerships and relationships. Irving Oil operates Canada's largest refinery, in Saint John, New Brunswick, which is located 65 miles north of the U.S. border and has reached production rates in excess of 320,000 barrels per day. The refinery exports over 80 percent of its production to the U.S. and accounts for 75 percent of Canada's gasoline exports to the U.S. and 19 percent of all U.S. gasoline imports.

The idea of a good athlete is a great way to think of building skills for a career in energy. As a company, we look for critical thinkers, good team players, and we look at a cultural fit for the industry. We look at various backgrounds, such as government

backgrounds, human resource backgrounds, branding and marketing, and understanding the customers within each distinct market. When I think about the social license to operate for the oil and gas business, brand, reputation, and trust are of utmost importance.

We need good thinkers with a vast array of experience who can apply that experience to problem solving. We're looking for people with varied backgrounds who are able to work across disciplines and who have the ability to move within organizations.

At Irving, people don't necessarily come in with an engineering background, so it would be great to see MBA programs incorporating a little bit of interdisciplinary knowledge. MBA programs should bring interdisciplinary studies into a case study-based course that would consider market conditions, as well as government and regulatory issues, which are such an important part of business today. Traditional MBA courses bring in day-to-day considerations, such as finance and operations. My ideal course would incorporate multidisciplinary threads into one course.

I'd advise MBAs to look at the industry from a broad perspective, because there are so many opportunities to apply whatever background you may have.

Frank Madden, Chief of Staff, Ogin Inc.

Ogin is a venture-backed manufacturer of high-efficiency shrouded wind turbines.

It would impress me if a candidate worked on a company-sponsored project with other students—something that shows me they want to better understand the industry and are willing to go above and beyond the classroom to do it.

We look for smart, versatile leaders who excel at working with people from different backgrounds. That's especially important at a start-up, where flexibility, adaptability, intellectual curiosity, and working with ambiguity are critical to everyday success. Having an interest in the bigger picture of your industry, as well as areas outside of your own expertise, is essential. For instance, if you're working on a technical problem, don't be afraid to ask questions and try to understand what the key drivers are, even if you're not coming from an engineering background.

While I was at Tuck, I worked with a solar-panel manufacturer for my First-Year Project, interviewed energy-efficiency contractors for a seminar project, and did an independent study looking at the possibility of Dartmouth's investing in wind energy. For MBA candidates, I always suggest taking advantage of your two years as a student to explore your career interests through real-world projects. To demonstrate interest in the industry and gain a better understanding of it, students should be willing to go above and beyond the classroom.

Michel Magnan, Professor and Stephen A. Jarislowsky Chair in Corporate Governance, and Director, Desjardins Center for Business Finance Innovation, John Molson School of Business, Concordia University

The John Molson School of Business is the business school of Concordia University in Montreal, Quebec. JMSB offers programs at the undergraduate, graduate, and doctoral levels.

While fundamental courses are still required to build a foundation of core skills and expertise, more emphasis should be put on multidimensional problem solving as well as how to cope and manage with "outliers" or breakthroughs that potentially change the established rules of the game.

Historically, technical expertise (e.g., an engineering background) has been critical in achieving leadership positions in the energy business. While such expertise remains essential for energy organizations, the evolution of society, as well as rapid social, economic, and technological change, implies that leaders of the future need to have a transversal perspective to envision new trends and developments. By transversal I mean non-silo vision, openness to new or revolutionary ideas, and a willingness to engage with different types of stakeholders.

Successful entrepreneurs and managers have always been able to look forward and see such trends emerging, but one could argue that they were either creating new industries or facing an industry in turmoil. Now, very few industries can say that they are safe from major breakthroughs or changes that may completely undermine their existing business model. MBA programs need to go beyond analysis and core competencies to develop better foresight but also the ability to assess technological or societal trends.

Eric Navales, Managing Director, L.E.K. Consulting

L.E.K. Consulting is a strategy consulting firm, with global headquarters in London and U.S. headquarters in Boston.

The global energy industry is in the midst of an era of immense change, with new energy sources and technologies coming online that will remap traditional value chains, supply relationships, and market structures. A leader in the energy industry should be comfortable working in ambiguity and with imperfect information in order to navigate the rapidly shifting industry landscape.

An MBA curriculum that includes programs in leadership, innovation, and risk management will be particularly useful for tomorrow's energy business leader.

The only thing we can say for certain about the future energy industry is that it won't be like the current one. Great talent displays initiative, integrity, and resilience in their day-to-day

actions; these traits, coupled with a well-rounded business knowledge base, are critical for success in tomorrow's energy market.

Marcy Reed, President, National Grid of Massachusetts

National Grid provides transmission and distribution of electricity and natural gas to customers in New York, New Hampshire, Massachusetts, and Rhode Island.

We need people with "can do" attitudes, self-confidence, and the ability to change course quickly as situations demand.

To lead and manage teams through this time of opportunity and shifts in the industry, utility leaders need to be forward-thinkers who embrace change and innovation and who can balance technology and engineering with the necessary "soft skills" to engage stakeholders, always keeping the needs of customers at the forefront. We need leaders who have combined cross-functional experience in science, technology, and engineering fields, plus advanced degrees, "can do" attitudes, self-confidence, and the ability to change course quickly as situations demand.

Elizabeth Seeger, Director, Public Policy and Affairs, Kohlberg Kravis & Roberts Co. L.P. (KKR)

KKR is an American multinational private equity firm, specializing in leveraged buyouts, headquartered in New York. The firm sponsors and manages private equity investment funds.

Energy leaders and business leaders in general, need to understand and have the skills to manage the fact that business decisions can or should no longer be made in a vacuum.

There are a number of important stakeholders that extend beyond a company's shareholders and customers, and decisions in the energy space in particular can have a significant impact on communities and the environment. Business schools have a role in teaching future leaders how to think about problems and solutions from a holistic perspective.

Eric Spiegel, President and CEO, Siemens USA

Siemens USA provides solutions for the growing demands of cities, the nation's infrastructure needs, and cleaner, more efficient sources of energy production.

Given the rapid changes that are unfolding as a result of the digital revolution, I'm constantly on the lookout for leaders who will be able to ride the digital wave and not

let it crash over them.

In an age when technology is dramatically changing the world around us, the energy leaders of tomorrow will need to understand how to use software and data to succeed in a competitive landscape that is undergoing historic change.

More and more businesses and industries are being transformed by data and digitalization, including the energy industry. To collect data, tiny sensors are being put in everything from wind turbines, to gas turbines, to pipelines. The next generation of energy leaders will be those who can turn "big data" into "smart data" and use their tremendous analytical skills to uncover trends and make connections that provide a competitive advantage. This is about using data to make operations run faster, safer, and better. It's also about using data to reduce costs, boost reliability, and make systems more environmentally friendly.

Given the rapid changes that are unfolding as a result of the digital revolution, I'm constantly on the lookout for leaders who will be able to ride the digital wave and not let it crash over them. In the increasingly data-driven energy industry, there is a need for leaders who have skills in technology, computer science, and quantitative analysis to help shape and drive the future of energy.

Additionally, the next generation of energy leaders will need to look at the landscape in a holistic way—to look not just at opportunities but also to mitigate risk.

Energy is not just about economics and numbers on a balance sheet. It's also about understanding the politics that surround the industry. MBA students would benefit greatly from a course that focuses on the impact of policy on business, providing instruction on how to integrate those considerations into business strategy.

For example, how do you assess and mitigate political risk? There are no black-and-white answers to questions like this. What happens in Washington and in state capitals has a significant impact on the energy industry. As we look at the long-term trajectory of the industry, the interplay between private and public interests will increasingly overlap, and energy leaders will need to understand how to anticipate and manage the outcome of policy debates. This dynamic highlights the importance of cross-functional thinking and the ability to bring different groups together to make real-world business decisions.

Academic representatives of the Council on Business & Society Member Schools

ESSEC Business School

ESSEC Business School, founded in 1907, is one of the leading educational institutions in France. AACSB and EQUIS accredited, ESSEC is regarded as a European leader in global management education, with a strong identity based upon its core values of innovation, open-mindedness, responsibility, and excellence.

Christian Koenig, Executive Director, Council on Business & Society; Associate Professor, Management Department, and Dean, BBA Program, ESSEC Business School

In addition to technology and engineering, today's energy leaders need to be versed in geopolitics or international relations. Today you can't think about the future of energy without thinking about the role of economic competition between countries. You can't understand the price of oil and gas, for instance, without understanding the rivalry between the United States, Saudi Arabia, and Iran, in terms of their power over the price of natural resources. We need to educate people to think not only about price, markets, and regulations but also about the meta-political aspects. It's very important.

There are global elements in field of energy, but there are local constraints. Regulation, demand, and even generation are local. It's this articulation between global and local that only an organization like this council can achieve.

Charles Cho, Professor of Social and Environmental Accounting, and Director, Center of Excellence for Management & Society, ESSEC Business School

We cannot continue to teach business students the mainstream, financial market-centered paradigm that has largely failed us as members of society.

An effective leader in a fast-moving and sensitive industry such as energy needs to (1) be prepared to challenge the logic of that very industry; (2) embrace paradoxes and radical but necessary changes; (3) genuinely welcome a diversity of ideas and paradigms by accepting multiple ways of seeing, interpreting, and knowing; and (4) foster an environment that inspires people to self-organize, collaborate, and seek a higher purpose.

Learning by doing seems to be the way to go these days. Energy industry-focused real-life case studies (like the one used for this forum's case competition) are a good start. But most importantly, there must be some mandatory core courses tightly focused on business ethics and corporate social responsibility and/or sustainability embedded in all MBA programs. We need to incorporate in our programs some required courses that make students feel uncomfortable, think outside the box, and encourage radical changes.

Radhika Gupta, Student, ESSEC Business School

You need to know you want to work in the sector. It's not an industry that you just fall into.

Energy leaders need to be passionate about the industry. To enjoy it and be comfortable, you need general knowledge. Everything else, you learn with the job.
For example, I worked on a project with an international team of students. I didn't know how American government and utilities work. That's an added step that international students have to deal with.

FGV/EAESP

Under the umbrella of Fundação Getulio Vargas, founded in 1954, Escola de Administração de Empresas de São Paulo (São Paulo Business Administration School)— FGV/EAESP—is well known as a center of research in administration and for creating corporate, governmental, and academic leaders. The school's portfolio includes business and public administration undergraduate programs, a variety of executive education courses, master's and doctoral programs.

Luiz Artur Ledur Brito, Dean, FGV-EAESP

The energy industry needs leaders who are able to combine strong analytical skills, business acumen, and innovative business thinking with a broad understanding of the connection between business and society. The current debate about the role and impact of business schools manifests itself perfectly in the energy industry.

MBA programs should include and combine courses and experiences with aspects that are not strictly business. Maybe we should question whether the name MBA—Master in *Business* Administration—is truly appropriate today. Business is only one element interacting with others related to individuals and society, like ethics, individual and corporate social responsibility, societal impact, and environmental change.

Goret Pereira Paulo, Associated Researcher, FGV Energy

You don't have to specialize. You do need to be able to assemble many different types of capabilities and get them to work as a team.

People who want to become leaders in the energy industry need a variety of talents. It's not necessary to specialize in one area. Nowadays, with energy projects, we have to be mindful of the environment, financial issues, and local regulation. You don't need to be an engineer, economist, lawyer, or project developer. But you do need to

know that you need these specialties on your team, and you need to be able to put them together and get them to work as a team.

In Brazil, for example, we have a challenge—our leaders in the energy industry are aging. We're in a moment of transition, and we're struggling to get new people—regulators, company leaders, government leaders—to come forward and take leadership roles. It's difficult, because it's a complex industry.

FUDAN UNIVERSITY SCHOOL OF MANAGEMENT

Fudan's School of Management is now a leading business school in China. Structured at an international level, the school has eight departments with more than 140 full-time faculty members from all major business areas. A long history of business teaching has nurtured the current multilevel system of school education. Always being one of the first providers of its kind in Mainland China, the school currently provides a high-quality business education, spanning science-degree programs, professional-degree programs of MBA/EMBA and MPACC, and postdoctoral research.

Xiongwen Lu, Dean and Professor, Fudan University School of Management

Leaders in the energy sector need global vision, because the development of the energy industry can't be happen in one country or one area independently. Growth should rely on interdependence and collaboration across countries.

Leaders in the energy industry will require the following skills and attitudes:

1. A deep understanding of scientific and technological factors, as well as the nature of the energy industry, which will change the structure of demand and supply.

2. Sufficient financial knowledge. Leaders should know how to use capital markets to promote the spread of energy technology and the industrial development of new energy sources.

3. Strong leadership, as well as the capacity for integrating different resources. Leaders should be willing to face challenges as well as facilitate changes and innovation.

4. A great sense of social responsibility and pathos for human beings. Leaders should not target short-term development but should view the welfare of younger generations and the human race as their responsibility.

Yu Tao, Student, Fudan University School of Management

We need to think differently about how to create common value for all stakeholders.

In the case study, we played the role of Parker Ranch, but we also had to consider the shared value of the whole community. My team discussed whether it's the responsibility of the company to tackle environmental issues or whether the government should assume this responsibility. Who should assume costs and liabilities? In the case of violations, who should be punished? I initially thought it was better to let the company do what they do best, which is to make money, and let the government and NGOs tackle the environmental issues.

But my team members disagreed. In this case, Parker Ranch was a large landowner, owning 80 percent of the land in the community. This made them a huge stakeholder, so it was difficult to distinguish which part of the responsibility belongs to the company and which belongs to the community. I now believe that we shouldn't artificially or purposefully create confrontational relationships.

KEIO BUSINESS SCHOOL

Keio Business School (KBS) was founded in 1962 as part of Keio University, one of the oldest private schools in Japan. The country's first accredited business school, KBS has offered two-year MBA degrees since 1978 and a Ph.D. degree since 1991. The business school continues to follow the two key principles—self-respect and pragmatic thinking—established by the university's founder, Yukichi Fukuzawa, who was considered the intellectual father of modern Japan.

Takashi Iwamoto, Project Professor, Keio Business School

We need people who understand all three fields: technology, policy, and business. Energy is related not just to business but also to policy. MBA programs teach mostly business, but they should include classes on policy and technology as well. Schools should provide events

during which students can communicate with professionals in other fields.

Atsuomi Obayashi, Professor, Keio Business School

A combination of business ethics and economics would support a sense of social responsibility.

The energy industry has a long supply chain, often of global scale, and energy is used for a diversity of demands. An industry leader should have a long term, wide range view. Events and conditions at opposite sides of the earth, and forecasts of developments decades from now—all these can affect investments in energy.

Leaders should have a sense of responsibility to society, especially towards maintaining a stable energy supply as part of society's infrastructure. Disruptions in energy supply may bring about revenue loss for suppliers, though disruption is often followed by a surge in demand and a hike in price, while energy consumers experience large losses, both financial and nonfinancial. Compensation for such loss usually goes unpaid. Contracts and regulations force suppliers to pay attention to keeping energy supplies steady, but these are not incentive enough. A sense of responsibility and leadership would make up the gap.

International experience, including exchange programs between business schools, will help develop a long-term and wide-range view in future energy leaders. Despite the fact that the energy industry is affected by global events, people's careers are prone to be local. International experience will provide glimpses of business models different from those one is familiar with.

Economic contract theory will clarify what kinds of duties are easily contactable, and what kind are not. We can use contracts and regulations if they are effective. Where they are not effective, business ethics are important. Leaders must have the ability to evaluate corporate ethical actions.

University of Mannheim, Business School

The business school of the University of Mannheim, state-run and founded in 1907, provides the complete spectrum of consecutive degree programs: bachelor, master, and Ph.D. Moreover, three non-consecutive international MBA programs, all taught in English, are offered: the full-time Mannheim MBA, the joint ESSEC & Mannheim Executive MBA, and the joint Mannheim & Tongji Executive MBA.

Dr. Jürgen M. Schneider, former Dean, University of Mannheim, Business School

In the long term, leaders in the energy industry must be able—and enabled—to face change and cope with it. The radical changes we see today can undermine existing business models:

- Electricity generation will have to be covered more and more from renewable sources,
- Energy consumption must be drastically reduced, and energy efficiency, smart grids, and storage capacities must be developed—with some urgency.
- Conventional "cash cows" run out earlier, and new product cycles will have to be started with greater speed.

In order to prepare students for work in this field, business schools should favor industrial case studies. Note, for example, that the share price of the largest German electricity provider has plunged by 80 percent within the last five years due to radical changes in its market environment. Counteractions to deal with this are underway, but uncertainty remains. A case study could address the following: Should recent decisions and actions have been taken earlier? Was their execution consequential and quick enough? Are free-market forces sufficient to manage change? To what degree are government actions and regulations required?

Fynn Schreiber, Student, University of Mannheim Business School

The most important thing is reading and analyzing cases. That's how you learn about doing business. You learn theory and fundamentals, and you certainly need all that. But in the end, it's about going out and seeing examples like Parker Ranch. When I began to read the Parker Ranch case, it didn't seem very exciting. But after my team and I had dug into it a while, I actually wanted to spend time there. I think that events like this case competition can really help prepare students to enter the field of energy.

TUCK SCHOOL OF BUSINESS AT DARTMOUTH

Founded in 1900 as the first American graduate school of management, the Tuck School of Business at Dartmouth has long been recognized among the leading business schools in the world. Tuck offers only one degree—the full-time MBA. Its small scale promotes a community that values learning, collaboration, and sharing. In this environment, its graduates develop the knowledge, perspective, and skills to effectively lead organizations.

Matthew J. Slaughter, Dean, Tuck School of Business at Dartmouth

The wisest leaders in energy are and will be those whose curiosity to learn and adapt is paramount.

The most important quality a successful leader in energy needs, today and in the future, is confident humility. By this I mean the agile combination of confidence in one's analysis of data and frameworks such as they are today and humility in knowing the limits of all this analysis to what tomorrow may bring. The global energy industry of the past decade has been overturned by revolutionary innovations and by political developments that almost no one knew was coming.

Paul Argenti, Professor of Corporate Communications, Tuck School of Business at Dartmouth

We need to be better at training students to think about risk, especially in the area of energy. To do that will require huge changes.

One of the most important things that we need to do is to teach students to regularly confront ambiguity. We spend way too much time on quantitative things. We need to teach students that the soft stuff is really the hard stuff. At Tuck, we do an excellent job with the hard stuff, but that means that our curriculum is geared toward the past, not the future.

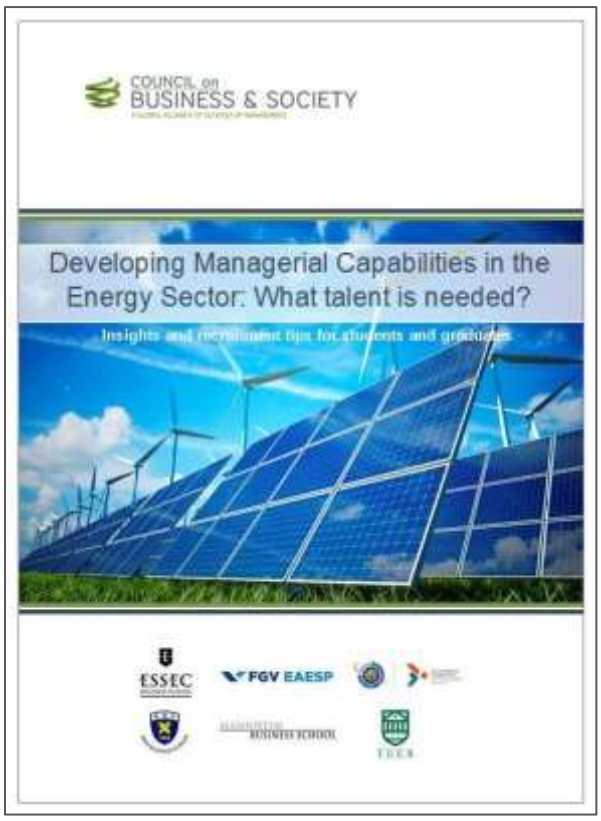
At Tuck, we teach communications at a high level, and that's unusual. But we don't do enough around issues of public policy and governance—not at the level you need to understand to be able to make changes in the sector.

Joseph Brown, Student, Tuck School of Business at Dartmouth

Leaders in the energy industry need to be open and analytical. They need to be open because there are many stakeholders, each with different views on the right path forward for a sustainable energy future. And they need to be analytical, as understanding the true impact of changes in the energy sector requires an ability to grasp complex and interconnected systems.

For me, the most helpful aspect of the MBA experience for learning about energy has been the opportunity to listen to and speak with a wide variety of people in the industry. A solid grasp of economics, finance, and strategy are important to understanding this sector, but without understanding the perspectives of all stakeholders, decisions will be made in a vacuum and will not be meaningful in the real world.

Download our free eBook from the Council Community blog: *Developing Managerial Capabilities in the Energy Sector: What talent is needed?*



The Deans of the Council on Business & Society

Jean-Michel Blanquer ESSEC Business School

Jean-Michel Blanquer has been Dean of ESSEC Business School since July 1, 2013. A Professor of Public Law, he holds a PhD in Law from the University of Paris II and Master's degrees in Philosophy and Political Sciences from Sciences Po. Dean Blanquer has occupied several administrative and scientific positions at the French Ministry of Education and Higher Education. President of the Institute of America since 2004, Jean-Michel Blanquer is the author of a number of books and articles on constitutional law, law theories, education and Latin America.

Luiz Arthur L. Brito FGV/EAESP

Prof. Brito graduated in Chemical Engineering and he holds a doctorate in Business Administration from FGV/EAESP (2005). His research interests lie in the boundaries between Operations Management and Strategy. He joined FGV/EAESP in 2003, is a full professor in the Operations Management Department and was appointed Dean in 2015. His academic involvement occurred after a long executive career, taking several positions in Brazil and other countries. He worked for 22 years in the Bunge group with responsibilities over consumer and commodities businesses. Since 1988 he acted as a statutory director of Sanbra S.A. and later Santista Alimentos S.A. From 1993 to 1996, he acted as Operations Director of BEOCO, Ltd (a Bunge subsidiary) in the U.K. From 1998 to 2002, was the Managing Director of a joint venture between Dixie Toga and Bemis Inc. in the packaging business.

Xiongwen Lu School of Management, Fudan University

Professor Xiongwen Lu is Dean of School of Management, and Founding Director of Chinese Marketing Research Center at Fudan University. Prof. Lu received his PhD in Economics from Fudan University and was a Research Fellow and Visiting Scholar at Tuck School of Business at Dartmouth College, MIT Sloan School of Management, and the Fisher College of Business at the Ohio State University. Prof. Lu has been serving as Vice President of Chinese Society for Management Modernization since 2010 and Vice Chairman of the National MBA Education
Supervision Committee of China since 2008.

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Hirokazu Kono Keio Business School

Hirokazu Kono has served as Dean and Professor of the Graduate School of Business Administration at Keio University and Keio Business School since 2009. Hirokazu Kono received his Doctor of Engineering from Keio University in 1991. He is a founding board member of the Asia Pacific Industrial Engineering and Management Society (APIEMS), and serves as Deputy Editor of the Industrial Engineering & Management Systems (IEMS) journal from 2008. Currently, he is the President of the Association of Asia-Pacific Business Schools (AAPBS).

Matthew Slaughter Tuck School of Business at Dartmouth

Matthew J. Slaughter is the Paul Danos Dean of the Tuck School and the Earl C. Daum 1924 Professor of International Business. He is also the founding faculty director of the Center for Global Business and Government at Tuck. His area of expertise is the economics and politics of globalization. Professor Slaughter is currently a Research Associate at the National Bureau of Economic Research, an adjunct Senior Fellow at the Council on Foreign Relations, a member of the advisory committee of the Export-Import Bank of the United States, a member of the academic advisory board of the International Tax Policy Forum, and an academic advisor to the McKinsey Global Institute.

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Dr Dieter Truxius University of Mannheim, Business School

Professor Dr. Dieter Truxius was named Dean of University of Mannheim, Business School in February 2016. He was previously CFO of the German logistics company Dachser SE, one of the global leaders in the logistics industry with more than 25,000 employees. Until his appointment as Dean, he lectured as honorary professor at the University of Mannheim, Business School. He is member of the board and chairman of the audit committee of the construction company Heberger GmbH. He is also treasurer of the Stanford Club of Germany. Dean Truxius holds a M.Sc. and a Ph.D. from the Ruhr University Bochum.

COUNCIL on BUSINESS & SOCIETY

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If you are a professional, academic, student or member of the public passionate about business and society issues, and wish further information on the Council on Business & Society, please contact the following International Coordinators:

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