

# **Meeting Energy Needs, Reducing Environmental Impact**

A climate change forum sponsored by Hitachi  
and featuring panels organized by  
the American Association for the Advancement of Science  
and The Brookings Institution



## **Forum Summary Report**

Thursday, March 5, 2009  
Ronald Reagan Building and International Trade Center  
Washington, D.C.

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- Strengthen American democracy;
- Foster the economic and social welfare, security and opportunity of all Americans and
- Secure a more open, safe, prosperous and cooperative international system.

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## **Hitachi, Ltd.**

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## Foreword

The topic of Climate Change is a critically important issue that must be addressed on a global basis. It is particularly important for our society to embrace and find ways to improve the condition of our climate and the responsibility rests on all of us to bear. We must realize and understand that we are all accountable for the climate changes occurring around us in all parts of the world.



It has been said time and time again that climate change represents one of the greatest threats facing the planet, so how can we reverse the damage that has been done, or can we? How can we move forward and become energy efficient, yet do so in a responsible way? How can we ensure the preservation of our planet for years to come and for future generations?

Fortunately, we are living in a world where technological advances and breakthroughs are occurring every minute, so the answer to improving our climate lies in creating a collaborative partnership with academia, policy makers and multinational and global corporations in a diverse array of industries and working together.

Given Hitachi's long standing corporate philosophy to help address the needs of society by leveraging our expertise and utilization of technology, we decided to collaborate on a Forum focused on "Meeting Energy Needs, Reducing Environmental Impact."

We worked jointly with the American Association for the Advancement of Science and The Brookings Institution—two of the most prestigious institutions in the area of climate change. We explored and examined energy usage, energy security and the direct correlation to climate change, as well as numerous global issues impacting our nation and nations around the world.

I invite you to share our findings, perspectives and insights outlined in this summary report with others, so together we can build a more sustainable future for generations to come!

Sincerely,

A handwritten signature in black ink, appearing to read "T. Ishigaki". The signature is fluid and cursive, with a long horizontal stroke at the beginning.

Tadahiko Ishigaki  
Senior Vice President and Executive Officer,  
Chief Executive for the Americas  
Hitachi, Ltd.

## Opening Remarks by Co-Organizers

Tadahiko Ishigaki, Chief Executive for the Americas, Hitachi, Ltd.  
Dr. Alan Leshner, CEO, American Association for the Advancement of Science  
Strobe Talbott, President, The Brookings Institution  
Ambassador Carlos Pascual, Vice President, The Brookings Institution

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In his welcoming statement, Tadahiko Ishigaki, Chief Executive for the Americas of Hitachi, Ltd., set the theme for the forum by remarking that energy needs and their environmental impact represent some of the most important and consequential issues the world faces today. Climate change requires our immediate attention as it is a problem that impacts not only us, the current residents of our planet, but also our children and generations to come. Hitachi's interest in these issues stem not only from concerns about humanity and the future of this planet, but also from the perspective of a global technology company with expertise that can contribute to solutions for energy and environmental problems. While a recognized leader in consumer electronics, the company is also a world leader in nuclear energy and cleaner coal power generation technologies. In addition, Hitachi excels in making turbines and generators that produce electric power, and is a leader in advanced battery technology for storing energy.

The current global economic crisis, which affects Japan as badly as the United States and other industrialized countries, has resulted in Hitachi experiencing unprecedented financial losses. However, the company views the way out of this predicament, as being similar to the approach suggested by U.S. President Barack Obama: through investment and innovation in the fields of energy saving and green technologies. Japan responded to the energy crisis of the 1970's by making a strong and sustained commitment to energy savings at every level, resulting in it becoming the most energy efficient country in the world measured by the ratio of energy use to GNP. Indeed, energy efficiency has been a major contributor to Japan's economic competitiveness over the past 30 years and provides lessons from which the United States could learn. Japan has a responsibility to share its expertise and technology

with the United States and other countries to help end the current economic crisis and to ensure a brighter future. Hitachi, which celebrates its 100<sup>th</sup> anniversary as a company next year, has announced a long-term environmental plan aimed at contributing to the reduction of 100 metric tons of carbon dioxide emissions through its products by 2025. The company is truly trying to follow the ancient Chinese proverb: "Though we can live only 100 years, we should think ahead 1,000 years."



In keeping with this theme, Dr. Alan Leshner, chief executive officer of the American Association for the Advancement of Science and Strobe Talbott, President of the Brookings Institution both offered thoughts on not only the urgency to address climate change, but also pathways forward. Economic, Energy and Environmental issues are integrally linked, but Policy makers have yet to agree on the plan to achieve the goal of balancing these at times competing issues. To provide answers, more research is needed, such as what could result from a U.S. proposal to create an Advanced Research Project Agency for Energy that would examine unconventional new approaches. International cooperation will be required as well, such as the close contact on these issues being developed between the United States and Japan.

## Panel Discussion One: “U.S. Climate Change Policy and Its International Implications”

Organized by The Brookings Institution

Moderator: Dr. Charles Ebinger, Director of the Energy Security Initiative, The Brookings Institution.

Panelists: Jason Bordoff, Policy Director, the Hamilton Project, The Brookings Institution  
Hajime Ito, President, Japan External Trade Organization/New York  
Dr. William Moomaw, Ctr for International Environment and Resource Policy, Tufts University  
Prof. Jose Roberto Moreira, Chairman, Brazilian Reference Center on Biomass (CENBIO)

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Panelists for this session represented three key nations that will be critical to addressing climate change—the United States, Japan and Brazil. Conference participants benefited from hearing perspectives on Japan’s experience with technology development and prioritizing efficiency, models for developing country growth, and the prospects for the international climate negotiations under a new U.S. Administration.



President Obama has committed the United States to re-engagement on climate change and to taking a leadership role in reducing greenhouse gas emissions. The President wants to go to Copenhagen at the end of the year for the next climate treaty meeting showing it has done something. The administration has to persuade Congress and the American people on its cap-and-trade proposal, which could result in higher energy costs for consumers during an economic downturn. Price signals are an effective tool for changing energy consumption, but can be challenging to accomplish politically. Balancing these issues of energy price signals and affordability will be necessary in formulating a cap-and-trade bill together. Such a bill must be based on good science and economic principles. Congress will additionally have to decide on

issues such as whether to auction permits or give them away and how to offset the regressive effects of higher costs on the poor. A market mechanism to manage the program can work, but it will need regulation and government investment. There must be policies in place to minimize the cost of responding to climate change.

In addition to domestic action, the United States will also need to work to engage other developed countries to make reduction commitments, but according to President Obama, developing countries like China, Brazil and India should also take on reduction requirements. The new proposed U.S. target for reduction of carbon dioxide emissions—dropping 14 percent below 2005 levels by 2020—is challenging and requires reduced energy use, more energy efficiency and use of clean energy sources. It is likely that the United States would have to buy carbon credits from abroad to reach this goal, but there are still issues to be worked out with making carbon offsets measurable, reportable and verifiable. While we see reduced energy demand as a result of the economic crisis, reducing growth is not a desirable way to meet emissions reductions. The real solution to reducing carbon dioxide emissions is developing new technology and ways to export it. The U.S. and Japan have agreed to take leadership roles in energy research and development, with Japan already having more than 20 technologies for reducing carbon emissions and accelerating energy efficiency that could be adapted elsewhere.

Developed countries could follow the example of Germany, which reduced carbon emissions by 20 percent by developing a portfolio of policies involving regulations, taxes and subsidies. The international community should seek to encourage developing countries to follow a different model

for growth than that used in the past, which involved massive energy use to build industries and infrastructure before tapering off to sustain the economy once built. Exploring ways to “leapfrog” this process with shortcuts to achieve development through using less or cleaner energy—such as we saw with the growth of mobile phones in countries that had limited wired telephone capability that expanded service by going directly to mobile. A key to cleaner, more efficient development is technology transfer from developed countries. We must find means to transfer technology in more ways than selling equipment, while at the same time protecting intellectual property rights. Developing countries can help by easing restrictions in foreign investment. Countries, such as China that depend on coal to fire power plants, could reduce their overall carbon emissions by 30 percent by using advanced technology now available in Japan and other developed countries. Another example of technology transfer that could help the environment is in agriculture. Using modern farming methods, nations can have larger crop yields without major increases in land expansion and forest cutting. These methods also can help in introducing biofuel crops to produce energy with minimal environmental consequences.

The panel also explored the framing of the climate dilemma, as well as questions about specific technologies. Climate change was formerly defined as a pollution problem when it is actually a development problem. Every economy and every country continues to develop and evolve,

including the United States and the nations of Europe, so to address climate change the focus should be on worldwide development. Most abatement plans for greenhouse gases have focused on not letting global temperature increase more than two degrees Celsius, but new evidence suggest this may not be enough. The carbon dioxide absorption making the oceans more acidic than earlier thought, which could decimate coral and other sea life, may require more drastic action than currently planned. China is now slightly ahead of the U.S. in carbon dioxide emissions, with each nation producing about 20 percent of the annual world total. So both nations must be involved in future abatement plans. Coal is a critical element to the climate issues in both countries, but to date, carbon capture and sequestration technology remains unproven. Nuclear energy is another promising technology, but has its share of unsolved issues as well, such as non-proliferation and waste management.



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### ***Question and Answers:***

Question: Carbon capture—will it work?

“Theoretically, it will work, but it must be proven first. The technology still has to be demonstrated and it is doubtful that the private sector will do it alone because of time and costs involved. It may be a decade before we have the answer.” (Moomaw)

Question: Nuclear power—what is its role?

“It takes 10 years to build a nuclear reactor and the costs are very high. The problems of nuclear proliferation and nuclear wastes are still big issues. If we were to go forward with nuclear, it is time to look at second and third generation designs.” (Moomaw)

“In the U.S., there are 104 nuclear reactors in more than 40 locations. If the U.S. were to build new nuclear reactors, it would be 2016 or 2017 before the first could produce electricity.” (Ito)

## Panel Discussion Two: “Energy Revolution: Identifying the Gaps in R&D and Beyond”

Organized by the American Association for the Advancement of Science

Moderator: Eli Kintisch, Reporter, Science Magazine

Panelists: Stephen Eule, Vice President, 21<sup>st</sup> Century Energy, U.S. Chamber of Commerce  
Dr. Kelly Sims Gallagher, Director, Energy Technology Innovation Project, Harvard University  
Dr. Martin Hoffert, Professor Emeritus of Physics, New York University  
Revis James, Director, Energy Technology Assessment Ctr, Electric Power Research Institute

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President Obama’s budget includes substantial funding for new energy, environment and climate research. The President has made energy a priority and assembled a team of experts in cabinet departments and agencies to direct the effort. During this session, panelists focused on how this funding could best be directed and discussed the prospects for current technologies that are receiving much attention at the moment—carbon capture and sequestration (CCS) and nuclear.

The United States needs a broad portfolio of research and development programs, as well as large demonstration projects, to investigate new ideas and to have alternatives if some of them fail. A priority should be work in energy efficiency, which is the easiest way to reduce emissions. Transportation is another important sector, particularly new research in alternative fuels and batteries for storing energy. Work is also needed on “energy enablers,” things such as storage for renewable power and new types of transmission grids to deal with renewable power.

Since World War II, most of the major innovation that has powered the U.S. economy has come from a massive investment in government research. But, the time it takes for investments to pay off determines to some extent who should best carry out the research and when it might produce useful results. Venture capitalists that sponsor work in energy usually want results within three years and expect to make 10 times their investment. This approach heavily influences the kind of R&D work they do. On the opposite end, there is traditional government research that doesn’t look for short-term results, sometimes not to conflict with private industry, and has time scales that stretch into decades and cost billions of dollars. In between those time scales of three to five years and 20 to 25 years is an investment gap

for alternative energy. Here, government could play a particularly critical role in research investment.

The government was also seen to have a role in producing new technology and affecting costs. One problem that was identified is the lack of a coordinated strategy through the whole innovation chain of research, development and deployment. Concerning carbon capture and storage, there is considerable knowledge on the process of capturing carbon from coal burning and storing it, but no one has done large scale demonstrations to see if it is practical. Currently, CCS looks like it will be very costly, much more than previously thought. CCS is at heart of real cooperation with China, which relies on coal for 80 percent of its energy. This is an opportunity for U.S. to work with China on coal research, including demonstration projects



Much energy is lost capturing and storing the excess carbon, with estimates indicating the process takes from 20 percent to 40 percent of a coal plant’s power output. This efficiency would have to be improved. China and Korea were interested in “FutureGen,” the proposed U.S. CCS demonstration plant that was cancelled by the

Bush administration when its cost rose to more than \$1 billion.

In addition, half of U.S. power is generated by coal, and people need to know if carbon capture and storage works as a way to generate clean energy and at what cost. If CCS is proven not to work, then we need to go to Plan B. One Plan B mentioned was nuclear power.

Nuclear power could be more viable if they are built in a more modern, streamlined way with standard modular designs that are more maintainable. Japan is ahead with nuclear power because it invested in it and advanced the technology, this because Japan does not have coal or natural gas and needed alternatives.



Regarding costs, it was noted that every energy source is expensive compared to coal, which is abundant and cheap. When doing research on energy, policy-makers should be careful about giving too much consideration to cost. It may be unrealistic to focus on cost effectiveness at the beginning when developing and demonstrating new energy technology. This was not true in the past, when the U.S. was developing nuclear reactors for submarines and later for commercial power plants. The United States should emphasize research and development, even at high costs, because better solutions are needed to deal with energy and environment problems. For 200 years, the United States has been the most innovative technology driver in the world, and it must continue to look for new approaches to problems, even if they are risky. Some research will not pay off, but the country has to take chances even if it is costly. Vision is more important than economics.

The panel also briefly discussed the concept of geo-engineering, which involves altering the environment itself to reduce the impact of carbon emissions. Overall there was not much enthusiasm, but panelists agreed that work in this field could produce something useful to mitigate climate change.

## Luncheon Keynote Presentation

The Honorable John F. Kerry, United States Senator (D-MA)

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Senator Kerry, chairman of the Senate Foreign Relations Committee, noted that any environmental treaty on global warming would come through his committee for approval. The United States has to end the procrastination on this subject that has existed for several years and make decisions driven by the best science available.

In 1988, he co-chaired the first Congressional hearing on global warming, which featured testimony by Dr. James Hansen. In the subsequent 20 years, he said, the U.S. has not moved far on the issue but that was going to change.

The senator reminded the audience that he chaired a task force on acid rain during the 1980's, and measures to counter this problem became part of the Clean Air Act. Acid rain abatement took half the time and cost half as much as many people predicted at the time, and the same could be true in dealing with problems of carbon dioxide remission and climate change.

"This doesn't have to be as hard as some people say," he remarked.

Mr. Kerry said any action the United States takes will be based on the best scientific facts available. The latest data indicates that since the year 2000, carbon dioxide emissions have grown at a rate four times faster than in the 1990s.

"Five nations—the United States, China, India, the Russian Federation and Japan—are responsible for 60 percent of these emissions," he said.

There is little time to wait on international agreements as global temperature moves toward a tipping point with irreversible effects. If other countries say they will not take action until the United States does, it is the equivalent of entering a suicide pact, he said.

The senator said the nation can achieve 40 percent of its needed carbon dioxide reduction through conservation and energy reduction alone, and must continue advancement in these areas.

Mr. Kerry said the United States, after years of hesitancy, is ready to take part in international action. "I'm excited about the possibilities."



## Panel Discussion Three: “Conserving Energy through Policy, Technology and Lifestyle”

Organized by Hitachi, Ltd.

Moderator: Michael Shepard, President, E Source

Panelists: Kateri Callahan, President, Alliance to Save Energy  
Takashi Hatchoji, Chief Environmental Strategy Officer, Hitachi, Ltd.  
Tom Stricker, Director-Corporate Manager, Toyota Motor North America

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Americans have become addicted to cheap energy. The energy industry has neglected to capture the value of the product it makes, and is beginning to understand it does not provide a commodity but a service. Costs to States that are trying to conserve energy are about three cents per kilowatt hours, considerably less than cost to make energy. The costs of efficiency are actually decreasing, indicating that the “low-hanging fruit” of efficiency does continue growing back with the evolution of technology.

Energy efficiency is the world’s greatest resource. Drivers of energy efficiency in the marketplace include price, codes and standards, consumer education and good public policy. Over the past 30 years, since the energy crisis of the 1970’s, if no efforts had been made on efficiency and conservation, the United States would be using 50 percent more energy than it is today. Studies show that energy demand can be reduced from 2.2 percent annually to 0.7 percent with conservation and efficiency. The U.S. does not balance incentives for more efficiency. Price is a major incentive affecting consumer behavior. Another incentive is removing inefficient products and construction from the market, which is done through codes and regulation. Current building codes only address minimum requirements, so

national legislation is needed to improve their effectiveness. Consumer behavior is a big factor in conservation and more resources are needed to train people to have more efficient lifestyles.

Hitachi, Ltd. is an example of an industry leader on energy efficiency. The company has an environmental policy to reduce carbon dioxide emissions and global warming, pollution and protecting ecosystems. Currently 38 percent of Hitachi products are eco-friendly in terms of energy efficiency, resource recycling and product longevity. The goal is to increase the share of eco-products to 50 percent of products by 2010 and to 100 percent by 2025. Japan has a national R&D policy established in 2008 that focuses on energy developments in 21 areas, including building products, power transmission and battery innovations, and Hitachi is working in many of them. Other areas of research include developing better energy management systems, improved heat insulation and more energy efficient data centers. Hitachi also is working on more efficient consumer products, such as recycling waste heat from a washing machine’s motor and water heater to the clothes drier, resulting in a 77 percent energy savings. Hitachi is engaged globally in energy savings and environmental protection with cooperative programs with other nations such as China.

Toyota is an industry leader for developing energy efficient automobiles and while the industry is hurting due to the financial crisis, it is still making a major investment in advanced technology such as hybrids and fuel cells. Some estimates say oil supplies will peak in 10 to 20 years, which doesn’t mean an end to oil, but as supplies diminish we will need alternative fuels such as electricity and biofuels. Toyota has worked on electrified vehicles for decades, and research is continuing with emphasis on hybrid vehicles. So far, the company has sold a total of two million hybrid

vehicles and has a goal of selling a million hybrids per year globally by the beginning of the next decade. To date, these hybrid sales have saved about 900 million gallons of gasoline and reduced carbon dioxide emissions by 10 million metric tons. Future vehicles, electric or fuel cell, are based on hybrids for flexibility. A new plug-in electric vehicle will be based on the Prius hybrid, operating mostly from the electric motors but using a gasoline engine for peak power when necessary. No one yet knows what the ideal electric vehicle should do, in terms of ideal range and performance. The challenges to widespread use of electric vehicles are bringing down battery

costs, improving durability of batteries, producing less carbon-based electricity and improving the charging infrastructure in the nation (now, fewer than 50 percent of residences have the capability to charge an outside vehicle). A range of technologies will be needed as any given technology may not work on every vehicle. The hybrid technology already developed has only penetrated 3 percent of the market. Technology takes time to penetrate the market, but while we pursue the sustainable future, we cannot forget about the sustainable present.

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### *Question and Answers*

Question: Is there political interest in a gasoline tax?

“People have talked about a variable tax that would keep gasoline at a price below which it would never fall, therefore maintaining an interest and market for alternative fuels. There are questions of political viability and what you would do with the money, such as investing more in public transportation or giving it back in payroll taxes. There is some interest on the proposal and policy makers have been quietly working on it on Capitol Hill since last year’s huge swing in gasoline prices. But the prospects of this are not good in the immediate future.” (Callahan)

Question: Does use of electric cars offset the emissions of power plants to produce electricity?

“If you are running an electric car off electricity produced by a coal-fired power plant, the carbon dioxide benefit is almost a wash. There is still an energy security benefit.” (Stricker)

“As the generation base of the country gets cleaner, you will get more of a CO2 benefit from these vehicles.” (Callahan)

Question: How much is it possible to change the behavior of Americans about using energy?

“Studies show that people have to hear or see something at least seven times before it takes root, which can be expensive. There has to be money to educate people. It is also possible to take some energy decisions out of consumers’ hands, such as designing lights that automatically turn on or off when people enter or leave a room.” (Callahan)



## Wrap-Up Session with Panel Moderators

Ambassador Carlos Pascual, Vice President, Foreign Policy, The Brookings Institution  
Dr. Charles Ebinger, Director, Energy Security Initiative, The Brookings Institution  
Eli Kintisch, Reporter, Science, American Association for the Advancement of Science  
Michael Shepard, President, E Source

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Ambassador Pascual started the discussion by stating that he was struck by enormity of problem with carbon dioxide and other greenhouse gases. The total levels of carbon emissions are so high that people are talking about targets of 80 percent reductions. Is this sufficient or should we be talking about something more radical?

Mr. Kintisch followed by saying that when you hear of success stories in Japan and elsewhere in energy efficiency, people acted when they were hit by the impact of rising costs or environmental problems. Climate is different and a unique case, he said, because people are being asked to respond so aggressively to a problem long before the impact affects them.

Dr. Ebinger said he was concerned about the disconnect between those who have long-standing concerns about energy security and those concerned about climate change. Energy security discussion is about costs of different fuels, the role of nuclear and other issues that center on cost. If we are dealing with global catastrophe, cost cannot be the main consideration. We need to move the whole debate beyond discussions about procedures and coalitions.



Mr. Shepard asked what can be done not only to cut the growth of energy consumption but to reverse it. Some states, and even some utilities, have developed programs to promote energy efficiency that have been somewhat successful.

Aggressive programs are spending about \$20 per capita per year and have cut the energy growth rate in half with better efficiency and using renewable energy sources. However, he said, a statewide program in Vermont is spending about \$50 per capita and in 2007 brought total electrical use in the state down by half of one percent. This is an example that we might actually be able to bring total electrical use down with a modest investment.

Dr. Ebinger said evidence is clear that there is a price response to the cost of gasoline and consumption. Gasoline still is relatively inexpensive in the United States and if there was a way to sustain a higher price that would not be too burdensome, it would help cut consumption and emissions. Another problem area is building codes that constraint technology, he said, citing a long battle on Nantucket Island over restrictions that prohibited use of solar panels for aesthetic reasons. He also suggested that ways might be found to upgrade houses and other property for energy efficiency each time they are sold, with the costs included in the mortgage or otherwise conveyed with the property to future owners until paid off.

Ambassador Pascual said some attention has to be paid to coal, both because of its importance for generating energy and because it is such a large part of many economies. He said he was struck by discussions of producing electricity from coal using carbon capture and storage, or CCS, technology, which itself uses 20 percent to 40 percent of the energy produced in the process. This is a very expensive way to reduce carbon emissions and he wondered if this would work and its effect on the price of energy. Almost all scenarios on future carbon reduction assume some commercialization of CCS use because coal is such an important energy source, particularly in China, India and other developing countries.

Dr. Ebinger added that if CCS proves too expensive to commercialize or is too inefficient,

what is there to replace it with? Another issue about coal use is its economic importance as an industry in developing countries. In India, for example, some 26 million people work in the coal industry and no government is going to put this many people, or even a large portion of them, out of work when there is little prospect of employing them elsewhere. These labor issues are common throughout the developing world, he said. You can't simply say, "We've got to save the world—out with coal."

An issue that has not been addressed, stated Ambassador Pascual, is the reality of coal in emerging economies. "China and India are just not going to go off coal," he said, and it is hard to believe these countries will make serious commitments to carbon reduction while China, for instance, is bringing online two new coal-fired plants a week. To switch out of coal, these countries would need a radical new energy alternative. Otherwise, they need some new cleaner coal-burning technology.

Mr. Shepard said there are billions of dollars in the Obama administration economic stimulus package for energy efficiency initiatives. However, past experience shows that when new efficiency programs start there can be confusion and some waste while people learn how to use the new resources. The Federal government and states have departments and infrastructure with procedures to use the new money but some cities and towns may not, leading to initial problems.



Senator Kerry and others said the time is now for the United States to act on climate change legislation, and stressed a sense of urgency, mentioned Ambassador Pascual. What else is necessary?

Mr. Kintisch said he was impressed by discussions showing that much can be done to improve energy efficiency and abate emissions with wider use of existing technology. The nation does not have to wait for new discoveries or futuristic technology to get started.

Dr. Ebinger said he thinks the country is having the wrong discussion, focusing on procedures and how to draft treaties. He said more has to be done to spread the message to the public and politicians that the energy and climate change issues are urgent with potentially catastrophic consequences to the Earth.

In his final comments, Ambassador Pascual said it is difficult to get the public, corporations and politicians to seriously deal with issues of energy use and climate change, particularly when the world is in a recession. "Getting people to go back to our opening statements of thinking ahead a thousand years is extraordinarily hard to do, but we have no choice but to actually do that."

## Appendix: Speaker Biographies

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### **The Honorable John F. Kerry**

*United States Senator (D-MA)*

John Kerry was born on December 11, 1943 at Fitzsimons Army Hospital in Aurora, Colorado. Not long after John Kerry was born, the family settled in Massachusetts, where his parents taught him the values of service and responsibility and the blessings of his Catholic faith, lessons he carries with him to this day.

As he was graduating from Yale, John Kerry volunteered to serve in Vietnam, because, as he later said, “it was the right thing to do.” John Kerry served two tours of duty. On his second tour, he volunteered to serve on a Swift Boat in the river deltas, one of the most dangerous assignments of the war. For his leadership, courage, and sacrifice under fire, he was decorated with a Silver Star, a Bronze Star with Combat V, and three Purple Hearts.

When he came home to the United States, John Kerry spoke out against a policy he felt gave politicians political cover while soldiers bore the real burden. He also began a lifelong fight for his fellow veterans – joining with other vets to found the Vietnam Veterans of America to fight for veterans’ benefits, for extension of the G.I. Bill for Higher Education, and for treatment of PTSD.

Later, John Kerry accepted another tour of duty – to serve in America’s communities. After graduating from Boston College Law School in 1976, John Kerry went to work as a top prosecutor in Middlesex County, Massachusetts. He took on organized crime, fought for victims’ rights and created programs for rape counseling.

John Kerry was elected Lieutenant Governor in 1982. Two years later, he was elected to the United States Senate and he has won reelection three-times since. He is now serving his fourth term, after winning again in 2002 by the largest margin in Massachusetts history.

John Kerry entered the Senate with a reputation as a man of conviction. He helped provide health insurance for millions of low-income children. He has fought to improve public education, protect

our natural environment, and strengthen our economy.

From his ground-breaking work on the Iran-Contra scandal to his leadership on global AIDS, John Kerry has distinguished himself as one of our nation’s most respected voices on national security and international affairs. As chairman of the Senate Select Committee on POW/MIA Affairs, he worked to learn the truth about American soldiers missing in Vietnam and to normalize relations with that country. As the ranking Democrat on the East Asian and Pacific Affairs Subcommittee, he is a leading expert on that region, including North Korea. He worked on a bipartisan basis to craft the American response to September 11th and has been a leading voice on American policy in Iraq and Afghanistan, the war on terrorism, the Middle East peace process and Israel’s security.

In 2003, John Kerry announced that he would be a candidate for president of the United States—and he went on to mount a come from behind campaign that won the Democratic nomination. Today in the United States Senate, he continues fighting for what motivated him to enter public life in the first place: love of country and the call of duty.

Senator Kerry was an early and ardent supporter of Barack Obama in the 2008 Presidential Election and while mounting his own successful run for a fifth term in the U.S. Senate. Kerry now chairs the Senate Foreign Relations Committee, the very committee he testified before in 1971. The Foreign Relations Committee plans to address the key foreign policy and national security issues facing the United States including Afghanistan and Pakistan, nuclear nonproliferation, global climate change, and a responsible conclusion to the war in Iraq.

Today, Senator Kerry is the fourteenth most senior Senator and the second longest serving Senator in his seat. He is the tenth most powerful Senate Democrat according to Roll Call/Knowlegis and holds senior positions on the Finance, Commerce, and Small Business Committees.

In his life of public service, John Kerry is sustained by his loving family. He is married to Teresa Heinz Kerry, and they have a blended family that includes two daughters, three sons, one grandchild, and three dogs.

### **Carlos Pascual**

*Vice President, Foreign Policy  
The Brookings Institution*

Ambassador Pascual joined Brookings in 2006 after a 23 year career in the United States Department of State, National Security Council (NSC) and the United States Agency for International Development (USAID). In 2007, he launched a major new initiative at Brookings called “Managing Global Insecurity: American Leadership, International Institutions, and the Search for Peace in the 21st Century.” This project has generated a forthcoming new book, *Power and Responsibility: International Cooperation in an Era of Transnational Threats, an Action Plan for International Cooperation*, to give the 44<sup>th</sup> American President and key international partners a platform for a new approach to global governance in 2009. Ambassador Pascual also started the Brookings Energy Security Initiative which brings together Brookings’ expertise on economics, foreign policy and governance to guide the development of energy security policies for the next decade.

Before joining Brookings, he served as Coordinator for Reconstruction and Stabilization at the U.S. Department of State where he led and organized U.S. government planning to help stabilize and reconstruct societies in transition from conflict or civil strife. Prior to that, he was Coordinator for U.S. Assistance to Europe and Eurasia and U.S. Ambassador to Ukraine.

### **Tadahiko Ishigaki**

*Chief Executive for the Americas  
Hitachi, Ltd.*

Tadahiko Ishigaki is Senior Vice President and Executive Officer, Chief Executive for North America, Hitachi, Ltd. In addition, he serves as Chairman, Hitachi America, Ltd. Mr. Ishigaki has a long and distinguished career with Hitachi,

joining Hitachi, Ltd. in 1968. He served in both the New York and San Francisco offices of Hitachi America, Ltd. in 1977 and 1980 respectively before moving to the Hydroelectric Power & Substation Equipment Department, International Sales Division I in 1982. Named Department Manager of the Industrial Machinery Department five years later, he also served as Department Manager, Marketing Department, of the Overseas Operations Promotion Office before being named Deputy Managing Director, Hitachi (Europe), Ltd. in 1993. Mr. Ishigaki continued his career in Europe with increasingly senior management positions at Hitachi Home Electronics (Europe), Ltd. In 1999, he was named General Manager, Digital Media Systems Sales Operations Division at Hitachi, Ltd. and two years later Senior Vice President, Nippon Columbia Co., Ltd. He has also served as the Managing Officer & General Manager, Corporate Marketing and the President & Director of Hitachi Home & Life Solutions, Inc. In April 2006, Mr. Ishigaki was named Representative Executive Officer, Senior Vice President and Executive Officer of Hitachi, Ltd.

### **Dr. Alan Leshner**

*Chief Executive Officer  
American Association for the Advancement of  
Science (AAAS)*

Dr. Leshner has been Chief Executive Officer of the American Association for the Advancement of Science and Executive Publisher of the journal *Science* since December 2001. AAAS was founded in 1848 and is the world’s largest, multi-disciplinary scientific and engineering society. Before coming to AAAS, Dr. Leshner was Director of the National Institute on Drug Abuse (NIDA). Dr. Leshner also was the Deputy Director and Acting Director of the National Institute of Mental Health. At the National Science Foundation (NSF), he held a variety of senior positions focusing on basic research in the biological, behavioral and social sciences, science policy and science education.

Dr. Leshner was a Professor of Psychology at Bucknell University and has also held long-term appointments at the Postgraduate Medical School

in Budapest, Hungary; at the Wisconsin Regional Primate Research Center; and as a Fulbright Scholar at the Weizmann Institute of Science in Israel. The U.S. President appointed Dr. Leshner to the National Science Board in 2004, and he is a member of the Advisory Committee to the Director of NIH.

## **Strobe Talbott**

*President*

*The Brookings Institution*

Strobe Talbott assumed the presidency of The Brookings Institution in July 2002 after a career in journalism, government and academe. His immediate previous post was founding director of the Yale Center for the Study of Globalization. He served in the State Department from 1993 to 2001 after 21 years with *Time* magazine. His 11th book, *The Great Experiment: The Story of Ancient Empires, Modern States, and the Quest for a Global Nation*, which was published in January 2008, combines historical and political analysis with personal reflection on efforts to forge a peaceful community of nations.

Mr. Talbott has been a fellow of the Yale Corporation; a trustee of the Hotchkiss School; and a director of the Council on Foreign Relations, the North American Executive Committee of the Trilateral Commission and the American Association of Rhodes Scholars. He is a member of the Aspen Strategy Group.

## **Dr. Charles Ebinger**

*Director, Energy Security Initiative*

*The Brookings Institution*

Prior to joining Brookings, Charles Ebinger was a Senior Energy Advisor at the International Resources Group and an Adjunct Professor at Georgetown University's School of Foreign Service. Currently, he is an Adjunct Professor at Johns Hopkins University's Nitze School of Advanced International Studies and serves on the Board of Directors of the Washington Chapter of the International Association of Energy Economists. Dr. Ebinger has 30 years of experience addressing the security, political,

economic, environmental and foreign policy interrelationships surrounding domestic and international energy issues. In 1975, he helped to establish the International Energy Agency and its oil-sharing mechanism. From 1976 to 1979, Dr. Ebinger served as Vice President of Conant and Associates, an international oil, gas and electricity political risk consulting company. In 1979, he became the founding Director of CSIS's Energy and Strategic Resources Program and served as Director until 1987. He was a Senior Consultant at Putnam Hayes & Bartlett and served as Executive Vice President at the International Resources Group. In 1999, he joined Stone & Webster Management Consultants as the Director of International Energy Practice. From 2000-2004, he held several positions at Bechtel Consulting including Vice President and Director of International Utility Services, Senior Vice President for Middle East, Central Asia and Africa and Senior Vice President for Global Privatization/Restructuring/Regulation.

## **Jason Bordoff**

*Policy Director, Hamilton Project*

*The Brookings Institution*

Jason Bordoff is Policy Director of the Hamilton Project, an economic policy initiative housed at The Brookings Institution committed to promoting more broadly shared prosperity. Mr. Bordoff has written on a broad range of economic policy matters with a focus on climate and energy, trade and globalization and tax policy. His publications include *Path to Prosperity* (Brookings Press 2008, with Jason Furman) and several journal articles, book chapters, op-eds and policy papers. He is also a term member of the Council on Foreign Relations, serves on the board of the Association of Marshall Scholars and is a member of the New York and Washington D.C. Bar Associations. He previously served as an advisor to Deputy Secretary Stuart E. Eizenstat at the U.S. Treasury Department and worked as a consultant for McKinsey & Co. in New York. He graduated with honors from Harvard Law School, where he was treasurer and an editor of the Harvard Law Review and clerked on the U.S. Court of Appeals for the D.C. Circuit.

## **Hajime Ito**

*President*

*JETRO/New York*

Hajime Ito has served as president of JETRO/New York since August 2008. Before joining JETRO, he was Deputy Director-General for Global Environmental Affairs at METI and was responsible for planning, coordinating and representing overall environmental policies of METI including participating in the international negotiation for post-Kyoto framework; attending Major Economic Meetings; G20, G8 preparatory meetings; coordinating inter-agency processes; supervising the process of purchasing emission rights under Kyoto Mechanism; and formulating and implementing domestic policy and measures for reducing CO2 emissions.

In April 2004, he became Councilor, Cabinet Secretariat and was responsible for coordinating inter-agency processes and supporting the Prime Minister and Chief Cabinet Secretary in the various policy fields including: environmental policy, energy policy, IT policy, policy for small and medium size enterprises and policy for reinforcing international competitiveness of the Japanese industries. He also served at MITI as Director, Petroleum Distribution and Retail Division, Petroleum Department, Agency for Natural Resources and Energy.

## **Dr. William Moomaw**

*Director, Center for International Environment and Resource Policy*

*The Fletcher School*

*Tufts University*

William Moomaw is the founding director of the Center for International Environment and Resource Policy, the Tufts Climate Initiative and co-founder of the Global Development and Environment Institute. He is a physical chemist with a Ph.D. from MIT who works to translate science and technology into policy terms using interdisciplinary tools. His major publications are on climate change, energy policy, nitrogen pollution, forestry financing and management and on theoretical topics such as the Environmental Kuznets Curve. He was a convening lead author

of the 2001 Intergovernmental Panel on Climate Change chapter on greenhouse gas emissions reduction and for the special report on renewable energy due in 2010. He was a lead author of three other IPCC reports (1995, 2005 and 2007).

The work of the IPCC was recognized with the 2007 Nobel Peace Prize. He also was an author for the Millennium Ecosystem Assessment on nitrogen and serves on the Integrated Nitrogen Committee of the EPA Science Advisory Board. He was the first director of the Climate, Energy and Pollution program at the World Resources Institute and directed the Center for Environmental Studies at Williams College where he held an endowed chair in chemistry. As an AAAS Congressional Science Fellow, he worked on legislation that eliminated American use of CFCs in spray cans to protect the ozone layer and also worked on energy and forestry legislation.

## **Professor José Roberto Moreira**

*Chairman, Brazilian Reference Center on Biomass (CENBIO)*

José Roberto Moreira is a professor of Physics and Energy at the Institute of Electrotechnology and Energy, University of Sao Paulo, where he also serves as the chairman of the National Reference Center on Biomass (CENBIO).

During his academic career he has worked as an energy expert at Princeton University and Sendai University in Japan. Since 1994 he has been a lead author for the United Nations Intergovernmental Panel of Climate Change (IPCC), winner of the 2007 Nobel Peace Prize. He has authored more than 200 books and papers in the areas of Nuclear Physics, Atomic Physics, Energy Conservation, Energy Planning and Environment and is a member of several national and international organizations.

Outside his academic role with the University, Professor Moreira has held several positions including Undersecretary of Energy at the Ministry of Mines and Energy; Executive Director of Biomass Users Network, a NGO; and director of NEGAWATT, a private engineering company. Most recently he has been engaged in providing consulting technical services for the multinational

company MGM International for projects in the area of carbon credits.

### **Eli Kintisch**

*Reporter  
Science*

Eli Kintisch covers science policy for *Science* magazine including climate and energy matters and manages the *ScienceInsider* blog. He is writing a book on climate change.

### **Stephen Eule**

*Vice President, 21st Century Energy  
U.S. Chamber of Commerce*

Stephen Eule serves as Vice President for Climate and Technology at the Institute for 21st Century Energy at the U.S. Chamber of Commerce. Before joining the Chamber, he was Director of the Office of Climate Change Policy & Technology at the U.S. Department of Energy. His previous experience includes a decade working in various public policy positions. He spent a number of years in the U.S. House of Representatives; first as a professional staffer and then subcommittee staff director with the Committee on Science and then as legislative director in the personal office of Representative Nick Smith (R-MI). He also served in Christie Todd Whitman's Washington office as an environmental analyst. Prior to that, he was with The Orkand Corporation as an energy consultant to the Energy Information Administration. He also was with the Heritage Foundation where he was assistant editor on the book *Free Market Energy*.

### **Dr. Kelly Sims Gallagher**

*Director, Energy Technology Innovation Project  
Harvard University*

Kelly Sims Gallagher is Director of the Energy Technology Innovation Policy (ETIP) research group at Harvard University's Belfer Center for Science and International Affairs and Adjunct Lecturer in the Kennedy School of Government. She has an M.A.L.D. and Ph.D. in International Affairs from the Fletcher School of Law and

Diplomacy at Tufts University and an A.B. in international affairs and environmental studies from Occidental College. She is an international member of the Task Force on Innovation for the China Council International Cooperation on Environment and Development. She speaks Spanish and basic Mandarin Chinese. She is the author of the book *China Shifts Gears: Automakers, Oil, Pollution, and Development* (available from The MIT Press). Her new book, *Acting in Time on Energy Policy*, will be published by Brookings Institution Press in April 2009.

### **Dr. Martin Hoffert**

*Professor Emeritus of Physics  
New York University*

Martin Hoffert is Professor Emeritus of Physics and former Chair of the Department of Applied Science at New York University.

He has published broadly in fluid mechanics, plasma physics, oceanography, planetary atmospheres, climatic change, solar and wind energy and space solar power. Most notably, he wrote the landmark 2002 article in the journal *Science* that concluded global warming mitigation was a clean energy research, development, demonstration and deployment problem, not primarily a regulation problem. He holds a B.S. in aeronautical engineering from the University of Michigan; an M.S. and Ph.D. in astronautics from the Polytechnic Institute of Brooklyn; and a Master of Arts in Liberal Studies from the New School for Social Research where he did graduate work in sociology and economics. He is a member of the American Geophysical Union (AGU), the American Institute of Aeronautics and Astronautics (AIAA) and was elected fellow of the American Association for the Advancement of Science (AAAS).

### **Revis W. James**

*Director, Energy Technology Assessment Center  
Electric Power Research Institute (EPRI)*

Revis James is Director of EPRI's Energy Technology Assessment Center where he focuses

on identifying strategic research and development priorities for the electric power industry. His current research activities include analysis of the potential for CO<sub>2</sub> emissions reductions from the U.S. electricity sector and assessment of the sensitivity of levelized costs of electricity to potential CO<sub>2</sub> emissions costs. He has been a lead author on several key EPRI public domain reports and analyses including *The Power to Reduce CO<sub>2</sub> Emissions: the Full Portfolio* and *Advancing the Efficiency of Electricity Utilization: “Prices to Devices”<sup>SM</sup>*. Mr. James joined EPRI in 1992 as a project manager in the Nuclear Sector. He initially managed research programs in instrumentation and controls, human performance and maintenance optimization in the nuclear sector. Subsequently, Mr. James managed the EPRI long-range strategic research program for several years. Most recently, he spent 2½ years in Paris, France developing a collaborative strategic research and development program with the R&D division of Electricité de France.

### **Michael Shepard**

*President*  
*E SOURCE*

Michael Shepard is president and a co-founder of E SOURCE, a Boulder, Colorado based firm that has provided technical and business intelligence to hundreds of electric and gas utilities, Fortune 500 corporate energy managers, government agencies and other players in the energy sector since 1987. The firm provides tools, research and client access to its experts in practice areas focused near the customer meter: assessing the latest in energy efficient technology, DSM program design and delivery, climate change policy and strategy and best practices in such utility functional areas as customer care, E-business, marketing, customer products and services, account management and communications.

In addition to his general executive role in the company, Mr. Shepard oversees the firm’s research and consulting activities with particular expertise in DSM programs, energy-efficient technology, emissions markets and climate change. He serves on the Advisory Board for Avista Utilities’ energy-efficiency program and chairs the

board of the Institute for Social and Environmental Transition, an international development organization focused on innovative energy and resource solutions for developing economies.

### **Kateri Callahan**

*President*  
*Alliance to Save Energy*

Kateri Callahan brings more than 20 years of experience in policy advocacy, fundraising, coalition building and organizational management to her position as the president of the Alliance to Save Energy, a non-government organization headquartered in Washington, D.C. whose mission is to advance energy efficiency worldwide to achieve a healthier economy, a cleaner environment and greater energy security. Under Ms. Callahan’s leadership, the Alliance conducts policy, communications, research, education and market transformation initiatives in the U.S. and more than a dozen other countries. She serves as the principal spokesperson for the Alliance and is a trusted source for credible information on energy efficiency and its role in addressing the environmental, economic and national security issues associated with the use of energy.

Ms. Callahan serves as the Co-Chair of The Keystone Center Energy Board and on the boards of the Business Council for Sustainable Energy and the Building Performance Institute. She also serves on an advisory council to the periodical *Better Homes and Gardens* and to the U.S. Chamber of Commerce 21st Century Energy Institute.

### **Takashi Hatchoji**

*Chief Environmental Strategy Officer*  
*Hitachi, Ltd*

Takashi Hatchoji was appointed CEnO (Chief Environmental Strategy Officer) and Adviser of Hitachi, Ltd. on December 1, 2007.

He graduated from Hitotsubashi University with a B.A. in Commerce in March 1970, and he joined Hitachi in April of that year. He has since held

various positions within Hitachi including General Manager of the Corporate Planning & Development Office; Executive General Manager of the Business Solution Systems Division; Corporate Officer, Administrative Officer, COO and CTO of the Information & Telecommunication Systems Group; General Manager of Legal and Communications; General Manager of Corporate Auditing; Vice President; and Executive Officer of Hitachi, Ltd. He has been Adviser of Hitachi, Ltd. since April 1, 2007.

### **Tom Stricker**

*Director-Corporate Manager  
Toyota Motor North America*

Tom Stricker is Director of Technical and Regulatory Affairs and Director of Energy and Environmental Research for Toyota Motor North America, Inc. Mr. Stricker is responsible for analyzing the impacts of energy and environmental policy on Toyota's future

powertrain development, overseeing Toyota's activities related to Corporate Average Fuel Economy (CAFE) and providing technical support for Toyota's federal legislative affairs.

Prior to joining Toyota in 2001, Mr. Stricker served as Senior

Products Associate at the American Petroleum Institute focusing on regulatory and policy issues for the fuels and refining industries. From 1989–2000, Mr. Stricker held various positions within the U.S. Environmental Protection Agency's mobile source emission program including compliance, regulation and policy development. In 1999, Mr. Stricker received the Gold Medal for Exceptional Service and a commendation from the U.S. Department of Justice. Mr. Stricker is a frequent speaker on Toyota's advanced technology strategy, energy and environmental policy, biofuels and fuel economy, and he has testified several times before Congress.

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<http://www.hitachi.us/climateforum2009>

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