International Energy Agency

Ministry of Science and Technology
of the People's Republic of China

Experts' Group on R&D Priority-Setting and Evaluation (EGRD)

ENERGY TECHNOLOGY R&D NEEDS OF EMERGING ECONOMIES

WORKSHOP

28-29 November 2012

Hosted by the Ministry of Science and Technology
Tangla Hotel (Ruby Room, 3rd floor), 19, Fuxingmenwai Street, Chang'an Avenue
Beijing, PR China

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International Energy Agency

The International Energy Agency (IEA), an autonomous agency, was established in November 1974. Its mandate is two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply and to advise member countries on sound energy policy. The IEA carries out a comprehensive programme of energy co-operation among 28 advanced economies[1], each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. The Agency aims to:

- Secure member countries' access to reliable and ample supplies of all forms of energy; in particular, through maintaining effective emergency response capabilities in case of oil supply disruptions.
- Promote sustainable energy policies that spur economic growth and environmental protection in a global context – particularly in terms of reducing greenhouse-gas emissions that contribute to climate change.
- Improve transparency of international markets through collection and analysis of energy data.
- Support global collaboration on energy technology to secure future energy supplies and mitigate their environmental impact, including through improved energy efficiency and development and deployment of low-carbon technologies.
- Find solutions to global energy challenges through engagement and dialogue with non-member countries, industry, international organisations, and other stakeholders.

Energy Technology Network

The IEA Energy Technology Network (Technology Network) is an ever-expanding, co-operative group of more than 6,000 experts that support and encourage global technology collaboration. At the head of the Technology Network is the Committee on Energy Research and Technology (CERT). Made up of senior experts from IEA member countries, the CERT provides leadership and policy guidance based on expertise provided by four sectoral working parties and two cross-cutting experts' groups.

Experts' Group on R&D Priority-Setting and Evaluation

Research, development and deployment of innovative technologies is crucial to meeting future energy challenges. The capacity of countries to apply sound tools in developing effective national research and development (R&D) strategies and programmes is becoming increasingly important.

The IEA Experts' Group on R&D Priority-Setting and Evaluation (EGRD) was established by the IEA Committee on Energy Research and Technology (CERT) to promote development and refinement of analytical approaches to energy technology analysis, R&D priority-setting and assessment of benefits from R&D activities. Senior experts engaged in national and international R&D efforts collaborate on topical issues through international workshops, information exchange, networking, and outreach. Nineteen countries and the European Commission participate in the current programme of work.

The Ministry of Science and Technology of P. R. China

The Ministry of Science and Technology (MOST) of China is mainly responsible for formulating national strategies, plans and policies on scientific and technological development, administering National Research and Development Programs and funding various research projects (including basic research, high-tech R&D, generic technologies, research in the area of public welfare, and industrial application of scientific and technological advances), building a pro-innovation environment including R&D facilities and platforms, supporting innovation by small and medium-sized enterprises, and promoting international cooperation in science and technology.

[1] Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Korea (Republic of), Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States; The European Commission also participates in the work of the IEA.

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AGENDA

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Tangla Hotel (Ruby Room, 3rd floor), 19, Fuxingmenwai Street, Chang'an Avenue, Beijing, PR China

OPENING REMARKS			
9:00	**1**	*Mr. Chen Jiachang, Deputy Director-General, High-Tech. Development and Industrialization (MOST)* *Mr. Rob Kool, Manager, International Sustainable Development, NL Agency (Netherlands), Chair, Experts' Group on R&D Priority-setting and Evaluation*	
GLOBAL PERSPECTIVES ON EXISTING CLEAN ENERGY TECHNOLOGY R&D INVESTMENTS AND THE IMPORTANT ROLE OF EMERGING ECONOMIES			
9:20	**2**	**The Importance of Meeting Clean Energy R&D Needs of Emerging Economies**	*Mr. Peter Cunz, Senior Expert, Swiss Federal Office of Energy, Chair, IEA Committee on Energy Research and Technology*
9:50	**3**	**A Comparative Analysis of Clean Energy Technology Contexts and Challenges in the Region**	*Dr. Robert Marlay, Deputy Director, Climate Change Policy and Technology, Dept. of Energy (United States), Vice-Chair, EGRD*
10:15 Break			
COMPARATIVE ANALYSIS OF CLEAN ENERGY R&D *Moderator: Dr. Robert C. Marlay*			
10:45	**4**	**China**	*Mr. Zheng Fangneng, Director, Division of High and New Technology Development and Industrialization, Ministry of Science and Technology*
11:30	**5**	**Thailand**	*Dr. Twarath, Deputy Director-General, Department of Energy Development and Efficiency, Ministry of Energy, Thailand*
12:15	**6**	**Indonesia**	*Dr. Verina J. Wargadalam, Senior Researcher, New & Renewable Energy Technology, Ministry of Energy and Mineral Resources, Indonesia*
13:00 Lunch on 2nd floor at Café D'or			
COMPARATIVE ANALYSIS OF CLEAN ENERGY R&D (cont'd) *Moderator: Mr. Ruisheng Yue, Secretary General, International SSL Alliance*			
14:30	**7**	**Malaysia**	*Mr. Azhar Omar, Senior Director, Electricity Markets and Supply Regulation, Energy Commission, Malaysia*
15:15	**8**	**India**	*Mr. Ambuj Sagar, Dean, Alumni Affairs & International Programmes, Indian Institute of Technology*
16:00 Break			
16:30	**9**	**Singapore**	*Mr. Zhen-hui Eng, Deputy Director, Policy and Planning, Energy Planning and Development Division, Energy Management Authority*
17:15	**10**	**Session wrap-up**	*Dr. Marlay*
18:00 End Day 1			

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AGENDA

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Tangla Hotel (Ruby Room, 3rd floor), 19, Fuxingmenwai Street, Chang'an Avenue, Beijing, PR China

REGIONAL PERSPECTIVES: SELECTED OECD COUNTRIES *Moderator: Mr. Ludwig Vandermaelen*			
9:00	**11**	**Panel Discussion** *Dr. John Soderbaum, Director, Science and Technology, ACIL Tasman* *Mr. Eiichi Homma, Director General, International Projects, International Affairs Department, New Energy and Industrial Technology Development Organization, Japan* *Dr. Seungyoung Chung, Senior Researcher, Korea Institute of Energy Technology, Evaluation and Planning*	
10:30 Break			
REGIONAL PERSPECTIVES: INVESTORS *Moderator: Dr. Herbert Greisberger*			
11:00	**12**	**Panel Discussion** *Mr. Justin Wu, Head, Wind Industry Research, Bloomberg New Energy Finance* *Mr. Levien J. de Legé, Managing Director, ECN Asia* *Mr. David Hathaway, Vice President, China Operations, ICF International* *Mr. Weigang (Greg) Ye, Founding Managing Partner, Delta Capital*	
12:15 Lunch on 2nd floor at Café D'or			
REGIONAL PERSPECTIVES : SELECTED ORGANISATIONS *Moderator: Mr. Fu Yuan , Executive Secretary, International Solid State Lighting Alliance*			
13:15	**13**	**Technology Perspectives on Clean Energy R&D Needs of Emerging Economies**	*Dr. Jayant Sathaye, Lawrence Berkeley National Lab*
14:00	**14**	**Innovation and Clean Energy R&D Needs of Emerging Economies**	*Dr. Ambuj Sagar, Dean, Alumni Affairs & International Programmes, Indian Institute of Technology*
14:45	**15**	**Integrated Approaches to Energy Efficiency Technologies in China**	*Dr. He Ping, Programme Director, Industry, China Sustainable Energy Program*
15:30	**16**	**The Practice of Solid State Lighting & Renewable Energy in Emerging Economies**	*Mr. Fu Yuan, Executive secretary, International Solid State Lighting Alliance*
16:15	**17**	**Overview and Outlook of China's Agricultural Bioenergy Development**	*Ms. Zhao Lixin, Director, Institute of Energy and Environmental Protection, Chinese Academy of Agricultural Engineering, Ministry of Agriculture of China*

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ENERGY TECHNOLOGY R&D NEEDS OF EMERGING ECONOMIES

AGENDA

29 November 2012, cont'd

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KEY QUESTIONS *Moderator: Dr. Birte Holst-Jorgensen*			
17:00	**18**	**Discussion** 1. *What is the general economic mix and outlook for your country or region (e.g. natural resource endowments, export and import balances, or grid capacity)?* 2. *What are the important features of your current energy situation and long-term energy strategy?* 3. *What are the most important energy-related environmental concerns?* 4. *Do you have distinct urban and rural energy planning or infrastructure needs?* 5. *What role do you envision for innovation and advanced technology to help you meet your energy, economic, and environmental goals?* 6. *What do you see as key R&D gaps and opportunities, and investment priorities?* 7. *What model do you prefer for cooperative R&D with other countries?*	
17:45	**19**	**Key messages for the synthesis report**	*Moderator*
18:00	**20**	**Conclusions**	*Mr. Li Xin Director, Division of International Organizations and Conferences, Department of International Cooperation, Ministry of Science and Technology, P.R. China* *Mr. Rob Kool*
18:00 Meeting Close			

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ENERGY TECHNOLOGY R&D NEEDS OF EMERGING ECONOMIES

RATIONALE

IEA Member countries agree that future energy systems must meet rapidly growing needs for energy in an expanding global economy. The IEA *Energy Technology Perspectives 2012* indicates that, if trends continue, global energy demand and emissions of greenhouse gases may be expected to double by 2050, with an expected climate effect of 6 degrees C in warming. ETP 2012 indicates further that much of this growth is likely to arise from newly emerging economies and other countries of the developing world.

Twenty years ago the community of nations collectively agreed that practical paths to the future should rely on clean energy and avoid the most serious consequences of climate change. This was codified by the United Nations Framework Convention on Climate Change of 1992, since ratified by more than 190 countries. Its central goal remains as "stabilizing concentrations of greenhouse gases in the Earth's atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".[1] Apart from climate change, energy security, reliability, affordability, efficiency, and a host of more immediate energy-related environmental concerns loom large in future energy planning in all countries.

ETP 2012 takes a long-view of the energy and environmental challenges of the 21st Century. It outlines a critical role for technology and innovative solutions across a range of uncertainties. Most energy demand and environmental emissions over the course of this century will come from equipment and infrastructure not yet built — a circumstance that poses significant opportunities to improve efficiency, build out infrastructure and equipment in a sensible way, and reduce or eliminate future emissions.

The task of bringing forth practical technologies that are reliable, affordable and meet acceptable environmental constraints is too large for a just few countries, or even the entire R&D community. Today, technological innovation arises from many sources and many countries. A recent report suggests that more investment in energy R&D is accounted for by Brazil, Russia, India, Mexico, China, and South Africa than by all of the OECD countries combined.[2] Further some technological challenges faced by emerging and smaller economies are unique and shaped by local or regional circumstances.

The clean energy R&D needs of these emerging economies are not well understood and may be under-represented in the global R&D portfolio. Yet, technological innovation has the potential to transform the future of the global economy in fundamental ways that can address not just climate change concerns, but also energy security, air quality, and many energy-related economic, social and environmental concerns.

Scope

Under the auspices of the IEA, the Experts' Group on R&D Priority-Setting and Evaluation (EGRD), and in cooperation with the Ministry of Science and Technology of the People's Republic of China, this international workshop assesses the clean energy technology R&D needs of emerging economies. While many such needs may be well aligned with those of fully developed economies, there are unique situations regarding stage of development, modes of economic development, endowments of natural resources, quality of fuels, characterisation of demographics and urbanisation, cultural aspects of energy use, and other country-specific circumstances.

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It is likely that some of the needs for energy R&D of these economies will differ in significant and unique ways. This workshop will explore the drivers underlying energy demand in these economies, assess clean energy technology needs, gather insights on R&D investment priorities, discuss modalities for international science and technology cooperation, and summarise implications for both IEA and non-member country R&D portfolio planners and technology investors.

This workshop will focus on the economic regions and markets of Asia; other regions may be addressed in future meetings in line with the IEA Global Engagement Strategy. The agenda will bring forth a variety of viewpoints, including those from emerging economies, OECD countries in the region, business and economic development sectors knowledgeable of the region's energy technology needs, and scientists and technologists with expertise in innovation of setting specific to the region.

Expected Outcomes

It is envisioned that the EGRD workshop will strive for the following outcomes:

- Identify clean energy technology needs and R&D gaps and opportunities of emerging economies
- Identify drivers underlying energy demand in these countries and regions
- Characterize desired future energy systems, noting common and distinctive features
- Form insights on R&D investment priorities of emerging economies, individually, collectively
- Explore existing and preferred "modalities" for enhanced international S&T cooperation
- List implications for future IEA Member and partner country R&D portfolio planners

These outcomes and key messages emerging from the discussion will be summarized in a report of the proceedings.

Questions to be Addressed

1. *What is the general economic mix and outlook for your country or region? Please include: appropriate natural resource endowments, export and import balances, grid capacity, etc.?*
2. *What are the salient features of your energy situation and long-term energy strategy?*
3. *What are the most important energy-related environmental concerns?*
4. *Do you have distinct urban and rural energy planning or infrastructure needs?*
5. *What role do you envision for innovation and advanced technology to help you meet your energy, economic, and environmental goals?*
6. *What do you see as key R&D gaps and opportunities, and investment priorities?*
7. *What model do you prefer for cooperative R&D with other countries?*

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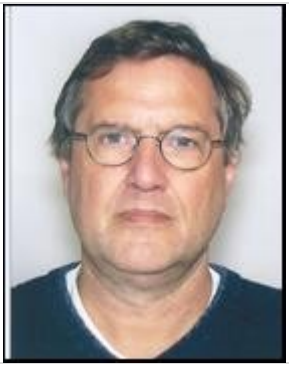
SPEAKERS AND MODERATORS



Dr. Rob Kool, Chair of the IEA Experts' Group on R&D Priority Setting and Evaluation, is Manager of Energy and Climate Cooperation Europe for NL Agency, the Innovation and Sustainability ? of the Netherlands. Rob has over 30 years of experience with a broad range of topics in the energy field such as municipal energy policy, design of new efficient suburbs, district heating, build environment, joint implementation, CDM and leading international co-operation projects. Rob holds leadership roles in many international fora, including the association of European Energy Agencies (EnR), vice-president of the European Council for Energy Efficiency, and vice-chair for the Demand-Side Management Implementing Agreement. Rob holds a business degree from the Netherlands Business School, and a PhD in biology (University of Utrecht).

Mr. Peter Cunz, Senior Expert and Delegate for international affairs of the Swiss Federal Office of Energy, began his career as an engineering consultant for hydro and thermal power stations, electric networks, dams for irrigation and power, large buildings and telecommunication in the Middle East and Africa. He was Director-General of Electrowatt (Nigeria) and held managerial positions at Alcatel and Bull (Switzerland). He also leads the national promotion of energy efficiency for the Swiss Federal Government. He also chairs the IEA Committee on Energy Research and Technology. Mr. Cunz is a certified Electrical Engineer and holds an MSc from the Swiss Federal Institute of Technology.

Dr. Robert C. Marlay is the Director of the Office of Climate Change Policy and Technology in the Office of Policy and International Affairs at the U.S. Department of Energy. Mr. Marlay has more than 30 years experience in the areas of national security, energy policy, science policy, and management of research and development programs. Earlier, he served as Director of the Office of Science and Technology Policy. He has also held leadership positions in the Offices of Science, Energy Efficiency and Renewable Energy, and in the Federal Energy Administration. Mr. Marlay holds a BSE from Duke University, as well as two Master's degrees and a PhD from the Massachusetts Institute of Technology.

Dr. Ambuj Sagar is the Vipula and Mahesh Chaturvedi Professor of Policy Studies and the Dean of Alumni Affairs & International Programs at the Indian Institute of Technology Delhi. While his current research focuses mainly on energy innovation and climate policy, he also studies, more broadly, various facets of technology innovation, environmental policy and politics, and engineering education and research. Dr. Sagar is a member of the US-India Track-II Dialog on Climate and Energy, a Board member of the US-India Educational Foundation and was a member of the Indian Planning Commission's Expert Committee on a Low-Carbon Strategy for Inclusive Growth. Dr. Sagar holds a B.Tech. Mechanical Engineering from IIT Delhi, an M.S. in Aerospace Engineering from the University of Michigan, an M.S. in Materials Science, a Ph.D in Polymer Science, and an M.S. in Technology and Policy from the Massachusetts Institute of Technology.

Dr. Verina J. Wargadalam, Senior Researcher at the R&D Center for Electricity Technology, New and Renewable Energy, and Energy Conservation, Ministry of Energy and Mineral Resources, Republic of Indonesia, with research interests in process and system design of renewable energy technologies. Currently she is a member of the Scientific Board at The Agency of R&D for Energy and Mineral Resources. She was a research fellow at Tohoku University, Japan, and she also had experience as team leader of the Country Coordinator for EU-ASEAN Cogen3 project. She holds a Ph.D in Chemical Engineering (*Technische Universität Wien,* Austria)**.**

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Mr. Ruisheng Yue, Secretary General of the International Solid State Lighting Alliance, was previously the Executive Deputy Director of National Project Office of China-EU Biodiversity Project (EUR30 million grants) between 2009-2011, the Director of National Project Office of GEF the Yangtze River Flood Project, the Director of National Project Office of GEF Household Air Conditioners Efficiency and Energy Conservation Project and the Director of National Project Office of GEF Biodiversity Partnership Project. Mr. Yue had been in charge of international environmental conventions negotiation and daily cooperation with related international organisations and regional environmental cooperation mechanisms since 1996, including cooperation on implementing the aforementioned treaties in China with UNEP, UNDP and UNIDO and other international organisations. Mr. Yue holds a MS in Environmental Science (Peking University).

Mr. Azhar Bin Omar, Senior Director, Energy Commission, Ministry of Energy Green Technology and Water, leads the electricity supply and market regulation focusing on areas of optimum supply and adequate capacity to meet demand; security, reliability and quality of supply and services; promotion of efficiency, transparency and fair play in the electricity supply industry; and working to ensure reasonable and affordable energy pricing, and licensing electricity supply activities. With more than 28 years experience in regulatory issues, he played an important role in electricity industry reform including incentive-based regulation, ring-fencing of single buyer and grid system operator and competitive bidding for new capacity procurement. He is the Chair for the Industrial Standard Committee for Generation, Transmission and Distribution and Chair of the Distribution Code Committee. He holds a B.Sc (Hon) in Electrical and Electronic Engineering from University College Cardiff, Wales.

Dr. Twarath Sutabutr is the Deputy Director-General, Department of Alternative Energy Development and Efficiency, Ministry of Energy, Thailand. He has more than 10 years experience in a wide range of energy policy coordination initiatives including renewable energy, nuclear power and strategic plan for communication. He began his energy career as Director of Policy and Strategy Co-ordination working also with the National Economic and Social Development Board in Energy Infrastructure Development Planning. He was also involved in Liberalization of Electricity and Natural Gas Sectors, giving him a strong relationship with major Thai energy players. He was awarded an "Outstanding Civil Service" award in 2003, the first officer from the Ministry of Energy to receive such an honour. Dr. Twarath holds a Doctor of Science degree in Civil and Environmental Engineering from Massachusetts Institute of Technology (MIT).

Mr. Eng Zhen-Hui is Deputy Director, at the Energy Market Authority's Policy and Planning Department where he is involved in developing policies and plans to meet Singapore's energy demands in a cost-competititve and environmentally sustainable manner. This includes applying strategic foresight to scan and develop features that can improve efficiencies in the electricity market, including the study of fuel mix policies, facilitating greater entry of renewable generation in Singapore's electricity market, and implementing Demand Response in Singapore. Mr. Eng has a Diplom-Ingenieur Degree in Mechanical Engineering from the Technische Universität München, Germany.

Mr. Ludwig Vandermaelen is a Policy Advisor, Federal Public Service for Economy, Energy and Small and Medium-sized Enterprises of Belgium. He is the Belgian Delegate to the IEA Committee on Energy Research and Technology (CERT), CERT Network Liaison Officer to the EGRD, and Secretary of CONCERE-ENOVER, the consultative committee between the Belgian Federal and Regional Energy Administrations and Ministerial Cabinets. CONCERE-ENOVER determines by consensus the Belgian position in energy matters to debate at European or International level; and with its 22 working groups it oversees the transposition of European law into Belgian legislation. CONCERE-ENOVER is particularly involved in promoting energy efficiency and renewable energy sources. Mr. Vandermaelen also coordinates the Belgian participation in IEA Implementing Agreements. He holds an MSc in Economics (University of Leuven).

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Dr. John Söderbaum is the Director Science and Technology for the Australian consulting firm ACIL Tasman. He is the Deputy Chair of the Australian Academy of Technological Sciences and Engineering (ATSE) Energy Forum. John has over 30 years of experience in the energy sector. He has worked for governments, the private sector and the IEA on a wide range of policy and regulatory issues related to the supply and use of energy. His work has a particular focus on R&D and innovation in the energy sector. He was the co-chair of the International Energy Agency's then Ad Hoc Group on Science and Energy Technologies and a member of the IEA Experts' Group on Science and Energy (EGSE). Dr Söderbaum has a B.Sc. with first class honours (University of Western Australia) and a Ph.D in Nuclear Physics (Australian National University).

Mr. Eiichi Homma is the Director-General for International Projects at the New Energy and Industrial Technology Development Organization (NEDO). He is in charge of energy technology projects in the Asia-Pacific region. Mr. Homma has experience on policy planning for clean coal technology through his appointment at the Agency for Natural Resources and Energy in Japan. Mr. Homma has also served as a Consulting Fellow at the Research Institute of Economy, Trade & Industry (RIETI). Mr. Homma holds a degree in marketing from Doshisha University in Kyoto.

Dr. Seung-young Chung is a Senior Researcher of R&D Strategy Planning Division at the Korea Institute of Energy Technology Evaluation and Planning, an R&D funding agency under the Ministry of Knowledge Economy. He has 15 years experience in energy technology R&D planning and management, international cooperation and policy planning. Recently, he lead the projects of '2nd National Energy Technology R&D Plan(2011)' and 'National Green Technology Strategy Roadmap(2011)'. Before he joined the KETEP in 2009, he worked for the Korea Energy Management Corporation where he managed renewable energy R&D projects and coordinated multilateral cooperation with international organizations such as IEA REWP, IPHE, Asia Pacific Partnership for Clean Development & Climate Renewable Energy & Distributed Generation TF. He holds a Ph.D in Chemical Engineering (Inha University).

Dr. Herbert Greisberger is the Managing Director of the Lower Austrian Energy and Environment Agency where his projects focus on energy and innovation with a special focus on sustainable buildings and renewables. Mr. Greisberger is also scientific manager of the Austrian Futurelab focusing on long-term developments and their consequences for society. Dr. Greisberger was formerly the senior scientist on R&D, innovation and energy technologies for the Austrian Energy Agency and the Austrian Society for Environment and Technology. Mr. Greisberger is also a lecturer at the Institute for Research and Education focussing on energy economy and energy management. Mr. Greisberger studied economics (University of Graz and Vienna) and holds a PhD (University of Stuttgart).

Mr. Justin Wu is Head of Wind Industry Research at Bloomberg New Energy Finance, the world's leading provider of industry information and analysis to investors, corporations and governments in clean energy. He leads a global team of analysts responsible for producing and communicating research and analysis on the economics, policy, and strategic dynamics of the wind industry. Based in Hong Kong, Previously Mr. Wu the lead Asia wind analyst, where he produced market research and consulting projects for the wind energy sector in China, Korea, Japan and Southeast Asia. He is a specialist in Chinese wind policy, the turbine manufacturing industry and US-China clean energy trade issues. Mr. Wu holds an MS in Politics, School of Oriental and African Studies (University of London) and a BS in International Politics and Economics (Georgetown University's Edmund A. Walsh School of Foreign Service).

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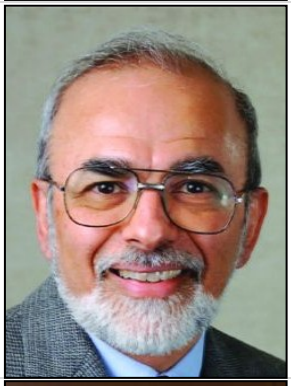
Mr. Levien de Legé joined the Energy Research Center of the Netherlands (ECN) four years ago to set up the business development department for solar energy technologies with the main focus being on technology transfer, licensing and consultancy to Asian PV manufacturers, providing active market feedback for ECN's R&D programme. Later this same strategy was copied for wind energy and biomass technologies, resulting in the establishment of ECN's Chinese subsidiary of which he is now Managing Director. Mr. de Legé has a Master's degree in Chemical Engineering from Delft University in the Netherlands.

Mr. David Hathaway is Vice-President and Managing Director for ICF International (China) where he oversees six offices in Asia-Pacific covering energy, power markets, aviation, building and industrial energy efficiency, low-carbon cities, infrastructure development, and carbon markets Key clients he has served in Asia include Nike, Blackstone, Hilton Asia-Pacific, US Green Buildings Council, US Agency for International Development, US Department of Energy, MIT, China National Development and Reform Commission, China Ministry of Housing and Urban-Rural Development, Beijing Airport, and Tsinghua University. He is a public policy specialist with 19 years of experience supporting international energy, program evaluation, and environmental technology transfer work, principally in the Asia-Pacific region. Mr. Hathaway has a Master's Degree in Public Policy (London School of Economics) and studied at Peking University and Nanjing University.

Mr. Weigang (Greg) Ye, founding partner of Delta Capital, an emerging private equity management platform specialising in early growth equity investments in China, focusing on sectors such as cleantech, high-margin manufacturing, consumer and information technology with total assets of RMB 3 billion. He has more than 15 years of experience in private equity, entrepreneurship, corporate management and consulting. Previously he was a managing partner, Shanghai NewMargin Ventures where he led the investment activities in the cleantech, high-margin manufacturing and IT sectors. He lectures at Shanghai Jiao Tong University and Tsinghua University on private equity related courses. He graduated in Electrical Engineering and Industrial Engineering (Shanghai Jiao Tong University), earned an MBA (Harvard University), and holds both CPA and CMA certificates.



Dr. Jayant A. Sathaye is a Senior Scientist and a Founder of the International Energy Studies Group at the Lawrence Berkeley National Laboratory, Berkeley, California. Dr. Sathaye has more than 40 years experience in the research, modelling and policy analysis of energy efficiency standards and labels and financial incentive programs, assessment of cool roofs, and development of global and country-specific models for the evaluation of costs and climate mitigation potential options in India and other major developing countries. Dr. Sathaye was a primary contributor to the 2007 Intergovernmental Panel on Climate Change (IPCC) Nobel Prize. He holds a B.Tech (Hons.) degree from the Indian Institute of Technology, Bombay and a Ph.D in Environmental Engineering from the University of California, Irvine.

Dr. HE Ping is the Industry Program Director of the Energy Foundation, supporting the development of long-term strategies for industrial energy efficiency, the improvement of energy efficiency of key energy intensive enterprises, the development and implementation of energy efficiency standards. Prior to the Energy Foundation, he worked as Energy Portfolio Manger of the United Nations Development Programme (UNDP) China for ten years, providing policy advice on energy to UNDP, and on environmental change and the energy sector to the Chinese government. Between 1990 and 1998 he worked and studied in Europe and Africa. Dr. Ping is a member of the Board of Directors of the China Energy Conservation Association (CECA) and Vice Chairman of the China University of Industrial Energy Efficiency (UAIEE). HE Ping holds a PhD in Environment (Peking University).

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Mr. Yuan Fu is executive secretary to International Solid State Lighting Alliance (ISA), a worldwide leading alliance of regional NGOs and associations, renowned universities and institutions and leading companies in the SSL field, with the mission to enhance public-private partnership and strengthen global cooperation on solid state lighting development. Mr. Fu has extensive experience in SSL industry research, industry chain analysis, SSL energy efficiency impact analysis, market demand analysis, industry competitiveness assessment and customized ad hoc industry research for leading enterprises and innovative SMEs. Mr. Fu has deep understanding of the international SSL industry development status, technology trends, industry policies and industry IPR strategies. Mr. Fu holds an MS in Materials Engineering (University of Cincinnati), and a BS in Chemistry (Peking University).

Dr. Birte Holst Jørgensen, Deputy Director, Management Engineering, Danish Technical University, is an experienced researcher and practitioner in new energy technologies and systems, specialising in energy R&D strategies and technology policies at national, European and international level. Dr. Jørgensen holds leadership positions in research and expert bodies (Chair, Strategic Research Council Programme Committee for Transport and Infrastructure; Member of the Research Council of Norway programme, and Principal Coordinator, Sino-Danish Centre for Research and Education Programme for Sustainable Energy, the Danish Ministry of Science, Technology and Innovation, the University of the Chinese Academy of Sciences and the Chinese Academy of Sciences). Dr. Jorgensen holds an M.Sc. in Business Economics (Copenhagen Business School) and a Ph.D in Political Science (University of Copenhagen).

Dr. Lixin Zhao, is a professor and director of the Institute of Energy and Environmental Protection (IEEP), Chinese Academy of Agricultural Engineering (CAAE), Ministry of Agriculture, China. She has more than 20 years experience in the renewable energy field. In recent years, Lixin Zhao has done pioneering work in the field of biomass energy technology R&D and policy research in China. As a leading scientist, she has directed and completed 23 national, provincial and ministerial level research projects; presided over large-sized biogas projects; attended 6 international cooperation project research, published over 40 research papers and other academic reports, and gained 11 national invention patents. She holds a Ph.D. in Energy Engineering (Politecnico di Torino, Italy).

Ms. Carrie Pottinger, Programme Manager for the Technology R&D Networks at the IEA, oversees the over 40 IEA multilateral technology initiatives (Implementing Agreements). With more than 20 years cumulative energy knowledge and analysis, particularly in the areas of energy statistics, energy policies and technology and R&D, she serves as Secretary to the IEA Experts' Group on R&D Priority-Setting and Evaluation, the Fusion Power Co-ordinating Committee, and carries out national R&D policy reviews and national R&D co-ordination efforts. Ms. Pottinger holds a degree in Communications (University of Washington) and has studied economics, data analysis and price forecasting.

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NOTES

Participating Organisations

International Energy Agency (IEA) www.iea.org

Government Agencies

Belgium: Federal Public Service for Economy, SMEs, Self-Employed and Energy http://economie.fgov.be
P.R. China: Ministry of Science and Technology www.most.gov.cn/eng/
India: Indian Institute of Technology www.iitd.ac.in
Indonesia: Ministry of Energy and Mineral Resources www.esdm.go.id/index-en.html
Japan: New Energy and Industrial Technology Development Organization www.nedo.go.jp/english/
Korea: Korean Institute of Energy Technology Evaluation and Planning www.ketep.re.kr
Malaysia: Energy Commission www.st.gov.my/v4/index.php
Netherlands: NL Agency www.nlagency.nl
Philippines: Department of Energy www.doe.gov.ph/
Singapore: Energy Management Authority www.ema.gov.sg/
Switzerland: Swiss Federal Office of Energy www.bfe.admin.ch
Thailand: Ministry of Energy www.energy.go.th/?q=en/
United States: Department of Energy www.energy.gov

Private Entities

ACIL Tasman www.aciltasman.com.au/
Asian Development Bank www.adb.org/
Bloomberg New Energy Finance www.bnef.com/
China Sustainable Energy Program www.efchina.org/
ECN Asia www.ecn.nl/home/
ICF International www.icfi.com/
International Solid-State Lighting Alliance http://isa-world.org/

Research and Academia

Lawrence Berkeley National Lab www.lbl.gov/
Technical University of Denmark www.dtu.dk

For further information

IEA Experts' Group on R&D Priority-Setting and Evaluation www.iea.org/about/experts.asp
IEA Clean Energy Technologies www.iea.org/topics/cleanenergytechnologies/
IEA Energy Technology Perspectives www.iea.org/etp/
IEA Technology Roadmaps www.iea.org/roadmaps/
IEA Multilateral Technology Initiatives
www.iea.org/publications/freepublications/publication/technology_initiatives-1.pdf
IEA OPEN Bulletin newsletter
www.iea.org/topics/cleanenergytechnologies/openenergytechnologybulletin/#d.en.8362

Presentations from this workshop for which waivers have been received will be posted on the IEA website http://www.iea.org/newsroomandevents/workshops/.

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