



DIREC 2010 Bulletin

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A Daily Report of the Delhi International Renewable Energy Conference 2010
Published by the International Institute for Sustainable Development (IISD) in collaboration with the Ministry of New and Renewable Energy, Government of India

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DIREC 2010

DIREC 2010 HIGHLIGHTS: WEDNESDAY, 27 OCTOBER 2010

The Delhi International Renewable Energy Conference (DIREC 2010) opened on Wednesday in New Delhi, India. Convened by the Indian Ministry of New and Renewable Energy, DIREC 2010 is the fourth in a series of conferences on international renewable energy. DIREC will provide a forum for discussing, *inter alia*, scaling-up renewables, mobilizing finance for innovation and deployment, and the benefits of collaboration and knowledge sharing at the international level.



Enormous banners adorned the outside of the conference center

In the morning, participants convened in plenary sessions on: the journey from Johannesburg to Delhi; scaling-up renewables for energy security, climate change and economic development; the road to Cancun; the green economy and the role of renewables; and Vision 2020 – the role of renewables for energy security, climate change and economic development. In the afternoon, three parallel sessions including ministerial and multi-stakeholder discussions, and a CEO roundtable were followed by a joint ministerial-multi-stakeholder-CEO “straight talk.”

MAIN CONFERENCE



Farooq Abdullah, Union Minister for New and Renewable Energy, India

OPENING CEREMONY

Farooq Abdullah, Union Minister, New and Renewable Energy, India, welcomed delegates to New Delhi and emphasized that international cooperation in renewable energy research and development is essential to accelerate the development of solutions to meet the world’s increasing demand for affordable, non-polluting, renewable energy.

JOURNEY FROM JOHANNESBURG TO DELHI: In the morning, Michael Eckhart, President, American Council on Renewable Energy (ACORE), moderated a panel on the International Renewable Energy Conference (IREC) concept and process, during which a moment of silence was held in honor of Hermann Scheer. Eckhart emphasized Scheer’s immense contribution to renewable energy and in establishing the European Association for Renewable Energy, World Council for Renewable Energy (WCRE), International Renewable Energy Agency (IRENA) and IREC conferences.

Jürgen Becker, State Secretary, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany, said renewable energy is important for tackling climate change challenges and ensuring energy access and security. Underscoring that global investment in renewables has increased five-fold since 2004 and that 83 countries now have national policies, he said the Global Climate Partnership Fund can further enable partnerships between banks in developed and developing countries.

The *DIREC 2010 Bulletin* is a publication of the International Institute for Sustainable Development (IISD) <info@iisd.ca>, publishers of the *Earth Negotiations Bulletin* © <enb@iisd.org>. This issue was written and edited by Aaron Leopold, Jonathan Manley, Anna Schulz, Andrey Vavilov, Ph.D., and Liz Willetts. The Editor is Mark Schulman <mark@iisd.org>. The Director of IISD Reporting Services is Langston James “Kimo” Goree VI <kimo@iisd.org>. Funding for coverage of this meeting has been provided by the Ministry of New and Renewable Energy, Government of India. IISD can be contacted at 161 Portage Avenue East, 6th Floor, Winnipeg, Manitoba R3B 0Y4, Canada; tel: +1-204-958-7700; fax: +1-204-958-7710. The opinions expressed in the *Bulletin* are those of the authors and do not necessarily reflect the views of IISD. Excerpts from the *Bulletin* may be used in other publications with appropriate academic citation. Electronic versions of the *Bulletin* are sent to e-mail distribution lists (in HTML and PDF format) and can be found on the Linkages WWW-server at <<http://www.iisd.ca/>>. For information on the *Bulletin*, including requests to provide reporting services, contact the Director of IISD Reporting Services at <kimo@iisd.org>, +1-646-536-7556 or 300 East 56th St., 11A, New York, New York 10022, United States of America. The IISD team at DIREC 2010 can be contacted by e-mail at <anna@iisd.org>.



Deepak Gupta, Secretary, MNRE, India

Kadri Nassiep, CEO, South African National Energy Research Institute (SANERI), recalled South Africa's pledge to generate 4% of their energy from renewable sources by 2013 and called attention to the role of women and rural revitalization.

Liu Qi, Vice Chairman, China National Development and Reform Commission and National Energy Administration, said that renewable energy represents an important

choice for humanity, called for an international roadmap for developing renewable energy according to countries' conditions and resources, and stressed the role of education and training.

Describing US legislation on clean and renewable energy, Arun Majumdar, Director, Advanced Research Projects Agency-Energy (ARPA-E), US Department of Energy, stressed the role of innovative solutions and basic science, and highlighted the ARPA-E-sponsored energy innovation summit to be held in February-March 2011 in the US.

THE DIREC THEME: UP-SCALING AND MAINSTREAMING RENEWABLES FOR ENERGY SECURITY, CLIMATE CHANGE AND ECONOMIC DEVELOPMENT: Mohamed El-Ashry, Chairman, Renewable Energy Policy Network for the 21st Century (REN21), highlighted the progress made in renewable energy since the Washington IREC in 2008, emphasizing recent increased political commitment to renewables from both developed and developing countries. El-Ashry noted that, despite the economic recession, renewables growth will continue to be driven by climate change and the need for energy security and energy access, and called on delegates to radically change the world's energy system for the sake of future generations.

Deepak Gupta, Secretary, Ministry of New and Renewable Energy (MNRE), India, urged government agencies and stakeholders to sign the Delhi International Action Program, and to pledge commitments for renewable energy, noting total commitments pledged are an indication of DIREC's success.

ROAD TO CANCUN: Kandeh Yumkella, Director General, UN Industrial Development Organization (UNIDO), said neither climate change nor meeting the Millennium Development Goals (MDGs) can be solved without an energy

revolution. He listed universal energy access and a 40% reduction in energy intensity by 2030, by doubling energy efficiency, as two universal goals.

Rajendra Pachauri, Chair, Intergovernmental Panel on Climate Change (IPCC), said setting an appropriate price for carbon and focusing on adaptation and impacts to human health are

important policy areas for the 16th session of the Conference of the Parties (COP16) of the UN Framework Convention on Climate Change (UNFCCC). He cited the co-benefits of using renewables including energy security and access, reduced air pollution, and higher agricultural productivity and employment.

GREEN ECONOMY AND THE ROLE OF

RENEWABLES: Maud Olofsson, Minister for Energy and Enterprise, Sweden, shared her country's experience in dramatically raising the share of renewable energy using economic instruments. She underscored the goal of freeing transport from the consumption of fossil fuel.

Sylvie Lemmet, Director, Division of Technology, Industry and Economics, UN Environment Programme (UNEP), highlighted their green economy initiative. She said a UNEP report covering, *inter alia*, the role of investment in renewable energy and helping the private sector compensate for additional costs will be released in February 2011.

Montek Singh Ahluwalia, Deputy Chairman, Planning Commission, India, noted that the need for new and renewable energy has increased due to India's growing reliance on petroleum and coal imports. Ahluwalia underscored India's energy plans, including: reducing the emissions intensity of its economy by 20-25%; taking advantage of abundant solar resources; and providing 500 gigawatts of clean energy through thorium-based nuclear energy by 2050.

VISION 2020 - ROLE OF RENEWABLES FOR ENERGY SECURITY, CLIMATE CHANGE AND ECONOMIC DEVELOPMENT:

Moderator Shyam Saran, former Special Envoy to the Prime Minister on Climate Change, India, emphasized the need to focus on what must be done in the short time period prior to 2020. Roberto Menia, Minister of State, Ministry of Environment, Land and Sea, Italy, said that the 450ppm target

outlined in the International Energy Agency (IEA) World Energy Outlook 2009 requires investment of US\$ 5 trillion between 2010 and 2030, noting in particular the importance of investment in capacity and research and development. He said that Italy expects that renewables will meet 60% of gross internal consumption by 2020.

Arthouros Zervos, President, European Wind Energy Association (EWEA), said that renewables will be the foundation of future energy systems and expressed optimism on the development of a global renewable energy target. He said recent expansion of the sector has exceeded expectations and noted the sector is cost-effective in the long-term.

A.S. Sambo, Director General, Energy Commission of Nigeria, emphasized the challenges of energy poverty and the need for financing, and called for strengthening policy and modernizing the regulation frameworks for the energy sector.

Richard Jones, Deputy Executive Director, IEA, called for defining "sustainable energy" and named several important goals, including: improving energy efficiency; decarbonizing



Kandeh Yumkella, Director General, UNIDO



Montek Singh Ahluwalia, Deputy Chairman, Planning Commission, India



The dais observing a moment of silence for the recently departed renewable energy icon, Hermann Scheer

the power industry; investing in smart grids and long distance transmission; and establishing predictable and transparent incentives.

PARALLEL SESSIONS

In the afternoon, three parallel sessions provided separate forums for Ministers, Multi-Stakeholders and CEOs to discuss renewable energy from their perspectives.

Ministerial Discussion: Vikram Chandra, CEO, NDTV, facilitated a panel session amongst energy ministers from Iceland, Mauritius, Japan, Iran, Portugal, India, the US, Finland, Uganda, Norway, Spain, Scotland, Bangladesh, Bhutan, Sri Lanka and a representative of the Asian Development Bank (ADB). Panelists discussed challenges to global action on energy, options for quick solutions and whether technology can enable renewables to dominate the energy industry. Several ministers emphasized the need for cooperation and collaboration among sectors and across borders but they differed in their optimism on growth in renewables.

Hiroshi Asahi, Director General, Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry, Japan, said optimizing competition was the way forward. Others, including Suresh Kumar, Assistant Secretary, US Department of Commerce, and Jim Mather, Minister for Enterprise, Energy and Tourism, Scotland, UK, said the quest for energy independence could, but should not, impede knowledge sharing and development of international cooperation. Some including Pedro Luis Marin Uribe, Secretary for Energy, Ministry of Industry, Tourism and Trade, Spain, Ahmed Rashid Beebeejaun, Deputy Prime Minister, Minister of Energy and Public Utilities, Mauritius, and Farooq Abdullah, Union Minister for New and Renewable Energy,

India, also underscored the restrictive costs of technology. Lyonpo Khandu Wangchuk, Minister of Economic Affairs, Bhutan, and Paavo Väyrynen, Minister of Foreign Trade and Development, Ministry of Foreign Affairs, Finland, raised the importance of synergies between the energy industry and sustainable forestry. Xiaoyu Zhao, Vice President, ADB, discussed the effectiveness of regional cooperation between bank members and announced that it would double lending for climate change mitigation to US\$ 2 billion. Additional topics included the importance of combining renewable technologies and the role of women.

Multi-Stakeholder Discussion: David Hales, President, College of the Atlantic, moderated the discussion, noting that, although progress in renewables has been significant, renewable technologies are still in their infancy.

Mark Radka, Chief of the Energy Branch, UNEP, said that increased investment in human capital in the sector would yield the greatest gains. David Renné, President, International Solar Energy Society, spoke on the role of his organization in informing renewable energy stakeholders on the latest breakthroughs in solar and other renewable technology. Harish Hande, Managing Director, Selco, underlined that decision-makers cannot afford to delay providing energy access to the poor, and the cost of inaction far outweighs the marginal costs of providing decentralized renewable energy over grid energy.

Jeremy Leggett, Chairman, Solarcentury, and Probir Ghosh, President, invVEST, strongly cautioned that peak-oil is imminent, underlining the importance of the clean energy industry, which will become a US\$40 to US\$50 trillion industry over the next 20 years. Vijay Mahajan, Chairman, BASIX, emphasized enhancing marketing and development of distribution networks by manufacturers for greater uptake of emerging clean energy technologies.



Rajendra Pachauri, Director General, TERI, and Chair of the IPCC



Maud Olofsson, Minister for Energy and Enterprise, Sweden

Ed Norrena, Head BBM Division, Cleantech, said governments must be at the forefront of renewables development. Hugo Lucas, Director for Policy, Capacity Building and Outreach, IRENA, said renewables synergize policy goals, because mitigation, employment, security and energy access all improve when renewables come online.

André Aranha Corrêa do Lago, Director, Department of Energy, Ministry of External Relations, Brazil, urged that international discussions begin addressing unsustainable patterns of production and consumption. Sunita Narain, Director, Centre for Science and Environment, stressed that business models are needed to bring renewables to the poorest of the poor, for whom they will be most beneficial.

CEO Roundtable: Moderators Steve Sawyer, Secretary General, Global Wind Energy Council (GWEC), and V. Subramanian, Secretary General, Indian Wind Energy Association (InWEA), led the discussion. Panelists included: Alf Bjørseth, CEO, SCATEC Solar; Rakesh Bakshi, Chairman, RRB Energy; Gary Conley, CEO, B2U Solar; Fabrice Didier, CEO, Saint-Gobain Solar; Wu Gang, CEO, Goldwind; Kishore Jayaraman, CEO, GE Energy India; Huang Ming, CEO,



Mohamed El-Ashry, Chairman, REN21

Himin; K. Subramanya, CEO, Tata BP Solar; Sean Sutton, President, Vestas Asia Pacific; and Harish Mehta, Director of Suzlon.

Panelists described the goals set in the field of renewable energy. Huan Ming drew attention to plans to build a “solar city,” and Rakesh Bakshi called on governments to provide clear and uniform policy guidelines. Several participants suggested putting in place national renewable

energy strategies. K. Subramanya highlighted the Jawaharlal Nehru National Solar Mission and said unless rural access to electricity improves, migration to big cities will continue. Fabrice Didier expressed his conviction that the cost of solar and wind energy will become competitive, with or without carbon pricing, and Sean Sutton noted how the focus on research and development is driving down energy costs. The problem of subsidies was mentioned, with some saying their

elimination is not necessarily the best approach. In the view of several participants, putting a standard price on carbon would prove difficult; and some doubted the “commercialization” of carbon, placing focus on carbon emissions. One noted that the solar market is driven by a small number of countries mostly through feed-in tariffs, but that in many cases the cost of photovoltaic energy is competitive with peak load production costs. Rakesh Bakshri noted that grid conditions dictate renewables’ design.

JOINT MINISTERIAL – MULTI-STAKEHOLDER – CEO ‘STRAIGHT TALK’: Reporting on the Ministerial discussion, Virginia Sonntag-O’Brien, REN21, highlighted that the discussion emphasized the importance of collaboration and partnership. She said ministers had noted the need to bring down the cost of renewables, but that costs are going down as renewables achieve economies of scale. On energy access for rural areas, she emphasized that decentralized power generation is often cheaper than constructing a grid. Sonntag-O’Brien underscored efforts on a sustainable energy free tariff agreement in many arenas, including the World Trade Organization (WTO).

Multi-Stakeholder discussion moderator David Hales highlighted the diverse views reflected on the panel. He noted that discussions centered on a renewable revolution in a broader context. Hales said some felt fundamental disconnects, such as the gap between rich and poor, have to be addressed in order to achieve such a renewable revolution, while others said such a renewables revolution would address these issues inherently.

CEO roundtable moderator Steve Sawyer said discussions had highlighted, *inter alia*: lowering costs of renewable energies to make them more competitive; scaling up wind and solar energy; assisting the industry to reach maturity; sending clear government signals to markets regarding renewables and fossil fuels; and addressing subsidies to level the energy playing fields and develop domestic renewable energy markets.



Arun Majumdar, Director, ARPA-E, US



Panelists from left to right: Roberto Menia, Minister of State, Ministry of Environment, Land and Sea, Italy; Richard H. Jones, Deputy Executive Director, IEA; moderator Shyam Saran, former Special Envoy to Indian Prime Minister on Climate Change; Arthouros Zervos, President, EWEA and EREC; and A.S. Sambo, Director General, Energy Commission of Nigeria



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DIREC  **2010**

DIREC 2010 HIGHLIGHTS: THURSDAY, 28 OCTOBER 2010

On Thursday, participants at DIREC convened throughout the day in thematic sessions organized around four main tracks: technology and infrastructure; policy; finance; and renewables access and the Millennium Development Goals (MDGs). Parallel workshops also took place on biofuels and promoting rural entrepreneurship for enhancing access to clean lighting options. The renewable energy exposition and trade show continued.



A new wind turbine design on display at the DIREC trade fair.

MAIN CONFERENCE

TRACK 1 – TECHNOLOGY AND INFRASTRUCTURE

POWER TECHNOLOGY AND INFRASTRUCTURE:

Jeremy Leggett, Solarcentury, moderated a discussion on up-scaling renewable energy and grid integration of renewable energy. Main topics discussed included grid stability and safely introducing renewables into established grid systems. Underlining the importance of energy efficiency and demand-side management programs, Marianne Moscoso-Osterkorn Renewable Energy and Energy Efficiency Partnership (REEEP), said that 90% of power utilities are government controlled and that governments must be persuaded to reform power systems.

Hans Arild Bredesen, Econ Pöyry, noted that distribution grids require upgrades and planning to accommodate renewable energy feed-ins from small-power producers.

Natalia Kulichenko-Lotz, World Bank, noted Bank programs incentivizing developing country governments to invest in renewable energy. Ravi Prasher, US Department of Energy ARPA-E, highlighted research at ARPA-E labs developing advanced energy solutions. During discussions, participants called for expanding renewable energy and attracting financiers by minimizing risk.

HEATING AND COOLING TECHNOLOGIES:

Gerhard Stryi-Hipp, Fraunhofer ISE, highlighted the market potential for solar cooling and heat pumps. Ralph Sims, Centre for Energy Research, noted that successful policies and frameworks have been implemented worldwide for renewable



In the morning, the panel on power, technology and infrastructure discussed grid stability, systems approaches to ensure functioning energy systems and incentivized systems to ensure government investment in renewables.

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The financing innovation - projects, business and technologies panel discussed public and private financing options to enable wider uptake of renewable energy technologies.

heating and cooling, and recommended that other countries draw lessons from these. Ravi Khanna, SCATEC Solar, and Gudni Jóhannesson, Iceland National Energy Authority, noted that practical and attractive applications of renewable heating and cooling would encourage industry growth and emphasized that pragmatic energy choices must be made to avoid system inefficiencies. Olivier Drücke, European Solar Thermal Industry Federation (ESTIF), underlined the importance of product development and market research for mass deployment. Huang Ming, Himin Solar Energy Group, emphasized the importance of branding to consumers, highlighted the success of renewable manufacturers in China's Solar Valley, and together with R.R. Sonde, Thermax, advocated providing consumers with complete renewable energy solutions for their energy service needs.

BUILDINGS: Ajay Mathur, Bureau of Energy Efficiency, India, moderated this session discussing the use of renewables in green buildings, with an emphasis on building design for lower energy consumption. Deepak Gupta, MNRE, India, underlined India's efforts to construct certified green government buildings. Rick Duke, US Department of Energy, noted that partnerships on clean energy between the US and India included knowledge sharing on energy building codes and establishing the India Green Building Council. Andreas Thermann, KfW Development Bank, and Robert Angioletti, French Agency for the Environment and Energy Management, highlighted the application of energy efficiency measurements for building subsidies. Manit Rastogi, Morphogenesis, called for a paradigm shift to eliminate new construction of non-green buildings and ensuring locally appropriate technology. Alastair Adair, University of Ulster, UK, highlighted Northern Ireland's efforts to reduce emissions, saying recent research shows that green buildings yield higher returns. S. Padmanaban, USAID in India, called for more projects demonstrating integration of renewable technology into green building design and further developing energy efficiency certificates for the building industry.

TRACK 2 – POLICY

RENEWABLE ENERGY SCENARIOS: This panel was moderated by Eric Martinot, Institute for Sustainable Energy Policies. The discussion centered on alternative scenarios for the future and the challenges posed by the expected dramatic growth of renewable energy, especially in solar and wind, their cost and contribution to the energy mix. Hans Jørgen Koch, Danish Energy Agency, described his country's successful use of renewables. Julien Pestiaux, European Climate Foundation,

supported by other

panelists, said that although enormous infrastructure changes will be required to mainstream renewables, the total cost will be less than expected and that changing consumer preferences will present a bigger problem. Sven Teske, Greenpeace International, noted that investment costs will be offset by fuel savings and will promote employment. Paolo Frankl, IEA, cautioned against overheated renewable energy markets and urged policy to support improved competitiveness of renewable energy.

SUPPORTING POLICIES I (ON-GRID): Li Junfeng, China Renewable Energy Industries Association, urged the removal of trade barriers, a measure that would reduce the cost of renewable energy technologies. Christopher Flavin, Worldwatch Institute, called for a combination of policies, including rules for grid access, to create sustainable markets for renewables. Some panelists highlighted national experiences promoting renewable energy, including those of India and Japan. Others highlighted the need for public support, international cooperation and increased investment, and with Harish Mehta, Suzlon, suggested a fund for renewable energy.

SUPPORTING POLICIES II (OFF-GRID): The panel was moderated by Hemant Lamba, AuroRE, and Akanksha Chaurey, TERI. Panelists discussed the renewable energy situation in rural areas, with many referring to distributed, decentralized generation systems and renewable energy being a factor integrating grid and non-grid power. Chaurey commended the involvement of Indian institutions and NGOs in renewables, and Kinsuk Mitra, Winrock International India, noted more effective use of electricity in villages and urged more private sector involvement. Speakers also noted negative tendencies, including: fragmentation of international efforts; lack of awareness; and the increasing gap between robust energy growth and actual access to electricity, especially for lighting in villages.

STATE AND LOCAL GOVERNMENTS: Griffin Thompson, US State Department, led a discussion addressing renewable energy from the local perspective. Panelists stressed the importance of leadership from local authorities in promoting use of renewable energy, rural empowerment, the challenge of urbanization and the role of city planning. Ray Morgan, Woking Borough Council, UK, underlined that the goal is more than introducing new renewable energy technology, but also assuring sustainable habitats.



The renewable energy scenarios panel discussed time frames and costs of various scenarios in light of the expected massive transition to renewable energy in the coming decades.

TRACK 3 – FINANCE

FINANCING INNOVATION – PROJECTS, BUSINESSES AND TECHNOLOGIES: Moderator Eric Usher, UNEP, began the session noting that for public finance institutions the challenge is how to exit sectors that have successfully scaled up to make way for private sector finance and to identify next steps.

Vivek Tandon, Aloe Private Equity, said that historically Certified Emission Reductions Units provided returns on equity in India, but now it is necessary to improve yields. Anita George, International Finance Corporation (IFC), identified several challenges: the difficulty of matching innovative smaller companies with large investors; regulatory “teething problems” due to the lack of regulatory frameworks in emerging sectors; and adapting technology to new markets.

Christine Eibs-Singer, E+Co, underscored the importance of: helping small entrepreneurs de-risk; considering replication potential; and cataloguing lessons learned. Vivek Mehra, YES Bank, noted the need for reliable finance models to support social innovation and technological development.

Don Purka, ADB, highlighted financing to adapt technologies to new markets and designing insurance policies to reduce risk. Ethan Zindler, Bloomberg New Energy Finance, emphasized that investment in emerging technology startups is declining and noted the importance of public investment.

FINANCING DEPLOYMENT AT SCALE: Chair Rashad Kaldany, IFC for Asia, Eastern Europe, Middle East and North Africa, noted challenges to renewable energy growth, including the nascence of the industry, inadequacy of grid infrastructure, unpredictability of government support and lack of funding in local currencies.

Satish Mandhana, IDFC Private Equity, said India must implement its laws more effectively to see real scaling-up. Craig O’Connor, Exim Bank, US, highlighted that competition amongst financiers is driving down loan costs.

Peter Gutman, Standard Chartered Bank, said energy projects are more about debt than equity, and therefore investments need to be carefully structured and supported to be successful, lamenting the recent solar subsidy collapse in Spain.

Nick Robins, HSBC, highlighted important investment-related energy transitions resulting from financial regulation reforms, including shifts from: developed markets to emerging markets; green stimulus to austerity; carbon-based economies to green growth; supply-to demand-side interest; and from equity to fixed-income instruments.

INITIATIVES TO CATALYZE AND SCALE UP INVESTMENT IN RENEWABLE ENERGY: During this session moderated by Virginia Sonntag-O’Brien, REN21, Jonathan Maxwell, Sustainable Development Capital LLP, described Critical Mass, a project to promote public-private



The track continued by focusing on markets for solar cooling and heating pumps, policy frameworks for heating and cooling and product development and market research.

partnerships, particularly looking at ways to allocate risk and report on lessons learned to improve capital efficiency. He highlighted the proposed Climate Public-Private Partnership (CP3) fund to provide private equity for low carbon and resource efficient infrastructure in Asia.

Martin Schoepe, German Federal Ministry for the Environment, said the Global Renewable Investment Plan (GRIP) is a project to quantify economic benefits, understand effectiveness of policy schemes and stimulate investment through increased international cooperation. Natalia Kulichenko-Lotz, World Bank, underscored the Bank's Strategic Climate Fund and Clean Technology Fund as well as the Scaling-Up Renewable Energy Program, establishing pilot projects in selected low-income countries.

On the Global Climate Partnership Fund, Klaus Peter Pischke, KfW Development Bank, said the fund provides financial and technical assistance to financial institutions in developing countries. Mark Domnik, Deutsche Bank, described Deutsche Bank's Global Energy Transfer Feed-in Tariff (GET FiT) program. He said it is a flexible system to help overcome cost competitiveness, technical, financial and project development constraints of developing renewables in developing countries.

Clifford Polycarp, World Resources Institute, supported creating new funding mechanisms but cautioned against over-proliferation of such initiatives, which could become burdensome for governments and users to manage and access. He said any new investment tools should tap into existing investment mechanisms.

In the ensuing discussion, participants discussed the need for better risk mitigation and hedging options for the proposed investment mechanisms.

TRACK 4 – RENEWABLES ACCESS AND MILLENIUM DEVELOPMENT GOALS

RENEWABLE ACCESS AND MDGs: Kandeh Yumkella, UNIDO, facilitated the discussion on the relevance of energy access to achieving the MDGs.

Deepak Gupta, MNRE, India, said poverty reduction depends on energy access and called for international commitment, commenting that improvements in lighting and rural electrification enhance education, health, and livelihoods. He lamented that, under the UNFCCC Clean Development Mechanism (CDM), basic rural projects go unfunded.

Kadri Nassiep, SANERI, added that internet access is a vital source of educational opportunity and emphasized providing energy access to improve livelihoods. Veerle Vandeweerd, UNDP, emphasized integrative approaches to energy services, such as providing lighting, battery and mechanical power simultaneously.

Rachel Kyte, ICF, emphasized that it is crucial for the private sector to communicate with policymakers to establish appropriate investment incentives at national and international levels. She cautioned that markets must be inclusive to avoid the poor bearing the price of carbon. Kyte highlighted that: business should focus on savings, not profits; subsidies for “concessional finance” can open up markets quickly; and technology quality standards are important.

Manfred Konukiewicz, German Federal Ministry for Economic Cooperation and Development, underlined the need for consumers to be the “first funding mechanism.”

CAPACITY BUILDING: Moderator Leena Srivastava, TERI, said capacity building is important at the national and international policy levels as well as at the grassroots level. Joe Madiath, Gram Vikas, called for access to energy to be viewed as a fundamental right and for capacity building at the user level. Sanjit “Bunker” Roy, The Barefoot College, described his training of trainers program, which teaches uneducated women to become solar engineers, empowering them to electrify their own villages. Mark Radka, UNEP, underlined the need for capacity building amongst negotiators, cautioned against “demonizing” non-renewables and emphasized the importance of networking as a capacity building tool.

RENEWABLES IN INDIA: Experts discussed, *inter alia*, India's: renewables potential; household energy access; and challenges to investment. Farooq Abdullah, MNRE India, underlined the importance of financial incentives to motivate sustainable development. Deepak Gupta, MNRE India, said: India's renewables industry has increased five-fold in recent years; instituting sector financing for renewables is imperative for developing countries; and reducing kerosene, solarizing telecom and enabling rice husk gasification are key focal areas for India's future. Darryl D'Monte, Chairman, Forum of Environmental Journalists of India, expressed disappointment that the conference focused on renewable “electricity” sources rather than renewable “energy” sources, which undermines the significance of cooking energy.



The next session on financing deployment at scale, discussed overcoming hurdles to renewable energy growth, such as lack of adequate power infrastructure, unpredictable government support, and the need to redraw financing structures to accommodate the nuances of renewables.



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SUMMARY OF THE DELHI INTERNATIONAL RENEWABLE ENERGY CONFERENCE (DIREC 2010)

The Delhi International Renewable Energy Conference (DIREC 2010) took place from 27-29 October 2010, in New Delhi, India. The president of India, Pratibha Devisingh Patil, inaugurated DIREC, which convened over 13,000 participants from governments, international organizations, civil society and the private sector to discuss renewables and energy security, climate change and economic development. These themes were explored in plenary sessions as well as in ministerial, multistakeholder and CEO discussions, which followed four tracks: technology and infrastructure; policy; finance; and renewables access and the Millennium Development Goals (MDGs).

Parallel workshops were also hosted on various issues including: solar power, solar water heating systems; wind energy; sustainable habitats; biomethanation; rural empowerment; smart grid technology; biofuels and clean lighting options. In addition, a renewable energy trade expo showcased the latest technology.

DIREC 2010 concluded on 29 October with: a panel summarizing key lessons learned from sessions under the four tracks; a high-level segment; and presentation of the conference's key outcomes, including the DIREC Declaration and 30 new pledges by governments, civil society and the private sector under the Delhi International Action Programme to take concrete actions to up-scale renewable energy.

A BRIEF HISTORY OF MULTILATERAL PROCESSES ON RENEWABLE ENERGY

During the fuel crisis of the 1970s, many countries began exploring alternative sources of energy. The international community's first major attempt to develop a strategy for the use of alternative fuels was the 1981 UN General Assembly Resolution A/RES/36/193 on the outcomes of the UN Conference on New and Renewable Sources of Energy, which included the Nairobi Programme of Action for the Development and Utilization of New and Renewable Sources of Energy. However, it was only following the 1992 UN Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil, that renewable energy issues featured more prominently on the international environment and development agenda.

UN CONFERENCES AND SUMMITS

At UNCED, delegates adopted Agenda 21, an action plan for implementing sustainable development. Agenda 21 addresses sustainable energy, in Chapter 9, on protecting the atmosphere,



Farooq Abdulla (right), Union Minister, MNRE, India, accepting the DIREC Declaration from Mohamed El-Ashry, REN21.

which notes that controlling atmospheric emissions of greenhouse gases and other substances will increasingly require reliance on environmentally sound energy systems, particularly new and renewable sources of energy. The chapter also addresses, *inter alia*, the need for research and development, the transfer and use of technologies, and measures to overcome barriers for the use of renewables.

In the years following UNCED, several UN conferences and summits addressed renewable energy and sustainable development issues in their outcome documents. These included the Global Conference on Sustainable Development in Small Island Developing States (1994), International Conference on Population and Development (1995), World

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Summit on Social Development (1995), Fourth World Conference on Women (1995), UN Conference on Human Settlements (1996) and World Food Summit (1996). The World Solar Summit in 1996 and the 19th Special Session of the UN General Assembly (UNGASS 19) in 1997 also addressed energy issues, with UNGASS 19 deciding that the issue should be further examined during the ninth session of the Commission on Sustainable Development (CSD 9) in 2001.

CSD

In April 2001, CSD 9 adopted Decision 9/1 (E/CN.17/2001/19) on “Energy for sustainable development.”



Eric Martinot, Institute for Sustainable Energy Policies (ISEP)

The Decision included recommendations to encourage the role of the private sector, strengthen research and development and institutional capacities, develop and use indigenous sources of renewable energy, and strengthen financial support to developing countries. It also addressed issues of energy accessibility and rural

energy, noting that access to affordable energy services is a prerequisite for implementation of the goal accepted by the international community to halve the proportion of people living on less than US\$1 per day by 2015. IISD RS coverage of CSD 9 can be found at: <http://www.iisd.ca/csd/csd9/index.html>

CSD 15, at its May 2007 meeting, also addressed energy issues, although delegates did not reach consensus on any decisions. IISD RS coverage of CSD 15 can be found at: <http://www.iisd.ca/csd/csd15>

WSSD

The World Summit on Sustainable Development (WSSD) convened in August-September 2002 in Johannesburg, South Africa. WSSD participants adopted the Johannesburg Plan of Implementation (JPOI), which addresses renewable energy in several of its chapters. Regarding sustainable consumption and production patterns (Chapter III), governments agreed to increase substantially the global share of renewable energy sources. The JPOI also addressed renewable energy issues in text on poverty eradication (Chapter II), small island developing states (Chapter VII) and Africa (Chapter VIII).

At the WSSD, Gerhard Schröder, then German Chancellor, invited the international community to Germany for an International Conference on Renewable Energy (Renewables 2004), which launched the series of IREC meetings.

IISD RS coverage of WSSD can be found at: <http://www.iisd.ca/2002/wssd>

RENEWABLES 2004

The International Renewable Energy Conference (Renewables 2004) took place from 1-4 June 2004 in Bonn, Germany. Participants addressed issues, including: policies for renewable energy market development; best-practice examples and success stories; financing options; strengthening capacities, research and policy development, and institutions; energy

services and the MDGs; and the contribution of renewable energy in meeting the climate challenge. The outcomes of the conference included policy recommendations, an international action programme and a political declaration. The declaration called for the establishment of a global policy network, which led to the creation of the Renewable Energy Network for the 21st Century (REN21).

IISD RS coverage of Renewables 2004 can be found at: <http://www.iisd.ca/sd/ren2004>

BIREC 2005

The Beijing International Renewable Energy Conference (BIREC), hosted by China in November 2005, addressed practical measures, success stories, and effective legislative and policy measures to create institutional and technical infrastructures. Participants discussed the establishment of a review process to assess the progress made towards the implementation of the JPOI and the 2004 International Action Programme of Renewables. They also adopted the Beijing Declaration, which recognized the need for significant financial resources, both public and private, for investment in renewable energy and energy efficiency, and emphasized the need for enhanced international cooperation for capacity building in developing countries, among other issues.

WIREC 2008

The Washington International Renewable Energy Conference (WIREC), convened from 4-6 March 2008 in Washington, DC, US. Participants discussed four main themes: market adoption and finance; agriculture, forestry and rural development; state and local authorities; and research and development. By the end of the conference, over 100 domestic and international pledges had been submitted for the Washington International Action Programme, to accelerate the global uptake of renewable energy.

IISD RS coverage of WIREC 2008 can be found at: <http://www.iisd.ca/ymb/wirec2008>

GLOBAL RENEWABLE ENERGY FORUM 2008

This Forum was held from 18-21 May 2008 in Foz do Iguaçu, Brazil, and endeavored to create a suitable environment to promote inter-regional dialogue and to set up joint actions between countries and regions to reduce poverty and enhance energy security through the use of renewable energy. IISD RS coverage of this meeting can be found at: <http://www.iisd.ca/ymb/greb2008/>

IRENA

The International Renewable Energy Agency (IRENA) was officially established on 26 January 2009. Its purpose is to act as a global clearinghouse of knowledge on renewable energy,



Suresh Prabhu, Council for Energy, Environment and Water, India

promote a swift transition towards its sustainable use and assist its member states to define renewable energy strategies. As of 29 October 2010, there are 149 signatory countries, with 42 states having ratified the agency's statutes.

GLOBAL RENEWABLE ENERGY FORUM 2009

This Forum was held from 7-9 October 2009 in León, Mexico, to encourage innovative multistakeholder and multi-regional partnerships for scaling up renewable energy. The



A discussion on heating and cooling technologies focused on markets for solar cooling and heating pumps, policy frameworks for heating and cooling, and product development and market research.

meeting concluded with several recommendations, including the need to: establish a global access fund to target chronic problems of access to energy; develop clear sustainability guidelines and standards for biofuels; strengthen regional research capacities through networks; and establish UN Energy and industry partnerships. IISD RS coverage of the Forum can be found at: <http://www.iisd.ca/ymb/energy/greb2009/html/ymbvol128num3e.html>

REPORT OF THE DELHI INTERNATIONAL RENEWABLE ENERGY CONFERENCE (DIREC2010)

OPENING SESSION

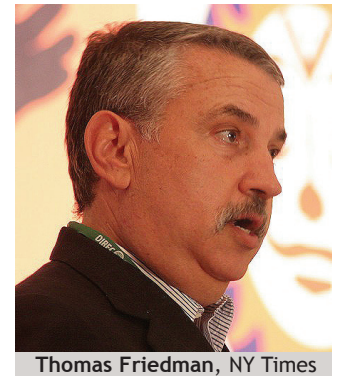
DIREC 2010 opened on Wednesday morning, 27 October 2010, with participants attending presentations on the status and future of the renewables industry. The four focal areas of discussion included up-scaling, climate change policy and the sixteenth Conference of the Parties (COP 16) to the United Nations Framework Convention on Climate Change (UNFCCC), the green economy, and a renewables vision for 2020.

UP-SCALING RENEWABLES FOR ENERGY SECURITY, CLIMATE CHANGE AND ECONOMIC DEVELOPMENT: Up-scaling the renewables industry served as the principal theme of the DIREC 2010 conference. Mohamed El-Ashry, Chair, Renewable Energy Policy Network for the 21st Century (REN21), highlighted progress made in renewable energy since the Washington International Renewable Energy Conference (WIREC) in 2008, emphasizing recent increased political commitment to renewables from both developed and developing countries. Despite the economic recession, he said that growth in renewables will continue to be driven by the urgency of climate change impacts and the need for energy security and energy access. He called on delegates to radically change the world's energy system for the sake of future generations.

Deepak Gupta, Secretary, Ministry of New and Renewable Energy, India, urged government agencies and stakeholders to sign the Delhi International Action Programme and to pledge commitments for renewable energy. He emphasized that such commitments would be an indication of DIREC's success.

ROAD TO CANCUN: This session discussed global actions for climate change mitigation and adaptation, particularly in the lead-up to UNFCCC COP 16, which will take place in Cancun, Mexico, in December 2010.

Kandeh Yumkella, Director-General, UN Industrial Development Organization (UNIDO), said neither climate change nor meeting the Millennium Development Goals (MDGs) can be solved without an energy revolution. This revolution, he said, would require: reducing energy intensity by 40% by 2030, translating to a doubling of energy efficiency; and enabling universal energy access. Yumkella described that developing countries view the upcoming UNFCCC COP with mixed emotions, fearing that high expectations will lead to disappointment and that low expectations will further delay action on climate change impacts. On the MDGs, he described efforts to make the renewables issue more prominent in the UN General Assembly.



Thomas Friedman, NY Times

Rajendra Pachauri, Chair, Intergovernmental Panel on Climate Change (IPCC), said he hoped UNFCCC COP 16 would put climate change adaptation "on track" and emphasized that reducing greenhouse gases and incorporating renewables into the energy matrix are crucial for climate change mitigation. He suggested that COP 16 could be useful for advancing progress on identifying appropriate prices for carbon. Energy security, Pachauri added, has a number



In a session on financing deployment at scale, participants discussed overcoming hurdles to renewable energy growth, such as lack of adequate power infrastructure, unpredictable government support, and the need to redraw financing structures to accommodate the nuances of renewables.

of co-benefits, including improved energy access, lower air pollution, higher agricultural productivity and increased employment.

GREEN ECONOMY AND ROLE OF RENEWABLES:

This discussion evaluated efforts to green both national economies and the global economy. Maud Olofsson, Minister for Energy and Enterprise, Sweden, shared her country's experience in dramatically raising the share of renewable energy using economic incentives, underscoring Sweden's goal to decouple transport from the consumption of fossil fuel. Montek Singh Ahluwalia, Deputy Chairman, Planning Commission, India, noted that India's energy plans include: reducing the emissions intensity of its economy by 20-25%; taking advantage of abundant solar resources; and providing 500 gigawatts of clean energy through thorium-based nuclear energy by 2050.

Sylvie Lemmet, Division of Technology, Industry and Economics, UN Environment Programme (UNEP), highlighted UNEP's green economy initiative, which will release a report in February 2011 evaluating the role of investment in renewable energy and options for compensating the private sector for capital investments.

VISION 2020 - ROLE OF RENEWABLES FOR ENERGY SECURITY, CLIMATE CHANGE AND ECONOMIC DEVELOPMENT:

Shyam Saran, former Special Envoy to the Prime Minister on Climate Change, India, emphasized the need to focus on what must be done in the short time period prior to 2020. Roberto Menia, Minister of State, Ministry of Environment, Land and Sea, Italy, said the need to limit CO₂ concentrations to 450 parts per million (ppm), as outlined in the International Energy Agency (IEA) World Energy Outlook 2009, requires investment of US\$5 trillion between 2010 and 2030. He noted, in particular, the importance of investment in capacity and research and development, and said Italy expects that renewables will meet 60% of gross internal demand by 2020.

Arthouros Zervos, President, European Wind Energy Association (EWEA), said renewables will be the foundation of future energy systems, and expressed optimism about the development of a global renewable energy target. He noted that the recent expansion of the sector has exceeded expectations and predicted the sector will be cost-effective in the long term. A.S. Sambo, Director-General, Energy Commission of Nigeria, emphasized the challenges of "energy poverty" and the need for financing, and called for strengthening policy and modernizing regulation frameworks for the energy sector. Richard Jones, Deputy Executive Director, IEA, called



Maud Olofsson, Minister for Energy and Enterprise, Sweden

for defining "sustainable energy" and named several important goals, including: improving energy efficiency; decarbonizing the power industry; investing in smart grids and long-distance transmission; and establishing

predictable and transparent incentives.

PARALLEL SESSIONS

On Wednesday afternoon, three parallel sessions provided separate forums for ministers, multistakeholders and CEOs to discuss renewable energy from their perspectives.

Ministerial Discussion: Vikram Chandra, CEO, NDTV, facilitated a panel discussion among energy ministers from Iceland, Mauritius, Japan, Iran, Portugal, India, the US, Finland, Uganda, Norway, Spain, Scotland, Bangladesh, Bhutan, Sri Lanka and a representative of the Asian Development Bank (ADB). Panelists discussed current challenges to global action on energy, options for quick solutions and whether technology can enable renewables to dominate the

energy industry. Several ministers emphasized the need for cooperation and collaboration among sectors and across borders, though they differed in the degree of optimism on renewables' growth.

Hiroshi Asahi, Director General, Agency for Natural Resources and

Energy, Ministry of Economy, Trade and Industry, Japan, said optimizing competition was the way forward. Several others, including Suresh Kumar, Assistant Secretary, US Department of Commerce, and Jim Mather, Minister for Enterprise, Energy and Tourism, Scotland, UK, suggested that the quest for energy independence could, but should not, impede knowledge sharing and broadening of international cooperation. Some, including Pedro Luis Marin Uribe, Secretary for Energy, Ministry of Industry, Tourism and Trade, Spain, Ahmed Rashid Beebeejaun, Deputy Prime Minister, Minister of Energy and Public Utilities, Mauritius, and Farooq Abdullah, Union Minister for New and Renewable Energy, India, underscored the restrictive costs of technology.

Lyonpo Khandu Wangchuk, Minister of Economic Affairs, Bhutan, and Paavo Väyrynen, Minister of Foreign Trade and Development, Ministry of Foreign Affairs, Finland, referred to the importance of synergies between the energy industry and sustainable forestry. Xiaoyu Zhao, Vice President, ADB, pointed to the effectiveness of regional cooperation between bank members and announced that ADB will double lending for climate change mitigation to US\$2 billion. Additional discussion topics included the importance of combining renewable technologies and the role of women in the renewables sector.

Multistakeholder Discussion: David Hales, President, College of the Atlantic, moderated the discussion, noting that, although progress in renewables has been significant, renewable technologies have yet to reach maturity.

Mark Radka, Chief of the Energy Branch, UNEP, said increased investment in human capital in the sector would yield the greatest gains. David Renné, President, International Solar Energy Society, spoke on the role of his organization in



Montek Singh Ahluwalia, Deputy Chairman, Planning Commission, India

informing stakeholders on the latest breakthroughs in solar and other renewable technology. Other participants underlined that decision-makers cannot afford to delay providing energy access to the poor, and the cost of inaction far outweighs the marginal costs of providing decentralized renewable energy over grid energy. Caution was expressed that peak oil is imminent and due to this, clean energy will become a US\$40-50 trillion industry over the next 20 years. Enhanced marketing was emphasized, as well as the development of robust distribution networks by manufacturers for greater uptake of emerging clean energy technologies.

A number of speakers insisted that governments must be at the forefront of renewables development. Others noted that renewables are the answer to policy goals because mitigation, employment, security and energy access all improve when renewables come online. Several speakers urged that international discussions begin addressing unsustainable patterns of production and consumption, and that business models are needed to bring renewables to the poorest of the poor, for whom they will be most beneficial.

CEO Roundtable: Moderators Steve Sawyer, Secretary-General, Global Wind Energy Council (GWEC), and V. Subramanian, Secretary-General, Indian Wind Energy Association, led the discussion. Panelists presented their renewable energy industry goals. Many speakers called on governments to provide clear and uniform policy guidelines, and to put in place clear national renewable energy strategies. A speaker highlighted the Jawaharlal Nehru National Solar Mission, a successful national example, and said unless rural access to electricity improves, migration to big cities will continue. Participants expressed a conviction that the cost of solar and wind energy will become competitive, with or without carbon pricing, with research and development driving down energy costs. The problem of subsidies was raised, with some saying their elimination is not necessarily the best approach. In the view of several participants, putting a standard price on carbon would prove difficult. Some expressed doubt about the “commercialization” of carbon, suggesting a focus on carbon emission reductions instead. One speaker noted that the solar market is driven by a small number of countries mostly through feed-in tariffs, and that in many cases the cost of photovoltaic energy is competitive with peak load production costs.

JOINT MINISTERIAL – MULTISTAKEHOLDER – CEO ‘STRAIGHT TALK’: Reporting on the ministerial discussion, Virginia Sonntag-O’Brien, REN21, emphasized the importance of collaboration and partnership. Ministers

noted the need to bring down the cost of renewables through achieving economies of scale. On energy access for rural areas, she emphasized that decentralized power generation is often cheaper than constructing a grid. She also underscored efforts to begin negotiations on a sustainable energy free tariff agreement.

Multistakeholder discussion moderator David Hales, College of the Atlantic, highlighted the diverse views reflected on the panel and noted that discussions centered on a renewables revolution in a broader context. In particular, some participants felt that fundamental disconnects, such as the gap between rich and poor, have to be addressed in order to achieve a renewables revolution, while others said such a revolution would address these issues inherently.



Kandeh K. Yumkella, Director-General, United Nations Industrial Development Organization (UNIDO)

CEO roundtable moderator Steve Sawyer, GWEC, said discussions had highlighted, *inter alia*: lowering costs of renewable energies to make them more competitive; scaling up wind and solar energy; assisting the industry to reach maturity; sending clear government signals to markets regarding renewables and fossil fuels; and addressing subsidies to level the energy playing fields and develop domestic renewable energy markets.

PARALLEL TRACK SESSIONS

On Thursday, 28 October, participants met in sessions under four tracks: technology and infrastructure; policy; finance; and energy access and MDGs.

TECHNOLOGY AND INFRASTRUCTURE: In this track, participants attended sessions focusing on four topics: power technology and infrastructure; heat and cooling; buildings; and transport (IISD RS provided coverage of the first three sessions).

On power technology and infrastructure, energy and grid integration of renewable energy, reliability of supply, and grid stability and infrastructure were discussed. On heating and cooling technologies, the advantages of district heating



The panel on financing innovation - projects, businesses and technologies discussed the roles for public and private finance, and finance models for supporting innovation.

systems, energy choices and solar and geothermal technologies were highlighted. On buildings, the main topics discussed were on green design, green certificates and low-energy buildings.

Power Technology and Infrastructure: This session



Deepak Gupta, MNRE, India

addressed up-scaling renewable energy and grid integration of renewable energy. Topics discussed included grid stability and safely introducing renewables into established grid systems. Participants underlined links between energy efficiency, demand-side management programmes and renewable energy. They

noted that governments must be persuaded and incentivized to reform power systems, as 90% of power utilities are government controlled, and that distribution grids require upgrades and planning to accommodate renewable energy feeds from small-power producers. Prospective applications of advanced energy research being done at Advanced Research Projects Agency-Energy (ARPA-E) labs were highlighted, and participants called for de-risking renewable energy investments to attract financiers.

Heating and Cooling Technologies: This session highlighted potential markets and applications for cooling and heating technologies. Participants noted that successful policies and frameworks have been implemented worldwide for renewable heating and cooling, and recommended that other countries draw lessons from these. Practical applications of renewable heating and cooling to encourage industry growth were called for, and participants emphasized that pragmatic energy choices must be made to avoid system inefficiencies and long-term “lock-in.” The importance of product development, branding and market research for mass deployment was underlined, while successes of renewable manufacturers in China’s solar valley, near the northern city of Dezhou, were highlighted, and participants advocated providing consumers with complete renewable energy solutions for their energy service needs.

Buildings: Discussing the use of renewables in green buildings, participants emphasized designing buildings with low, or zero, energy consumption. Participants commended

India’s efforts in constructing certified green government buildings, and partnerships between the US and India in developing energy building codes, as well as the Green Building Council in India. Case studies for the application of energy efficiency measurements for green building subsidies were presented and numerous participants called for a paradigm shift eliminating new construction of non-green buildings, and ensuring locally appropriate technology. Participants highlighted recent research showing that green buildings are more profitable for renters and businesses using them, and called for further projects demonstrating integration of renewable technology into green building design and developing energy efficiency certificates for the building industry.

POLICY: This track consisted of four panel discussions, which focused on renewable energy scenarios, on- and off-grid supporting policies, and state and local governments.

Renewable Energy Scenarios: This panel’s debate centered on future scenarios of renewables development and challenges posed by the expected dramatic growth of renewable energy, especially in solar and wind, as well as their costs and contribution to the energy mix. Several participants described success stories of renewables used in their countries. Many panelists expressed the view that although enormous infrastructure changes will be required to mainstream renewables, the total cost is affordable and that changing consumer preferences will present a bigger problem. In particular, participants said investment costs will be offset by fuel savings and will promote employment, although some speakers cautioned against overheating renewable energy markets and urged policies to support improved competitiveness of renewable energy.

Supporting Policies (On-Grid): Panelists called for the removal of trade barriers that keep the cost of renewable energy technologies unnecessarily high. According to some, the creation of sustainable markets for renewables would require a combination of policies, including rules for grid access. Some panelists highlighted national experiences in promoting renewable energy, including in India and Japan.



Farooq Abdullah, MNRE, India



In a session on renewable energy scenarios, participants discussed time frames and costs of various scenarios related to the expected massive transition to renewable energy in the coming decades.

Others highlighted the need for public support, international cooperation and increased investment, and another suggested a fund for renewable energy.

Supporting Policies (Off-Grid): Panelists discussed the renewable energy situation in rural areas, with many referring to distributed, decentralized generation systems. Renewable energy was also noted as a vector for integrating grid and non-grid power. One participant commended the involvement of institutions and NGOs in renewables in India, while others noted the highly effective use of electricity in villages. Increased private sector involvement was a recurrent theme. Speakers also noted some negative tendencies, including: fragmentation of international efforts; lack of awareness; and the increasing gap between energy growth and access to electricity, especially for lighting in villages.

State and Local Governments: Panelists stressed the importance of leadership from local authorities in promoting the use of renewable energy, which for many is seen as important for sustainable local development. Several speakers focused on the need to empower rural communities, the challenge of urbanization and the importance of city planning. One panelist suggested the overall goal is to assure sustainable habitats, rather than to introduce new renewable energy technology alone.

FINANCE: This track addressed four topics: financing innovation – projects, business and technologies; financing deployment at scale; initiatives to catalyze and scale up investment in renewable energy; and financing for small business and end users (IISD RS provided coverage of the first three sessions).



Ralph Sims, Centre for Energy Research

Financing Innovation – Projects, Businesses and Technologies: This session focused on challenges hindering increased financing

for renewables innovation as well as on key areas where policy changes could lead to quick improvements in availability of financing. Moderator Eric Usher, UNEP, began the session noting that for public finance institutions, the challenge is how to exit sectors that have successfully scaled up and to make way for private sector finance.

Noting the importance of public investment, participants highlighted several challenges for innovation, such as: the difficulty of matching innovative smaller companies with large investors; “teething problems” due to the lack of regulatory frameworks in emerging sectors; adapting technology to new markets; and the decline of investment in emerging technology startups.

Speakers also underscored the importance of: helping small entrepreneurs de-risk; considering replication potential; cataloguing lessons learned; finding reliable finance models to support social innovation and technological development; providing the financing to adapt technologies to new markets; and designing insurance policies to reduce risk.

Financing Deployment at Scale: This session looked at initiatives to incentivize massive investment in renewable energy. Chair Rashad Kaldany, International Finance Corporation (IFC) for Asia, Eastern Europe, Middle East and North Africa, noted challenges to renewable energy growth,

including the nascence of the industry, inadequacy of grid infrastructure, unpredictability of government support, and lack of funding in local currencies.

Participants noted that energy projects are more about debt than equity, and therefore investments need to be carefully structured and supported to be successful; many lamented the recent solar subsidy collapse in Spain. Participants also highlighted that competition among financiers is already driving down loan costs.

Finally, panelists discussed important investment-related energy transitions resulting from financial regulation reforms, including shifts from: developed markets to emerging markets; green stimulus to austerity; carbon-based economies to green growth; supply-to demand-side interest; and equity to fixed-income instruments.

Initiatives to Catalyze and Scale Up Investment in Renewable Energy: Moderated by Virginia Sonntag-O’Brien, REN21, this panel heard presentations from a number of financiers on programmes and mechanisms to encourage investment, while participants highlighted the World Economic Forum’s Critical Mass project, the German Federal Ministry for the Environment’s Global Renewable Investment Plan, the World Bank’s Strategic Climate Fund and Clean Technology Fund, the KfW Development Bank’s Global Climate Partnership Fund and Deutsche Bank’s Global Energy Transfer Feed-in Tariff programme.

Participants said renewables face four major problems in terms of attracting investment, especially in developing countries: cost competitiveness and technical, financial and project development constraints. The programmes and projects highlighted by the panel all focused on finding new ways to allocate and reduce risk, improve capital efficiency, and organize policy to encourage investment in energy or energy infrastructure.

One participant cautioned against over-proliferation of such initiatives, which could become burdensome for governments and users to manage and access, adding that any new investment tools should tap into existing investment mechanisms.

RENEWABLES ACCESS AND MDGS: Under this track, participants addressed four topics: renewables access and MDGs; capacity building; renewable energy in India; and woman empowerment (IISD RS provided coverage of the first three sessions).

Renewables Access and MDGs: This session evaluated the relevance of energy access to achieving the MDGs. Several panelists stressed that poverty reduction depends on energy access. Participants said improvements in rural lighting and electrification enhance education, health and livelihoods, stating that, for example, Internet access can provide a vital educational opportunity. It was mentioned that energy provision should be integrated by developing solutions using electrical, battery and mechanical technologies simultaneously for optimal growth and achievement of the MDGs. Panelists then discussed challenges of financing energy access and underlined the importance of: communication between the private sector and policy-makers at all levels; subsidies for concessional finance; quality standards for technology; inclusive markets; and using consumers as financiers. Some participants emphasized the need for the UNFCCC Clean Development Mechanism (CDM) to play a larger role in financing small, local projects.

Capacity Building: Panelists reiterated the importance of capacity building at all levels, including in national and international policy, research and design, finance and at the grassroots level. One participant called for energy access to be viewed as a fundamental right. Another presented a successful training of trainers programme that recruits uneducated women in developing countries and turns them into rural energy experts, successfully disseminating electrification technology.

Renewables in India: This session focused on potentials



Rajendra K Pachauri, Director-General, The Energy and Resources Institute (TERI) and Chair, Intergovernmental Panel on Climate Change (IPCC)

for the renewables industry in India, challenges it faces for investment, and the importance of household energy access. Presentations revealed that India's renewables industry has increased five-fold in recent years and that future progress relies on reducing kerosene consumption, solarizing the

telecom industry and expanding rice husk gasification. One participant observed, however, that financial incentives must motivate sustainable development of the energy industry, while another said that instituting sector financing for renewables is crucial. Regarding India and DIREC 2010, one participant expressed disappointment that the DIREC panel sessions focused too much on renewable electricity sources rather than renewable energy sources, thus undermining the significance of cooking energy.

PLENARY ON KEY FINDINGS FROM ALL SESSIONS

On Friday morning, 29 October, key outcomes from the four tracks were presented to delegates in plenary.

On renewable access and MDGs, Suresh Prabhu, Council for Energy, Environment and Water, India, reported that the sessions had underscored the need to address energy inequalities and improve energy access for women, who are often burdened with collecting fuel for domestic use. He noted that gender inequality exacerbates poverty and that access to energy enables participation in productive activities. On MDGs, he emphasized that increasing access to energy is essential to halving extreme poverty by 2015. He underlined the need for stronger international cooperation on technology transfer and training, and called for changing the UNFCCC CDM to include decentralized off-grid energy projects.

On technology and infrastructure, Ralph Sims, Centre for Energy Research, noted substantial progress in renewables technology in the past 20 years, but warned that, according to the IEA World Energy Outlook 2009, the goal of limiting greenhouse gas concentrations to 450ppm will require significant effort. He emphasized the importance of smart grids to up-scaling renewables and reminded participants that fossil fuels will remain important during the transition to renewables. He also underlined benefits of renewables for district heating and cooling, and the importance of manufacturing and marketing quality renewable energy products. Sims noted that

buildings could become net energy generators through green building design and called for educating more green building professionals. On transport, he said significant spending is required to switch the world's fleet of light vehicles to advanced renewable fuel and storage technologies, and noted that an array of renewable technology solutions must be combined and advanced through government institutional and infrastructural planning.

Eric Martinot, ISEP, and Ernesto Macías, Alliance for Rural Electrification, summarized the policy track, concluding that even scenarios of 50-100% renewable energy use are, although challenging, technically and financially feasible. Martinot explained that the main problem is not the overall costs but their distribution within society. He said new and better scenarios, including lower energy price volatility and employment benefits, are needed. Martinot also said countries must learn from one another's policy successes in order to design the energy grids of the future, which require policy as well as technological innovation. Macías spoke of the importance of NGOs in effective off-grid systems development, especially for countries like India, as well as the importance of ensuring such systems remain flexible, focusing on increasing capacity and performance over time and the eventual arrival of "the grid" to off-grid localities.

On finance, Eric Usher, UNEP, talked about renewables finance, noting that industry and governments are collaborating in unprecedented ways to massively invest in renewables.

On expanding deployment, he said "long, loud and legal" policies are needed, and that policy frameworks



Sultan Ahmed Al Jaber (left), UAE, and Virginia Sonntag-O'Brien, REN21, presented the results of DIREC 2010.

cannot only be supportive but must be "investment grade." The drivers of these policies, he said, must be understood pragmatically as necessarily being more related to industrial and export policy than to environmental policy. Usher said challenges for increasing investment include realizing technology transfer, and addressing first-mover issues for venture capitalists who have seen a lack of decent returns from renewables. He stressed that the most significant barrier to increasing investment is the mismatch between the urgency of the renewable revolution today, and the long, slow policy scenarios related to energy infrastructure development. Usher lamented that while solar technology has radically advanced of late, the poor have not yet benefited from this due to lack of investment in technologies they can use. On new financing initiatives, he said the KfW Development Bank's Global Climate Partnership Fund, providing financial and technical assistance to financial institutions in developing countries, was very inspiring in its efforts to address the multiple challenges of bringing financing to all levels.

CLOSING SESSION

HIGH-LEVEL SEGMENT: Thomas Friedman, New York Times, explained that the world has become "hot, flat and crowded," due to climate change, improved average living



Woman Empowerment: This session discussed the role of women in renewable energy markets, including barriers to obtaining credit, delivery of energy services, and improving household life and health.

standards and overpopulation, which together have led to several mega-trends including: unsustainable energy demands; petro-dictatorships; “global weirding”; energy poverty; and extreme biodiversity devastation. He explained that the universal solution to these problems is abundant, cheap, clean and reliable “electrons” and called on countries to establish ecologies for innovation and to embark on an “earth race” to seek a clean and abundant way to power the world. He added that innovation and technology, coupled with cooperation and competition, are the keys to saving the planet.

Trond Giske, Minister of Trade and Industry, Norway, cited Norway’s target to be carbon neutral by 2050, noting the need for innovation and multilateral agreements to set a price on carbon and open investments in clean energy. He called for increased public- private partnerships, highlighting Norway’s partnership with the Tata Group to develop hydropower in India. Noting the severity of the state of the world, he urged participants to commit themselves to positively changing the world for the next generation.

DIREC POLITICAL DECLARATION: Mohamed El-Ashry, Chair, REN21, said the pre-conference and conference consultations and comment processes resulted in the DIREC Declaration. Noting that the UNCCC COP 16 in Cancun will only achieve success if “we all pull together,” Farooq Abdullah, Union Minister for New and Renewable Energy, India, presented the DIREC Declaration, which aims at up-scaling and mainstreaming renewables for energy security, climate change and economic development.

The DIREC Declaration:

- acknowledges the multiple benefits of renewable energy, *inter alia*, energy access for the poor, economic opportunity, improved air quality and enhanced energy security;
- notes that renewable energy growth has largely been policy driven;
- acknowledges that renewable energy’s share in the world’s primary energy supply remains small and its adoption uneven, and that a large portion of the world’s population remains without access to modern energy services;
- commends the goal enunciated by the UN Secretary General’s Advisory Group on Energy and Climate Change of universal access to modern energy services by 2030;
- calls on the UN to designate 2012 as the International Year of Energy Access;

- reaffirms the importance of investment in, and international cooperation on, research, development and deployment for cost-effective and advanced technologies;
- recognizes that consistent and sustained government policies have a favorable impact on technology deployment and will increase the uptake of renewable energy;
- welcomes cooperative global action to strengthen human and institutional capacities in developing countries;
- notes that public funds are instrumental in leveraging and incentivizing large-scale private investment in developing countries through, *inter alia*, guarantees and risk sharing; and
- welcomes the Delhi International Action Programme that encourages governments, international organizations, private companies, civil society and others to take voluntary action for up-scaling renewable energy within their jurisdictions or spheres of responsibility.

INVITATION TO HOST THE NEXT IREC CONFERENCE: Sultan Ahmed Al Jaber, Assistant Minister, Ministry of Foreign Affairs, United Arab Emirates (UAE), invited participants to the next IREC conference to take place in 2012 in Abu Dhabi, UAE. He noted that the meeting will provide an opportunity to continue collaboration on renewable energy and stressed that the world does not have the luxury of choosing between environmental protection and economic growth. “We have to be champions for both,” he said.

DELHI INTERNATIONAL ACTION PROGRAMME: Virginia Sonntag-O’Brien, REN21, reported on the results of REN21’s Delhi International Action Programme, a pledge challenge that was open throughout the conference. She announced that 30 pledges were made, with seven coming from states. Most pledges came in the areas of target-based measures (8) and rural energy (6), followed by communication/ awareness raising (2) and deployment (2). As an incentive to keep these pledges, she announced REN21 will be offering awards to those who make the most progress by the next IREC. She said REN21 and the International Renewable Energy Agency (IRENA) will support pledge submitters by assessing implementation needs, creating an exchange platform between pledge makers, and offering expertise, technical assistance and capacity development via webinars and monitoring tools.

UPCOMING MEETINGS

Joint Working Group II / Working Group III – Expert Meeting on Socio-economic Scenarios for Climate Change Impact and Response Assessments: This meeting will bring together the integrated assessment and impacts and adaptation communities to develop a joint strategy for storyline development. **dates:** 1-3 November 2010 **location:** Berlin, Germany **contact:** IPCC Working Group II Technical Support Unit **phone:** +1-650-462-1047 **fax:** +1-650-462-5968 **e-mail:** tsu@ipcc-wg2.gov **www:** <http://www.ipcc-wg2.gov/meetings/EMs/index.html#4>

Global Green Growth 2010 Conference: This conference, hosted by the Climate Consortium, Denmark, will discuss political frameworks for green growth and the role of business and financing in connection with the transition to green growth. **dates:** 7-8 November 2010 **location:** Copenhagen, Denmark **contact:** Climate Consortium **phone:** +45-72-10-01-79 **email:** info@climateconsortium.com **www:** <http://www.klimakonsortiet.dk/GlobalGreenGrowth2010.aspx>

Climate Investment Funds (CIF) Trust Fund Committee and Subcommittee Meetings: This World Bank-sponsored meeting will include a Joint REDD+ meeting and committee and sub-committee meetings for various funds including SREP, FEP, PPCR, SCF and CTF. **dates:** 8-12 November 2010 **location:** Washington, DC **contact:** CIF administrative unit **phone:** +1-202-458-1801 **email:** CIFAdminUnit@worldbank.org **www:** <http://www.climateinvestmentfunds.org/cif/>

Twenty-Second Meeting of the Parties to the Montreal Protocol: MOP 22 is expected to consider a series of strategic, substantive, administrative and budgetary issues. **dates:** 8-12 November 2010 **location:** Bangkok, Thailand **contact:** Ozone Secretariat **phone:** +254-20-762-3851 **fax:** +254-20-762-4691 **email:** ozoneinfo@unep.org **www:** <http://ozone.unep.org/>

Sixteenth Conference of the Parties to the UNFCCC and Sixth Meeting of the Parties to the Kyoto Protocol: The 33rd meetings of the SBI and SBSTA will also take place concurrently. **dates:** 29 November – 10 December 2010 **location:** Cancun, Mexico **contact:** UNFCCC Secretariat **phone:** +49-228-815-1000 **fax:** +49-228-815-1999 **email:** secretariat@unfccc.int **www:** <http://unfccc.int/>

CIF Partnership Forum: The Climate Investment Funds (CIF) Partnership Forum will meet to discuss the CIF, a unique pair of financing instruments designed to support low-carbon and climate-resilient development through scaled-up financing channeled through major development banks. **dates:** 14-18 March 2011 **location:** Tunis, Tunisia

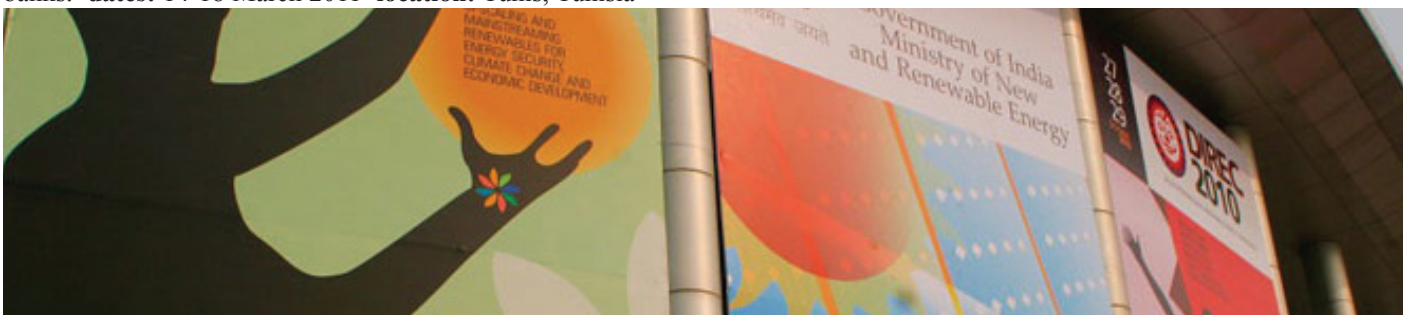
contact: CIF Administration Unit **phone:** +1-202-458-1801 **email:** CIFAdminUnit@worldbank.org **www:** http://www.climateinvestmentfunds.org/cif/partnership_forum_2010

1ST Assembly of IRENA: During the first assembly of the International Renewable Energy Agency, the statutory organs will replace the preparatory committee, and member states will work to define their renewable energy strategies. **dates:** 4-5 April 2011 **location:** Abu Dhabi, United Arab Emirates **contact:** IRENA Interim Headquarters **phone:** +971(0)241-79062 **www:** <http://www.irena.org/home/index.aspx?mnu=hom>

IPCC 33: The 33rd session of the International Panel on Climate Change is expected to take place in late April or early May 2011. **date:** TBD **location:** United Arab Emirates **www:** <http://www.ipcc.ch/>

GLOSSARY

ARPA-E	Advanced Research Projects Agency-Energy
ADB	Asian Development Bank
BIREC	Beijing International Renewable Energy Conference
CDM	Clean Development Mechanism
CSD	UN Commission on Sustainable Development
DIREC	Delhi International Renewable Energy Conference
EWEA	European Wind Energy Association
GWEC	Global Wind Energy Council
IFC	International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
IREC	International Renewable Energy Conferences
IRENA	International Renewable Energy Agency
JPOI	Johannesburg Plan of Implementation
MDGs	Millennium Development Goals
MNRE	Ministry of New and Renewable Energy, India
REN21	Renewable Energy Network for the 21st Century
SANERI	South African National Energy Research Institute
UNCED	UN Conference on Environment and Development
UNEP	UN Environment Programme
UNFCCC	UN Framework Convention on Climate Change
UNGASS	United Nations General Assembly Special Session
UNIDO	UN Industrial Development Organization
WCRE	World Council for Renewable Energy
WIREC	Washington International Renewable Energy Conference
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization



DIREC 2010 banners on display on the outside of the conference center in New Delhi.