

World Energy  
Outlook 2012



Workshop on  
**Fuelling  
the Future  
with Energy  
Efficiency**

Tokyo, Japan, 10 May 2012

Supported by :  **METI**  
Ministry of Economy, Trade and Industry



**IEA workshop on**  
**FUELLING THE FUTURE WITH ENERGY EFFICIENCY**  
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**BACKGROUND**

The *World Energy Outlook*, the IEA's flagship publication, presents a rigorous analytical framework for energy industry and policy makers by providing updated comprehensive energy projections by fuel, sector, region and scenario. Following on from previous special focuses on gas, renewable, this year's edition will include a special in-depth analysis on energy efficiency.

The most important contribution to reaching energy security and climate goals comes from energy efficiency, the energy that we do not consume. Improving energy efficiency is common energy agenda for all governments. However, in the year 2009 and 2010, for the first time, we see two consecutive years a worsening of energy efficiency globally. This implies that energy efficiency measures make a difference, but much more is required. In *World Energy Outlook's* central scenario (New Policies Scenario), energy efficiency needs to improve at a rate twice as high as that seen over the last two-and-a-half decades, stimulated by tighter standards across all sectors and a partial phase-out of subsidies to fossil fuels. To achieve more sustainable path in terms of climate change (450 Scenario), we need to achieve an even higher pace of change, with efficiency improvements accounting for half of the additional reduction in emissions.

Organized by the IEA and supported by the Ministry of Economy, Trade and Industry of Japan, the workshop aims to seek insight from high-level international experts in industry, government and academia on:

- Estimating potentials by sector.
- Policies to unlock the potential.
- Costs, benefits and mechanisms to realize gains.
- Strategies to scale up energy efficiency globally.

The meeting will be informal in nature and will be held under the Chatham House Rule, according to which participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed. Each session will be introduced by one or two invited renowned speakers, after which there will be roundtable discussions.

## ORGANISER

**International Energy Agency (IEA)**, was established in November 1974. Its primary mandate was – and is – two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply, and provide authoritative research and analysis on ways to ensure reliable, affordable and clean energy for its 28 member countries and beyond. The IEA carries out a comprehensive programme of energy co-operation among its member countries, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. To find out more about the IEA please visit <http://www.iea.org/>

**World Energy Outlook (WEO)**, the IEA's annual flagship publication, is an authoritative source of energy market analysis and projections, providing critical analytical insights into trends in energy demand and supply and what they mean for energy security, environmental protection and economic development. The WEO projections are used by the public and private sector as a framework on which they can base their policy-making, planning and investment decisions and to identify what needs to be done to arrive at a supportable and sustainable energy future. To find out more about the WEO please visit <http://www.worldenergyoutlook.org/>

## SUPPORTER

**Ministry of Economy, Trade and Industry (METI) of Japan**, namely the Agency for Natural Resources and Energy (ANRE) is responsible for comprehensive energy policies in Japan to ensure strategic energy security, realise an efficient energy supply and promote energy policies in harmony with the environment. It is also responsible for measures to promote the development of the economy and industry, such as enhancing the vitality of the private sector and facilitating economic relations with other countries. After the Great East Japan Earthquake and the TEPCO Fukushima Daiichi nuclear accident, Japanese Government is currently revising new Strategic Energy Plan from scratch, and plans to complete it around this summer 2012. Focal point of the discussion is the energy mix towards the future, including the role of nuclear, renewables and energy efficiency. To find out more about METI please visit <http://www.meti.go.jp/> .



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## AGENDA

### Wednesday 9 May

19:00-21:00 Pre-registration & buffet reception **hosted by Ambassador of Denmark to Japan, Mr. A. Carsten Damsgaard**

- Venue: Ambassador's residence, 29-6, Sarugaku-cho, Shibuya-ku, Tokyo (from Hotel New Otani to the residence, it may take up to 30 minutes on taxi, depending on the traffic.)
- If you have not registered for this event and plan to attend, it is imperative that you let us know (contact [shinichi.kihara@iea.org](mailto:shinichi.kihara@iea.org)). Participants already registered have received a separate invitation.

### Thursday 10 May

8:30 Registration and coffee

- Venue of the workshop: Banquet room Mai, on the Main Building Arcade Floor of the Hotel New Otani

9:00 Opening

- Welcome remarks: Mr. Hiroshi Asahi, Director General for Energy and Environmental Policy, **Ministry of Economy, Trade and Industry of Japan**
- Mr. Hans-Jorgen Koch, Deputy State Secretary, **Ministry of Climate, Energy and Buildings of Denmark**
- World Energy Outlook 2012 overview and scope of workshop:  
Dr. Fatih BIROL, Chief Economist, **IEA**

9:30 Session 1: Estimating potentials by sector

- Chair: Ms. Joan MacNaughton, President, **Energy Institute**
- Brief remarks: Mr. Emmanuel Lagarrigue, Senior Vice President, **Schneider Electric**
- Brief remarks: Mr. Somnath Bhattacharjee, Head of Indian Programs, **Institute for Industrial Productivity (IIP)**
- Brief remarks: Mr. Takayuki Kusajima, Project Manager, **Toyota Motor Corporation**
- Open discussion

10:45 Group photo

10:50      Coffee break

11:15      Session 2: Policies to unlock the potential

- Chair: Mr. Amit Bando, Executive Director, **IPEEC**
- Brief remarks: Dr. Hongwei Yang, Director of Energy Efficiency Center , **Energy Research Institute (ERI)**
- Brief remarks: Mr. Antonio Verde, **Ministry of Foreign Affairs, Italy**
- Brief remarks: Mr. Jeffrey Miller, **US Department of Energy**
- Open discussion

12:30      Buffet lunch

- Venue: Banquet room Sho, on the Main Building, Arcade Floor of the Hotel New Otani (next to the workshop venue)

14:00      Session 3: Costs, benefits and mechanisms to realise gains

- Chair: Dr. Josue Tanaka, Managing Director, Energy Efficiency & Climate Change, **EBRD**
- Brief remarks: Mr. Ashok Bhargava, Director, Energy Division of East Asia Department, **Asian Development Bank**
- Brief remarks: Ben Caldecott, **Climate Change Capital**
- Open discussion

15:30      Coffee break

16:00      Session 4: Strategies to scale up energy efficiency globally

- Chair: Mr. Hong Tat Chee, Chief Executive, **Energy Market Authority, Singapore**
- Brief remarks: Mr. Girish Sethi, Director - Industrial Energy Efficiency, **The Energy and Resources Institute (TERI)**
- Brief remarks: Dr. Anne Arquit Niederberger, Principal and Founding Owner, **Policy Solutions**
- Brief remarks: Mr. Binu Parthan, Principal, **Sustainable Energy Associates**
- Open discussion

17:30      Summary and conclusions

- Tour de table with recommendations for key topics and areas of study for consideration in the WEO-2012
- Concluding remarks by Dr Fatih Birol, **IEA**

18:30      cocktail reception

- Venue: Banquet room Sho, on the Main Building, Arcade Floor of the Hotel New Otani (next to the workshop venue)

## QUESTIONS TO BE ADDRESSED

### Session 1: Estimating potentials by sector

- What do we already know about the overall savings potentials by sector, fuel, and region and which are the most significant ones?
- How much increase in savings could we expect from the accelerated development of ultra-high efficiency technologies? What rate of learning is observed for high efficiency end-use technologies and processes? Are these stable and how might they be increased?
- What are the reasons that cost effective energy efficiency savings are often not realized through simple market forces? Do these reasons vary by sector, end-use or economy?
- To what extent do high energy price signal influence investment decisions for energy efficient facilities?

### Session 2: Policies to unlock the potential

- What energy efficiency policy was effective, while what policy was not?
- Can we replicate success to other regions?
- Do we need policies to address rebound effects as well as market barriers and failures? If so what form should these take?
- Is the design and implementation of energy efficiency policies adequately resourced to deliver the potential or is administrative and programmatic support capacity constraints a major hurdle to the effective realization of EE policies?

### Session 3: Costs, benefits and mechanisms to realise gains

- How can we maximize output in suboptimal policy context?
- How can we bring private investment into play?
- What kind of benefit cost ratios are currently observed from energy efficiency investments? (at societal, programmatic and end-user level) How do these vary by sector, region and end-use?
- What kind of policies and their associated delivery mechanisms produce the highest efficiency gains and can we rank them in terms of benefit cost ratios and costs of avoided pollutions?

### Session 4: Strategies to scale up energy efficiency globally

- There has been much greater focus on EE policies and measures in the last several years than was previously the case, yet in many regions and sectors the rate of EE improvement appears to have slowed down. What is the reason for this and what needs to happen to reverse the trend?
- Who needs to do what to deliver these potentials and how can critical actors who may currently be only weakly engaged in the delivery of EE be more fully engaged?
- What internationally coordinated action is needed to address EE globally?
- How can we make the High Efficiency Scenario real? How can we deploy the best available technology, and how can we replicate the best practice to the world?



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**AGENDA SPEAKERS**

Opening remarks:

Mr. Hiroshi Asahi, Director General for Energy and Environmental Policy, Ministry of Economy, Trade and Industry of Japan

*Mr. Hiroshi Asahi began working for the Ministry of International Trade and Industry (MITI), now known as the Ministry of Economy, Trade and Industry (METI) in 1982. Mr. Asahi has since worked in many energy related positions and offices including those for Petroleum Development Division, Power Reactor Development Division, Mineral and Natural Resources Division, and Standards and Conformity Assessment Policy Division. Mr. Asahi began as the Director-General for Energy and Environmental Policy in July 2010.*

Mr. Hans-Jorgen Koch, Deputy State Secretary, Ministry of Climate, Energy and Buildings of Denmark

*Mr. Hans-Jorgen Koch is the Deputy State Secretary of the Danish Energy Agency, Ministry of Climate, Energy and Building, and has been a leading voice in the energy policy of Denmark as well as in the international energy arena for more than thirty years. Prior to current position, he served as the Deputy State Secretary at Ministry of Transport and Energy (2005-2007), and the Ministry of Economic and Business Affairs. From 1994 to 2002 he held the position as Director of Energy Efficiency, Renewables, Technology and R&D at the International Energy Agency (IEA) in Paris. He served as Director General at Ministry of Energy between 1982 and 1994. Mr. Koch takes a leading role at the IEA as a long-time Governing Board member, chairman of the Renewable energy Technology Deployment, and chairman of Renewable Energy Working Party of the International Energy Agency (IEA).*

World Energy Outlook 2012 overview and scope of workshop:

Dr. Fatih BIROL, Chief Economist, IEA

*As the Chief Economist of the International Energy Agency, Dr. Birol has the responsibility for the organisation's economic analysis of energy and climate change policy. He Oversees the annual World Energy Outlook which is the flagship publication of the IEA and is recognised as the most authoritative source for energy analysis and projections. Also the founder and chair of the IEA Energy Business Council which brings together leaders of some of the*

*world's largest energy companies and policymakers to seek solutions to global energy challenges. He has been named by Forbes Magazine among the most powerful people in terms of influence on the world's energy scene. Dr. Birol is a member of the UN Secretary-General's 'High-level Group on Sustainable Energy for All' and the Chairman of the World Economic Forum's (Davos) Energy Advisory Board. Prior to joining the IEA in 1995, he worked for six years at the Organisation of the Petroleum Exporting Countries (OPEC) in Vienna.*

#### Session 1: Estimating potentials by sector

Chair: Ms. Joan MacNaughton, President, Energy Institute

*Joan MacNaughton has been an influential figure in the energy policy debate in a variety of roles. As Director General of Energy in the UK she led a major change programme and made a significant contribution to international energy policy, including overseeing the energy agenda during the UK Presidency of the EU and leading the work on the energy part of the climate change proposals agreed at the G8 Gleneagles Summit. From 2004 to 2006, she was elected Chair of the Governing Board of the International Energy Agency, overseeing the redefinition of the IEA's strategy and leading the emergency response to the supply disruption caused by Hurricane Katrina. From 2007 to 2012, Joan led Alstom's policy department and spearheaded the company's clean power advocacy. Joan has a degree in physics from the University of Warwick and is president of the Energy Institute, chair of the World Energy Council Policy Assessment and Vice Chair of the UN High Level Panel on the CDM Policy Dialogue.*

Brief remarks: Mr. Emmanuel Lagarrigue, Senior Vice President, Schneider Electric

*Emmanuel Lagarrigue is the Senior Vice-President Corporate Strategy of Schneider Electric since June 2010. Based in Europe until August of this year, he is now heading his team from Schneider Electric's Global Management Hub in Hong-Kong. Prior to his current assignment he has spent 17 years working for Schneider Electric in several countries in Western Europe and in South America, holding leadership positions in sales, marketing and general management. Emmanuel graduated from IESE Business School, Barcelona (Spain) and from ENSEIHT, Toulouse (France).*

Brief remarks: Mr. Somnath Bhattacharjee, Head of Indian Programs, Institute for Industrial Productivity (IIP)

*Somnath Bhattacharjee is presently heading the India program of Institute for Industrial Productivity, designed to help the industry and policy makers identify and implement best practices to achieve greater energy efficiency and productivity. Somnath is a Mechanical Engineer, having close to 30 years of professional experience. His principal interests are promotion of cleaner technologies, industrial energy conservation and management, internal combustion engines and prevention and control of pollution. Somnath started his career with Indian Institute of Petroleum, Dehradun, where he managed projects in the areas of efficient use of fuels and lubricants in internal combustion engines, engine emissions, and engine tribology. Later, as Director of the Energy Environment Technology Division at The Energy and Resources Institute (TERI), he was actively involved in promoting*



*diffusion of cleaner technologies in various end-use sectors. Prior to joining Institute for Industrial Productivity, Somnath was with Winrock International India as Vice President, guiding the work in the 'Energy and Environment' and 'Climate Change' divisions.*

Brief remarks: Mr. Takayuki Kusajima, Project Manager, Toyota Motor Corporation

*Mr. Kusajima is the Project Manager for the Energy Affairs Department since 2006. He has extensive experience in strategic planning and research activities related to energy area, including Research Division and Overseas Planning Division. He was also involved in policy making when he was dispatched to the Cabinet Office of Government of Japan. Mr. Kusajima holds Bachelor degree in Economics from University of Tokyo.*

## Session 2: Policies to unlock the potential

Chair: Mr. Amit Bando, Executive Director, IPEEC

*Amit Bando is Executive Director of the International Partnership for Energy Efficiency Cooperation (IPEEC) Secretariat. IPEEC operates out of its Paris headquarters to coordinate energy efficiency, renewable energy and climate change policies, regulations and standards among its member nations. Together, the fifteen IPEEC members account for over 80% of world energy usage. IPEEC is working with industry to promote rapid global deployment of energy efficient technologies, products and services. Mr. Bando has published extensively on the economic evaluation of environmental impacts and presented numerous workshops on investment finance and environmental management.*

Brief remarks: YANG Hongwei, Ph.D./Prof., Director of Energy Efficiency Center, Energy Research Institute (ERI)/ National Development and Reform Commission(NDRC), China.

*Dr. Yang Hongwei received Ph.D. degree from Tsinghua University in 1995. After teaching in Tsinghua University for 3 years, he joined ERI in 1998 and since then has been working on energy economics, energy systems analysis, energy efficiency and energy-related environmental policy studies. He has done extensive studies on energy policy integrated assessment, clean and low-carbon energy technology options, energy conservation and energy efficiency, optimization of energy mix, and mitigation of greenhouse gases and air pollutants. He has outstanding achievements on the relationship between global climate change and sustainable energy development that won several awards from NDRC, National Energy Bureau, and Ministry of Environmental Protection. He is a Chief Scientist for the National Basic Research Program of China (973 Program), a Council Member for the China Energy Research Society, and an IPCC Lead Author contributing to the award of the Nobel Peace Prize for 2007 to the IPCC.*

Brief remarks: Mr. Antonio Verde, Ministry of Foreign Affairs, Italy

*Mr. Antonio Verde is the Head of the Division for Energy, Environment and Sustainable Development of the Ministry of Foreign Affairs of Italy since 2010, and is actively involved in international energy arena. He developed his diplomatic career through stationing in Tokyo (1991-1996), Moscow (1996-1999), Sydney (2002-2006) and Strasbourg (Council of Europe - 2006-2010). He was also involved in policy building in IT strategies (2000) and development cooperation (2001-2002). Mr. Verde is a graduate in political science at the University for Oriental Studies of Napoli.*

Brief remarks: Mr. Jeffrey Miller, US Department of Energy

*Jeffrey Miller is the Energy Attaché at the United States Embassy Japan, and Director of the U.S. Department of Energy (DOE) Japan Office. In this connection, his primary responsibility is to sustain and enhance the bilateral and multilateral energy, security, science, and environmental programs and common interests between DOE and its Government of Japan, research community and industry counterparts. Jeffrey began his career in 1999 as a Presidential Management Fellow, a United States Government Honors Program. From 1999 – 2009, he worked at the United States Departments of Energy and State, focusing principally on nuclear energy, nuclear safety, and nuclear nonproliferation, and critical infrastructure protection. Prior to joining the DOE Japan Office in August 2011, Jeffrey worked for approximately 2.5 years for Battelle, at the Pacific Northwest National Laboratory. Jeffrey attended Muhlenberg College, which is located in Allentown, Pennsylvania. Following completion of his undergraduate studies, he received a law degree from the University of Maryland School of Law, and is licensed to practice law in the District of Columbia and the State of Maryland.*

### Session 3: Costs, benefits and mechanisms to realise gains

Chair: Dr. Josue Tanaka, Managing Director, Energy Efficiency & Climate Change, EBRD

*Josué Tanaka is responsible for the EBRD operational strategy and planning function and, since 2006, for leading its Energy Efficiency and Climate Change activities including the formulation and implementation of the Sustainable Energy Initiative. This initiative aims at scaling up energy efficiency and renewable energy financing in central and eastern Europe and is currently active in 27 countries with cumulative EBRD investments of €8.8 billion. Energy efficiency financing areas include large energy intensive industries, SMEs, buildings, transport systems and municipal infrastructure. The EBRD operates both with direct financing to companies and by supporting the development of energy efficiency financing by local banks. Prior to EBRD, Mr Tanaka worked at the World Bank where he was Special Assistant to the President and worked in different positions on strategic planning, tropical forest conservation and environmental financing matters. Mr Tanaka graduated from Princeton University with a Bachelor of Science in Engineering degree and holds a Master of Science and Ph.D. from the Massachusetts Institute of Technology.*

Brief remarks: Ben Caldecott, Climate Change Capital

*Ben Caldecott is Head of Policy, Advisory of the Climate Change Capital (CCC). He advises clients and funds on the development of policy-driven markets. He has worked on secondment at a senior level in the Strategy Directorate of the UK's Department of Energy & Climate Change and as a Sherpa to the Green Investment Bank Commission. Prior to joining CCC, Ben was a Research Director and Head of the Environment & Energy Unit at Policy Exchange. He has also worked for the United Nations Environment Programme and Foreign & Commonwealth Office. Ben read economics and specialised in development and China at London, Peking and Cambridge universities. He is a Fellow of the Royal Asiatic Society, Royal Geographical Society and LEAD International.*

Brief remarks: Mr. Ashok Bhargava, Director, Energy Division of East Asia Department, Asian Development Bank

*Ashok Bhargava is the Director of the Asian Development Bank's (ADB) Energy Division in the East Asia Department. He has more than 28 year of energy sector experience in the region, including past 8 years in the People's Republic of China (PRC). Mr. Bhargava oversees ADB's energy sector lending and non-lending activities in PRC and Mongolia. ADB activities in the PRC include support for demonstration of innovative low-carbon techniques—particularly new renewable such as offshore wind, concentrated solar power and smart grid; advanced clean coal especially IGCC and CCS—and to develop enabling policies and regulations such as emission trading platforms and incentive and regulatory framework for energy efficiency improvements.*

#### Session 4: Strategies to scale up energy efficiency globally

Chair: Mr. Hong Tat Chee, Chief Executive, Energy Market Authority, Singapore

*Served as Principal Private Secretary to Minister Mentor Lee Kuan Yew from 2008 to 2011. He was awarded the Public Administration Medal (Silver) in 2010. He joined the Administrative Service in 1998 for Ministry of Home Affairs. He was subsequently posted to strategic and planning positions at the Ministry of Finance (2000-2003), Ministry of Transport (2003-2005) and Ministry of Education (2006-2008). He holds Bachelor degree in Electrical Engineering & Computer Sciences and Economics from the University of California at Berkeley, and Masters of Business Administration from Adelaide University.*

Brief remarks: Mr. Girish Sethi, Director - Industrial Energy Efficiency, The Energy and Resources Institute (TERI)

*Mr Girish Sethi is the Director of Industrial Energy Efficiency Division at TERI, New Delhi, India. He is leading and managing the programme on promoting energy efficiency in the industrial sector, encompassing both large industries and Small and Medium Enterprises (SMEs). He has more than 25 years of experience in the field of energy conservation and environment improvement in the industrial sector and has been with TERI for the past 19 years. Aside of providing strategic direction and coordinating the activities related to industrial energy efficiency, he has lead multi-disciplinary research teams in action research projects involving development/ adaptation of energy efficient and environmentally benign technologies. Mr Sethi is presently managing a large program funded by a bilateral organization that focuses on holistic development of a few energy intensive small-scale industry sectors in India. He is also involved in matters related to inventorisation of corporate level GHG emissions and aspects related to transfer and promotion of low carbon energy technologies in the context of climate change. Mr Sethi is a Chemical Engineer with Masters in Energy Studies from IIT, New Delhi. He has also completed a multi-disciplinary Masters course on "Technology in the Tropics" from University of Applied Sciences, Cologne, Germany.*

Brief remarks: Dr. Anne Arquit Niederberger, Principal and Founding Owner, Policy Solutions

*Working as an independent consultant since 2001, Dr. Arquit Niederberger has spearheaded pioneering energy efficiency and carbon market partnerships, including TopTen USA, for which she currently serves on the Board of Directors; the Low-Carbon City China program;*

*and the Swiss Climate Cent, a voluntary scheme to offset transport sector emissions under which Swiss oil importers contributed roughly USD 1.2 billion through 2011 – including for building retrofits. She obtained approval for the first carbon quantification methodology for super-efficient appliances that relies on global benchmarking, as well as for the most widely used methodology for efficient lighting. Numerous demand-side efficiency programs and leading companies around the world have relied on her expertise and advice. During the 1990s, she was responsible for international climate and energy policy at the Swiss Federal Office of Environment and the State Secretariat for Economic Affairs, including negotiating the UNFCCC and introducing a Protocol on Energy Efficiency and Related Environmental Aspects into the Energy Charter negotiations.*

Brief remarks: Mr. Binu Parthan, Principal, Sustainable Energy Associates

*Parthan is the principal at Sustainable Energy Associates (SEA), a global consulting and advisory company, and has over 18 years of professional experience in financing, policy and technology aspects of low-carbon energy and climate change. Prior to SEA, he was the Deputy Director General for the Renewable Energy and Energy Efficiency Partnership (REEEP) and was also the executive director of IT Power India which he co-founded and lead the energy and environment practice. Parthan holds Masters degrees in Industrial-Mechanical engineering and Renewable Energy and is currently finishing a doctorate on low carbon energy technology. At REEEP, Parthan developed an oversaw responsible its global work programme involving over 150 low-carbon energy projects implemented in over 60 countries. While at IT Power India, as a consultant and expert Parthan had contributed to over 50 assignments for international agencies such as the World Bank, EU, UNDP, UNIDO, UN-DESA, UN-ESCAP, UNFCCC, WHO as well as bilateral development agencies such as DfID, KfW, DANIDA, as well as government, institutional, private and civil society clients in low-carbon energy, and climate change. His professional experience covers 12 countries including developing countries in Asia and Africa. Parthan has also authored or co-authored 7 books and 21 publications and papers apart from 45 professional reports.*