



SUMMARY OF THE VIENNA ENERGY CONFERENCE 2009 TOWARDS AN INTEGRATED ENERGY AGENDA BEYOND 2020: SECURING SUSTAINABLE POLICIES AND INVESTMENTS: 22-24 JUNE 2009

The Vienna Energy Conference 2009 was held at the Hofburg Palace in Vienna, Austria, from 22-24 June, 2009, and was jointly organized by the United Nations Industrial Development Organization (UNIDO), Austrian Development Cooperation, the International Institute of Applied Systems Analysis (IIASA), and the Global Forum on Sustainable Energy (GFSE). The meeting brought together 778 participants from 93 countries, including 20 ministerial-level participants, energy representatives and experts, as well as representatives from UN agencies, bilateral organizations, the private sector, academia and regional and international non-governmental organizations.

The overall objective of the Conference was to provide a platform for high-level policymakers and private sector and civil society representatives from developing and industrialized countries to discuss energy issues in the context of the current global financial and economic crisis. The conference served as an opportunity to, amongst other things: shift the debate on energy and development beyond generalities and identify specific courses of action; initiate and advance regional and international co-operation in dedicated result-oriented working sessions; celebrate the tenth anniversary of the GFSE; provide inputs to the UN Climate Change Conference (COP15) in Copenhagen; and present new international energy initiatives such as the International Renewable Energy Agency (IRENA).

The three day conference consisted of five plenary sessions, six parallel sessions, and one high-level panel. This report provides background information on the GFSE and energy meetings under UNIDO and other processes, and summarizes the discussions and outcomes of the Conference.

BRIEF HISTORY

GFSE-1: The Global Forum on Sustainable Energy was launched by Austria's Foreign Minister in 1999 and provides a platform for multi-stakeholder dialogue aimed at facilitating decision-making on energy policy issues in relevant fora. It also seeks to foster public-private partnerships. The first GFSE meeting convened from 11-13 December 2000, in Laxenburg, Austria. GFSE-1 addressed the theme "Rural Energy – Priorities for Action," and contributed to preparations for the ninth session of the Commission on Sustainable Development (CSD-9). Participants at GFSE-1 considered the linkages between rural energy and sustainable development, enabling frameworks for

attracting investment for rural energy, lessons learned, financing issues, the challenges and opportunities of regulatory reform, and innovation. IISD Reporting Services (IISD RS) coverage of the meeting can be found at: <http://www.iisd.ca/sd/gfse1>

CSD 9: Energy for sustainable development was not specifically dealt with at the UN Conference on Environment and Development (UNCED) held in Rio in 1992. However, as Agenda 21 and the Rio Conventions were being implemented in the 1990s, energy emerged as a significant issue. The five-year follow-up meeting to UNCED in 1997 decided that CSD-9 in 2001 would address energy, transport and the atmosphere. CSD-9 recognized, among others, that the Millennium Development Goals (MDGs) would not be met without increased access to modern energy services. IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/csd/csd9>

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The *Vienna Energy Conference 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 Jonathan Manley and Miquel Muñoz, Ph.D. The Editor is Leonie Gordon <leonie@iisd.org>. The Director of IISD Reporting Services is Langston James "Kimo" Goree VI <kimo@iisd.org>. Funding for coverage of this conference has been provided by the Federal Ministry for European and International Affairs of Austria. 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 (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.

GFSE-2: The second GFSE meeting convened from 28-30 November 2001, in Laxenburg, Austria, and addressed the issue of “Energy Technologies – Cooperation for Rural Development.” Participants heard presentations and engaged in discussions on: stocktaking of the international energy discourse; facilitating the transfer of energy technologies suitable for rural development; case studies on successful modalities for transfer of energy technologies; and enabling policy environments and creating conditions for private sector involvement in the transfer of energy technologies for rural needs. Participants also considered the desired outcomes of and proposals for the World Summit on Sustainable Development (WSSD). IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/sd/gfse2>

WSSD: Energy was one of the key areas addressed at the WSSD. In the Johannesburg Plan of Implementation (JPOI) agreed at the WSSD, governments made a commitment to improve access to reliable and affordable energy services, promote sustainable use of biomass, and support the transition to the cleaner use of fossil fuels. Energy issues were also addressed in JPOI chapters pertaining to Small Island Developing States, Africa, regional initiatives, and health and sustainable development. IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/2002/wssd>

GFSE-3: The third GFSE meeting convened from 27-29 November 2002, in Graz, Austria, and addressed public-private partnerships for rural energy development. It considered the relevant outcomes of WSSD and sought to support the further development of initiatives to promote WSSD implementation, including the EU initiative on Energy for Poverty Eradication and Sustainable Development. GFSE-3 covered topics such as innovative financial instruments for private sector involvement in rural energy development; implementation of the energy outcomes of the WSSD; and the role of operational international organizations and funding agencies for rural energy development. IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/sd/gfse3>

CSD-11: CSD-11 took place in New York from 28 April - 10 May 2003. At CSD-11 governments adopted a new work programme for CSD for the period 2004-2017. CSD-11 agreed that future sessions would consider a limited number of topics, or “thematic clusters.” These clusters were to be examined over two-year “implementation cycles.” Energy issues were included in the thematic cluster for the 2006-2007 cycle. IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/csd/csd11>

GFSE-4: This meeting, entitled “Energy for Sustainable Development: Reconsidering the Role of Incentive Measures,” was held from 18-20 February 2004, in Vienna, Austria. GFSE-4 focused on renewable energy issues in order to provide input to the Bonn International Conference for Renewable Energies. GFSE-4 also brought together various energy-related partnerships announced at the WSSD in order to discuss their progress, and sought to contribute to ongoing work on the use of incentive measures for sustainable energy. IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/sd/gfse4>

GFSE-5: The fifth GFSE was held from 11-13 May, 2005, in Vienna, Austria, under the theme “Enhancing International Cooperation on Biomass,” putting special emphasis on strengthening institutional capacity to promote South-South cooperation. Participants also addressed a variety of relevant topics, including: potential and challenges for increasing biomass use; synergies and competition between food and

biofuels; biofuels for sustainable transport; and biomass for electricity production and household heating. IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/sd/gfse5>

CSD-14: CSD’s fourteenth session met from 1-12 May 2006, in New York, US. CSD-14 was tasked with reviewing progress in the areas of energy for sustainable development, industrial development, air pollution/atmosphere, and climate change. CSD-14 included thematic discussions, expert panels, a multi-stakeholder dialogue, and a high-level segment. The meeting was dominated by the energy agenda, with discussions focusing on energy security, the impact of oil and gas prices, and the respective roles of renewable energy technologies, fossil fuels, nuclear power and the post-2012 multilateral climate change regime. IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/csd/csd14>

GFSE-6: The sixth GFSE was held from 29 November - 1 December 2006, in Vienna, Austria. The meeting convened under the theme “Africa is Energizing Itself” and focused on sustainable energy in the African continent, with particular attention to sub-regional issues, biofuels, hydropower, Clean Development Mechanism (CDM) opportunities in Africa, GFSE’s contribution to CSD-15, and financial engineering for energy in Africa. IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/sd/gfse6>

CSD-15: CSD’s fifteenth session met from 30 April - 11 May 2007, in New York, US. Building on the outcomes of CSD-14, CSD-15 focused on expediting the implementation of commitments in the areas of: energy for sustainable development; industrial development; air pollution/atmosphere and climate change; as contained in Agenda 21; the Programme for the Further Implementation of Agenda 21; the JPOI; and the Millennium Declaration. Delegates were unable to agree on policy decisions and a Chair’s Summary text was issued *in lieu* of a negotiated outcome. IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/csd/csd15>

GFSE 7: The Seventh GFSE-7 was held from 21-23 November 2007, in Vienna, Austria. The meeting convened under the theme “Energy Efficiency for Developing Countries – Strong Policies and New Technologies,” and considered policies, case studies, and initiatives related to improving and promoting energy efficiency in developing countries, as well as opportunities, barriers, and the way forward. IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/sd/gfse7>

Global Renewable Energy Forum: Co-organized by UNIDO, this meeting was held in Foz do Iguaçu, Brazil, from 18-21 May 2008. The overall objective of the Forum was to create a suitable environment to promote dialogue on strengthening inter-regional bonds and to set up joint actions between countries and regions that aim to reduce poverty and enhance energy security through the use of renewable energy sources. The Forum also aimed to promote the development of renewable energy sources and related infrastructure in Latin America and in the Caribbean. IISD RS coverage of the meeting can be found at: <http://www.iisd.ca/ymb/greb2008/>

IRENA: IRENA was officially established in Bonn on 26 January 2009. 125 delegations attended the Founding Conference and a total of 75 nations, developing and industrialized, signed IRENA’s Statute. The aim of the new Agency is to promote a rapid transition towards the widespread and sustainable use of renewable energy worldwide. IRENA will offer advice to its members on creating appropriate framework conditions, undertake capacity building as well as foster the dissemination of and learning from best practice examples for technology transfer and financing of renewable energies.

REPORT OF THE MEETING

The Vienna Energy Conference began on Monday, 22 June, with an opening ceremony followed by a high-level panel. Monday also included two plenary sessions and a reception, hosted by Michael Spindelegger, Foreign Minister of Austria.

On Tuesday, 23 June, participants attended two plenary and four parallel sessions. On Wednesday, 24 June, two parallel sessions were held, as well as a closing plenary. In the afternoon participants went on a field trip to Hydropower Plant Freudenuau.

This report summarizes, in chronological order, the keynote presentations and discussions that occurred during the opening ceremony, plenary and parallel sessions.

OPENING CEREMONY

On Monday morning, Irene Freudenschuss-Reichl, Director General, Austrian Development Cooperation (ADC), Ministry of Foreign Affairs, Austria, opened the meeting. She emphasized the 10 years of history of the Global Forum on Sustainable Energy (GFSE), and said the Vienna Energy Conference marked the beginning of collaborative undertakings between the United Nations Industrial Development Organization (UNIDO), the International Institute of Applied Systems Analysis (IIASA) and ADC.

Brigitte Öppinger-Walchshofer, Managing Director, Austrian Development Agency (ADA), highlighted that Vienna has become a centre of international energy activities and stressed Austria's offer to host the International Renewable Energy Agency (IRENA). She said that the next months would reveal the credit crisis' impact on energy investments essential for development in developing countries. She highlighted ADA's role in directing aid to those regions most in need.

Detlof von Winterfeldt, Director, IIASA, underlined the Institute's work on the Global Energy Assessment (GEA). He underscored IIASA's goal to find solutions to global problems, particularly on the issues of food and water, poverty and equity, and energy and climate change. Stressing the need for a transformation of the energy system, he said that providing modern energy services to all is doable and affordable in the medium term, if the political will exists.

Kandeh Yumkella, Director-General, UNIDO, recalled Vienna's role as an energy hub and noted that energy had only recently been moved to the fore of the development agenda. He said energy strategies need a long-term vision and proposed to focus on four issues during the meeting: the key role of energy for development; the need for greater access to clean energy; the nexus between energy and climate change; and ensuring a globally inclusive clean energy revolution, which does not repeat the exclusions of the previous industrial revolution. He hoped the Vienna Energy Conference could take place bi-annually.

Srgjan Kerim, Special UN Envoy on Climate Change, said climate change is the defining challenge of our times, affecting every aspect of society, from economy to health, food and water security. Underscoring that energy is at the heart of climate change, and the inter-linkages with poverty reduction, he stressed the need for a radical transformation in global energy policy. He noted that a fair and effective deal in Copenhagen is pivotal to transforming the energy system, and needs to meet developing countries' need for significant financing and technology transfer.

In a keynote address, Rajendra Pachauri, Chairman of the Intergovernmental Panel on Climate Change (IPCC), said an energy revolution is needed for three reasons: economic and geopolitical issues associated with fossil fuels dominance of the energy mix; the need to avoid dangerous levels of greenhouse gas concentrations to address climate change; and the unacceptable level of energy poverty affecting over two billion people. He noted that the technology exists for a shift to a low carbon economy and that policy and a correct carbon price are tools to carry these forward. He emphasized the need for innovative approaches and to reassess global spending priorities.

HIGH-LEVEL PANEL: AN INTEGRATED ENERGY AGENDA BEYOND 2020

On Monday morning, Todd Benjamin, Former CNN International Financial Editor, moderated the high-level segment, which included the following panelists: Suleiman Jasir Al-Herbish, Director-General, OPEC Fund for International Development; Andre Amado, Vice-Minister, Ministry of Foreign Affairs, Brazil; Manfred Konukiewitz, Commissioner for Climate Policy, Federal Ministry of Economic Cooperation and Development, Germany; Jan Kubis, Executive Secretary, UN Economic Commission for Europe (UNECE); Corrado Clini, Director General, Ministry of Environment and Protection of Land and Sea, Italy; Jordy Herrera, Secretariat of Energy, Mexico; and Mohamed Maalim Mahamud, Minister of Energy, Kenya. The session had the format of a media debate, with a quick succession of questions from the moderator and answers from the panelists.

Asked whether energy efficiency can increase without hampering economic growth, Konukiewitz said most energy efficiency measures have net benefits. Clini said the challenge is financing the initial costs. Al-Herbish underscored the differences between developed countries, needing capital, technology and political will, and low-income countries, needing a relief programme for energy access.

Asked whether energy access or renewables are more important for developing countries, Amado underscored sugar-cane biofuels. Noting the impacts of corn ethanol on food availability and of palm oil on tropical forests, Al-Herbish and Clini underscored the need for sustainable biofuels. Herrera emphasized rural electrification. Konukiewitz said renewables and efficiency are the only answers to urgent greenhouse gas reductions. Mahamud said access to energy is crucial for development.

Asked where the money comes from to pay for renewables, Konukiewitz said there are about US\$300 billion subsidies for fossil fuels, which could be redirected to renewables. Kubis said a deal in Copenhagen could enable financing. Konukiewitz noted the successful regulatory measures and political will to deploy renewables in Germany. Amado underscored productivity and efficiency, rather than subsidies. Clini emphasized the need to address international carbon leakage. Herrera underscored Mexico's proposed Green Fund.

When asked whether they considered an agreement is likely to be reached in Copenhagen, most of the audience thought not. Clini said there would be a good agreement on technology, but not a legal agreement. Konukiewitz believed there would be an agreement, given the policy changes in the US and China's openness to discussion. He said the litmus test for

political will not be a 2050 target, but an interim 2020 target. Mahamud said Africa needs technology and finance from a Copenhagen deal.

PLENARY SESSION 1: THE GLOBAL ENERGY CHALLENGES OF THE 21ST CENTURY

On Monday, the plenary session consisted of two sections, one before and one after lunch. The pre-lunch session was moderated by Todd Benjamin, and the Panel consisted of Fatih Birol, IEA, Ogunlade Davidson, Minister for Energy and Power, Sierra Leone, Ged Davis, Co-President, GEA Council, Douglas Gardner, UN Development Programme (UNDP), Nebojsa Nakicenovic, IIASA, and Kandeh Yumkella.

On scaling-up clean energy, Davis emphasized collaboration between politicians and the public as well as understandable and achievable goals. Davidson said politicians and the public need to be aware of the urgency of the climate change problem. Nakicenovic said economy and poverty are reasons for changing the energy model and Birol stressed change through financial incentives.

On impacts of the financial crisis on energy investments, Yumkella expressed concern but noted encouraging signs of green investments in India, China and Brazil, and inclusion of clean energy in some stimulus packages. Gardner highlighted how energy investments can act as a catalyst for development. Davidson said Copenhagen could change the way business is done, and that technology agreements could be made to help those countries left out of previous development cycles. Birol said carbon should be priced such that it incentivizes OECD countries to move away from fossil fuels.

On energy access and industrial development in developing countries, Yumkella said that energy access is the missing Millennium Development Goal (MDG). He said that climate change should not cannibalize overseas development assistance (ODA) funds, which are essential for other development needs such as HIV/AIDs. Davidson said ODA funds are strongly required for building institutional capacity.

In the afternoon session Thomas Johansson, Director, International Institute for Industrial Environmental Economics, Lund University, underscored access to energy, peak-oil, air pollution, climate change and weapons proliferation as challenges to energy systems. He stressed that to stay below 2°C, greenhouse gas emissions will need to be brought down below zero. In this context, he said the GEA analyzes what to do, how to do it and who can do it. Citing the examples of ethanol from sugarcane or corn, and of feed-in tariffs, Johansson highlighted that policies can be done right or very wrong. He noted that while previous energy transitions were market-driven, the one needed today is constraint-driven.

Li Zheng, Tsinghua University, underscored five challenges for China's energy system: great increase in energy demand; dependency of imports on fuel liquids; environmental pollution; urbanization; and climate change.

Daniel Bouille, Institute of Energy Economics, Bariloche Foundation, said the 1.6 billion people with no electricity and the 2.4 billion that cook with wood are the poorest of the poor, have the smallest voice, and greatest need for assistance. He warned against dualism, and underscored equitable energy and the "right to energy" to reduce energy poverty and inequity. He said energy access should be integrated with other development goals, but framing it under climate change goals would be detrimental.

Kirk Smith, University of California Berkeley, US, said that products of incomplete combustion need to be addressed because they significantly add to the climate change problem and are a direct health risk. He stressed that giving poor people access to clean fuels meets the dual goals of climate change and improved energy quality.

Marianne Haug, University of Hohenheim, Germany, said climate change and development financing should be kept separate, or development will be short-changed. She said a Copenhagen agreement, no matter what shape it takes, will reduce regulatory risk, but stressed that the next decade will be one of policy learning. She emphasized low investments in energy technology research and development (R&D) and said the energy transition cannot happen until R&D investments are ramped up.

In the ensuing discussion, speakers addressed many questions, including how to redirect investment into less carbon-intensive technologies, the need for low-cost renewable energy technologies, and the need to mobilize private funding in the order of twenty times public finance for R&D.

PLENARY SESSION 2: ENERGY STRATEGIES TO COMBAT CLIMATE CHANGE

Anders Wijkman, European Parliament, moderated this session on Monday afternoon. He said the goal was to move from general towards specific suggestions, strategies, and policies to achieve the transition to clean energies.

Keywan Riahi, IIASA, spoke on research findings from IIASA and the GEA. He said that there was no one policy "hammer" to achieve all the energy access, development and climate change goals, and policy and technology portfolios were required. He underscored biomass with carbon capture and storage (CCS) as a promising technology to deal with climate change. He underscored the need to triple clean energy investments.

Christoph Frei, Secretary General, World Energy Council, said utilities needed carbon price estimates. He explained that currently the cost of CCS had been used as a benchmark, with price estimates ranging from US\$50 to US\$100 per tonne of carbon dioxide. On smart grids, he underscored the needs for standardization of information to enable production of "smart" appliances, and for appropriate incentives for utilities.

Robert Williams, Princeton University, US, presented on systems that produce synthetic fuels and electricity by co-processing coal and biomass with CCS. He highlighted that this method is much cheaper than conventional CCS technologies and that this technology would become competitive at an oil price of US\$100 per barrel. He noted that the greenhouse gas emissions rate for coal synfuels is no better than for crude oil products displaced, hence the value of coupling it with electricity generation.

Rangan Banerjee, Indian Institute of Technology, said for developed countries climate change mitigation is the benefit and development a co-benefit, whereas for developing countries it is the other way round. He highlighted the need to base policy on equity principles and the need for a shift of business models from kWh provision to energy services provision. He also highlighted split incentives, particularly in the building sector.

Suani Coelho, Brazilian Reference Center on Biomass (CENBIO), said replication of the Brazilian experience in biofuels is possible in other developing countries, in a sustainable way and without competition for food. Noting

the need for adequate policies and sustainability criteria, she stressed that win-win South-South cooperation is possible. She said sustainability criteria should be applied to all energy sources, not just biofuels.

Lamine Thioune, Ministry of Energy and Biofuels, Senegal, underscored his country's policies on climate change and renewable energies. He highlighted adaptation and multi-sectoral programs to improve health, agricultural production and energy and information technologies access. He stressed the difficulties in financing such programs.

Diana Üрге-Vorsatz, Director, Center for Climate Change and Sustainable Energy Policy (3CSEP), Central European University, underscored the building sector as having the largest potential to mitigate greenhouse gas emissions. She noted that passive buildings "only" cost three to eight percent more than conventional buildings, and also highlighted potential for improvements in existing buildings through retrofits. She said carbon pricing is not effective in improving energy efficiency in buildings and stressed the need for government regulation.

In the ensuing discussion, participants addressed a number of issues including: the need for performance targets, rather than picking "winning" technologies; fossil fuel subsidies and other market distortions; how to establish carbon prices; whether large-scale CCS will be available in time to deal with climate change; the lack of effectiveness of the Clean Development Mechanism (CDM) for investment in green buildings; and the "not-in-my-backyard" (NIMBY) effect for energy infrastructure.

When the panelists were asked if they could enact any one piece of legislation what would it be: Üрге-Vorsatz proposed a package of energy performance standards; Thioune, mechanisms to include Africa in the CDM; Coelho, certification criteria for biofuels; Banerjee, a mechanism to cost projects according to life-cycle analysis rather than initial investment; Williams, low-carbon intensity standards; Frei, carbon costs and specific financing instruments for rural electrification; and Riahi, feed-in tariffs. Wijkman concluded by noting that climate negotiators seem to be locked into a dialogue of their own, removed from energy and world realities.

During the evening reception, Michael Spindelegger highlighted Austria's offer to host IRENA in Vienna.

PLENARY SESSION 3: TOWARDS A SUSTAINABLE, LOW-CARBON PATH TO DEVELOPMENT

On Tuesday morning, Irene Freudenschuss-Reichl moderated this session.

Aristides Fernandez-Zucco, Secretary of State and President of the National Energy Commission, Dominican Republic, stressed the importance of energy to development, highlighting that energy is essential to meeting all the MDGs, yet does not exist as an MDG in itself. He said the Dominican Republic has the political will, but requires financial resources for clean development.

Christopher Flavin, President, Worldwatch Institute, identified trends and the driving forces behind the changes in renewable energy over the previous five years. He highlighted the role of higher fossil fuel prices, and identified strong renewable energy policy frameworks as the most important driver. He said countries that do not move soon on renewables would be left behind in the "new industrial revolution."

Melinda Kimble, UN Foundation, underscored the urgency of implementing and making the Copenhagen agreement operational. She highlighted the need for a systemic transformation not only in energy, but also in agriculture. She proposed using small island states (SIDS) as laboratories for carbon-free economies, and highlighted the need to address forests and land-use. She said developed countries could come up with US\$2-5 billion for an adaptation fund at Copenhagen, plus a US\$10 billion GEF replenishment.

Marianne Moscoso-Osterkorn, Director General, Renewable Energy & Energy Efficiency Partnership highlighted non-governmental organization's (NGOs) added value in three key areas, namely that they: can move very quickly to provide support; are flexible and can provide tailor-made renewable energy and energy efficiency solutions; and promote innovation and can work on small-scale solutions.

Karsten Sach, Chairman, Administrative Committee IRENA, stressed that the Agency was created outside the UN for speed reasons, but this does not preclude it being adopted by the UN family in the future. He underscored IRENA's cooperation with renewables networks and other organizations, and said IRENA will stimulate research, enhance capacity building and advise on policy and financing, but will not finance renewable energy projects.

Wijkman underlined the need to adopt full systems approaches and urged more regular scientific updates than those provided by the IPCC. He called for more involvement of national legislators in negotiating processes.

In the ensuing discussion, participants addressed issues such as: the time-frames for systemic change; the relevance of the UN Framework Convention on Climate Change (UNFCCC) negotiations; the potential of an international energy efficiency agreement; the effectiveness of binding targets; and energy access for the poor and rural areas.

PARALLEL SESSION 1: RENEWABLE ENERGY

This session took place on Tuesday morning and was moderated by Mark Radka, Chief, Energy Branch, UN Environment Programme (UNEP).

Mark Davis, Norfund, Norway, spoke from the perspective of an investor in renewable energy, illustrating how to overcome challenges such as construction risk, political risk, and the difficulties of raising capital with an example of a project in Uganda.

Samai Jai-In, House of Representatives, Thailand, underscored the importance of biofuels in the Association of Southeast Asian Nations (ASEAN) region. He said the question is not food vs. fuel, but human security and land-use. He highlighted Thailand's commercialization of biofuels and 55% gasohol consumption, as well as its position as the world's fifth largest ethanol producer.

Hongpeng Liu, UN Economic and Social Commission for Asia and the Pacific, underscored the energy challenges posed in the region by economic growth, lack of access to energy, and changes in energy governance. He emphasized the need for regional cooperation, taxation reform, and increased investment in renewables.

Markku Nurmi, Director-General, Ministry of the Environment, Finland, elaborated on lessons from working in Central America through the Energy and Environment Partnership with Central America. He noted that the share of renewables in Central American countries is higher than most European countries.

Mustapha Taoumi, Director, Development Centre for Renewable Energy (CDER), Morocco, underscored the development of renewable energies in his country as an example for developing countries. He noted the effects of the economic crisis and volatility of oil prices in financing for renewables. He elaborated on the energy challenges posed by population growth and urbanization, and suggested limitation of consumption, deployment of renewables, and energy efficiency as solutions.

PARALLEL SESSION 2: ENERGY ACCESS FOR PRODUCTIVE USES

Minoru Takada, Sustainable Energy Programme, UNDP, moderated this session on Tuesday morning, stressing its focus on technology, financing and promoting political will to achieve energy access. The panel consisted of: Abeeku Brew-Hammond, Kwame Nkrumah University of Science and Technology, Ghana; Adam Kighoma Ali Malima, Deputy Minister for Energy and Minerals, Tanzania; Susan McDade, UN Coordinator in Cuba; Harry Verhaar, Senior Director Energy & Climate Change, Philips Lighting; and Andrew Yager, UN Department of Economic and Social Affairs (UN DESA).

On the role of technology, Verhaar noted how lighting solutions extend daily productive hours and lead to development. McDade said it was important to focus on energy services and let the choice of technology follow the service requirements. Yager emphasized the obligation to fulfill basic energy and water needs. Brew-Hammond emphasized the need to be timely in delivery of energy services. Malima underlined the need to improve the marketing of new technologies to increase awareness among both the public and politicians.

On financing, allocating resources, and whether a specific fund for energy access was required, McDade recommended incorporating the gender dimension into energy access investments, to account for women's pro-development patterns of income use. Noting that current financing often overlooks the poorest of the poor, Yager said basic lighting, water and sanitation are needed to help them jump-start development. Malima noted that such a fund was needed as many projects are not attractive to commercial or national financing institutions.

On the question of political will, Verhaar called for more dynamic leadership. Brew-Hammond noted how strong leadership was often based on luck, and that instead targets and public accountability are needed. McDade underscored how the climate debate sometimes overshadowed more pressing social needs, and said perhaps a sense of public outrage needed to be cultivated to move forward on energy access.

PARALLEL SESSION 3 ENERGY EFFICIENCY IN INDUSTRY

Hans Rogner, International Atomic Energy Agency, moderated this session on Tuesday afternoon.

Rob Steele, Secretary-General, International Organization for Standardization (ISO), said energy issues should be regarded under a global goal of sustainable development, and emphasized the need for effective standards, learning from proven systems, achieving growth without depleting resources, and recognizing the economic benefits of energy efficiency. He highlighted the ISO 50001 international standard for industrial energy efficiency to be published in 2010.

Dolf Gielen, UNIDO, presented on facts and figures for industrial energy efficiency, noting that good quality data was still needed, especially to develop good policies. He noted that although the potential for emissions reductions for industrial energy efficiency is high, including in small and medium enterprises, industrial emissions savings could be more challenging than emissions reductions in the transport and buildings sectors.

Aimee McKane, Lawrence Berkeley National Laboratory, US, spoke on systems optimization as the approach where the most energy savings could be achieved. She noted that difficulties in assessing performance were often due to incorrect measurements. She said the ISO 50001 standard made energy use more apparent and would enable users to manage energy more effectively.

Gianluca Sambucini, Global Energy Efficiency 21 (GEE21), spoke on financing energy efficiency investments. He noted the activities of GEE21 aim to strengthen energy efficiency project financing in the 12 UNECE countries, and share experience over these countries. He highlighted a study underway with UN Energy to collect and publish data on energy efficiency initiatives in Europe.

Paul Waide, IEA, noted major differences in industrial energy efficiency levels across countries. He said policies were needed as price signals were not sufficient, and underscored lack of awareness and information as a barrier. He highlighted IEA's recommendations on energy efficiency to the G8, and reiterated that major savings could be achieved through systems optimization and energy efficiency standards.

PARALLEL SESSION 4: TOWARDS A RENEWABLE ENERGY VISION FOR WEST AFRICA

This session on Tuesday afternoon was moderated by Irene Freudenschuss-Reichl.

Ogunlade Davidson said in his country 25% of the population has access to the grid, an additional 10% self-generates, and 60% depends on firewood and charcoal. He said most dissemination of efficient stoves is driven by the private sector, often with poor technical performance. He highlighted the need for climate change adaptation and efficient use of land resources, and the importance of government procurement.

Pradeep Monga, Director, Energy and Climate Change Branch, UNIDO, highlighted the link between energy access and human development rankings. He underscored the large potential for hydropower, biomass and solar energy in West Africa, and the need to balance biofuel and food production. He highlighted challenges for the region such as dependence on fossil fuel imports and weak policy and institutional capacity. Monga elaborated on the West Africa Global Environmental Facility Programme and the Economic Community of West African States (ECOWAS) Initiative on Access to Energy and Regional Centre.

Mahama Kappiah, ECOWAS, said high population growth provides pressure for the development of energy infrastructures. He stressed the ECOWAS white paper "Increasing Energy Access Services for Rural and Sub Urban Areas in Order to Achieve the MDGs," and noted that without energy access the MDGs cannot be met.

Vijay Modi, Columbia University, US, said the primary driver for growth in rural areas is agriculture, and, using an example of energy access for water pumping, underscored attention to energy needs for agriculture. He stressed that in many solar energy systems the higher costs come from

batteries, not solar panels. Modi underscored the importance of assisting local capacity to develop renewable policies within countries.

Alberic Kacou, UN Resident Coordinator in Nigeria, highlighted three points to make energy investments transformative: focusing energy access in provision of energy services, rather than energy *per se*; energy efficiency targets; and capacity building and enabling environments. He underscored addressing energy access for the poor as a top priority for UNDP.

Fabio Borba, InfraCo Limited, presented on his company's experience on infrastructure projects in Africa. He described a windpower project in Cape Verde of 28MW, representing 48% of Cape Verde's installed capacity and resulting in 80,000 Certified Emission Reductions. He said renewable energies have a place in Africa and are the natural answer in many projects, due to high and volatile oil prices. He said CDM financing is necessary, but access to CDM should be simplified.

PLENARY SESSION 4: FINANCING ENERGY IN TIMES OF CRISIS

This session was held on Tuesday afternoon and moderated by Amarquaye Armar, Energy Sector Management Assistance Program, World Bank.

Aida Karina Izaguirre, World Bank, presented on the World Bank's main findings with regards to the impact of the financial crisis on new infrastructure. She said projects have been impacted by higher cost of financing, delays and cancellations. She said the economic slow down had mainly affected infrastructure projects closely related to trade, and that the crisis had, in some cases, given the electricity sector some time to catch up with demand shortfalls.

Orli Arav, Director, Frontier Markets Fund Managers, spoke on the effects of the credit crisis on investments in Africa. She underscored two Africa-focused funds: Emerging Africa Infrastructure Fund (EAIF) and GuarantCo, which focused exclusively on private sector infrastructure projects. She noted the need to build capacity in African governments for negotiating multiple project arrangements.

Amarquaye Armar, presented a study on the impacts of the financial downturn in Vietnam, the Philippines and Indonesia. He said the credit crisis and requirements for higher equity ratios have hit small and medium developers hard. Armar stressed that tangible assets formation has declined by half since 2007.

Dinh Quang Tri, Electricity of Viet Nam, noted the impacts of the financial crisis in the energy sector in Viet Nam, and highlighted measures undertaken to overcome the crisis, such as tariff increases, issuance of bonds and request of loans to the Asian Development Bank. Le Tuan Phong, Ministry of Industry and Trade, Viet Nam, stressed the impacts of the crisis on the renewable energy sector, including increased threat of contract defaults and shortage of funds for renewable energy development. He underscored government measures such as a reassessment of demand, a new renewable energy law and regulations, and setting up a renewable energy fund. Setio Anggoro Dewo, National Power Utility, Indonesia, underscored his country's strategies to cope with under-supply of electricity. He stressed a goal of 80% electrification by 2030 and an increased share of renewable energy from 5% to 10%.

Jeremias Paul, Department of Finance, Philippines, underscored the crisis as an opportunity to improve energy efficiency. He noted continued government commitment for the power sector reform process, which had slowed due to the crisis. Paul highlighted the potential of indigenous renewable energy sources.

Nestor Luna, Latin American Energy Organization (OLADE), said the credit crisis brought a 1.8% to 1.2% reduction in infrastructure investments in Latin America. He underscored opportunities to involve multilateral organizations in infrastructure investments, to establish cross-border partnerships to lower costs of infrastructure investments; and to boost investments in renewable energy.

Alexis Bonnel, Head, French Development Agency (AFD), said an increase in the price of energy services is needed to reflect the true cost of energy. He said this would improve supply and promote renewables and energy efficiency, and that portions of the higher tariffs could be allocated to energy poverty alleviation.

Farida Mazhar, World Bank, said capital finance flows to developing countries would fall by 70% from a peak in 2007, with an estimated funding gap above US\$600 billion. She noted the World Bank's increased emphasis on providing guarantees, because of the leveraging effect compared with just standard lending.

PARALLEL SESSION 5: ENERGY IN CENTRAL AND EASTERN EUROPE

On Wednesday morning, Herbert Lechner, Austrian Energy Agency, moderated this parallel session.

Johannes Enzmann, European Commission, explained that the EU Emission Trading System (EU-ETS) was effective in achieving the lowest cost emission reductions defined by setting a cap on emissions. He explained measures to minimize carbon leakage by identifying and offering concessions to industries most prone to relocate beyond the EU-ETS jurisdiction. On whether it was possible for non-EU countries to link with the EU-ETS, Enzmann spoke of plans to develop links with non-EU countries, and an OECD-wide carbon market by 2015.

Marek Wejtko, Ministry of Economy, Poland, said that renewables and energy were to play a major part in the Polish economy, but that joint implementation (JI) had not stimulated clean investments significantly. He noted IEA's support in developing a draft energy efficiency strategy for Poland, and noted that carbon leakage signified the failure of climate change mechanisms to reduce emissions growth without negatively affecting economic growth.

Iaroslav Mikhieiev, National Environmental Investment Agency, Ukraine, presented Ukraine's developments in a growing number of JI programmes, and advocated continuation of this Kyoto mechanism. He also noted a partnership with Japan, and that PointCarbon had rated Ukraine the best JI partner in the world.

Ivan Narkevitch, Head of Department of International Conventions and Agreements, Belarus, said that Belarus was awaiting ratification for its inclusion in Kyoto Protocol Annex B. He noted that instruments had been put into place to take advantage of UNFCCC funding once Belarus is included in Annex B. He noted their goal to increase their energy independence through growth of renewable energy sources.

Andre Gagarinski, Kurchatov Institute, underscored attributing some carbon liability to consumers of finished goods, not just producers. He presented the energy forecasts for major countries and regions highlighting that large percentages of emissions production went into goods that are exported for international consumption.

In the ensuing discussion, Enzmann noted that the EU-ETS was not a good vehicle for reducing energy consumption in buildings as the scheme focuses on very large carbon emission point-sources, and noted that the EU-ETS could provide price signals, thus promoting renewables where cost-efficient.

PARALLEL SESSION 6: STRENGTHENING SUSTAINABILITY AND ENERGY SECURITY IN SMALL ISLAND DEVELOPING STATES

This session was held on Wednesday morning, and moderated by Solomone Fifita, Pacific Regional Environment Programme. He said SIDS might be small islands, but have big issues, energy being one of them. Most panelists highlighted the bleak future of SIDS due to climate change and the domestic reasons to move towards sustainable energy systems in SIDS.

Albert Binger, Alliance of Small Island States (AOSIS), underscored that SIDS had nothing to do with climate change, yet they are the most affected, and emphasized that SIDS' first priority is survival. He stressed impacts on critical infrastructure, noting that coastal defenses of infrastructure cost about US\$4000 per meter. He highlighted the need to integrate energy and agriculture systems.

Susan McDade said a mechanism is needed to allow SIDS to redirect energy investments from short-term fossil fuel payments to long-term sustainable energy investments. She proposed the international community should finance SIDS oil bills for a while, rather than renewable projects, so SIDS can free their energy budgets and redirect them towards sustainable energy investment. McDade said SIDS should use their UN block negotiation techniques for negotiations with energy technology providers and to buy down the price of renewables.

Tom Roper, Global Sustainable Energy Islands Initiative, underscoring the small size of SIDS energy systems, said SIDS could act as ideal externally-funded laboratories for sustainable energy systems at a low cost, with benefits for all third countries. He underscored the challenge of technology transfer, which has been ongoing for 20 years, and noted that SIDS don't benefit from the CDM, calling for special CDM arrangements for SIDS.

Elizabeth Thompson, Senator and former Minister for Energy and Environment, Barbados, said the problem is the global attitude towards renewables where interest is only expressed when fossil fuel prices are high. She suggested harmonized legislation in the Caribbean as a way to establish appropriate frameworks in an effective manner. She noted that during the last oil price spike, household energy costs in Dominica were higher than the cost of rent.

Paul Fairbairn, Pacific Islands Applied Geosciences Commission, stressed the opportunities of linking climate, energy and agriculture. He said the development of procedures to access funding appropriate for SIDS needs should be taken up at the higher level.

Joseph Williams, Caribbean Community (CARICOM), said there is a significant renewable energy resource potential in SIDS, and highlighted regulatory frameworks as critical elements.

Juan Marco Alvarez, IUCN, underscored islands as a valuable laboratory to understand the linkages between ecosystems, energy systems and climate change. He said an ecosystem approach to energy sources would help in providing a more diversified energy system.

CLOSING PLENARY

The closing plenary began on Wednesday morning. In the closing keynote speech, Nikolaus Berlakovich, Federal Minister of Agriculture, Forestry, Environment and Water Management, Austria, remarked that this was an ideal time for this conference given the environmental and economic challenges, and GFSE's 10th anniversary. He noted his long-term vision for freeing Austria from energy imports, and Austria's commitment to increasing its share of renewable energy and environmental technologies. He emphasized Austria's offer to host IRENA in Vienna, noting Vienna's position as an energy hub, hosting numerous complementary energy agencies.

Ged Davis said the meeting discussions had led to the following six key recommendations, presented by several speakers:

- **Energy Development Goals (EDGs) for 2030** – Freudenschuss-Reichl noted that the MDGs ended in 2015 and said it was necessary to set long-term EDGs that would address energy poverty issues, with appropriate timeframes and milestones;
- **Energy efficiency fast track** – Nakicenovic highlighted that energy efficiency is an important requirement for enabling effective uptake of renewable energy and energy access. Freudenschuss-Reichl suggested sectoral energy efficiency targets to speed up action and implementation, to develop policies at the national and regional levels, and encourage stronger international cooperation and sharing of best-practice information;
- **Accelerate energy R&D** – Nakicenovic said global spending on energy R&D should be commensurate to the vital role energy plays in society. He said ambitious long-term targets for R&D are needed to induce change;
- **Enhance diffusion of energy technologies** – Nakicenovic said focusing on end-use technologies should be a priority as diffusion has much shorter timeframes than those of large supply technologies. Participants asked how this could be achieved, and Freudenschuss-Reichl noted that the GEA will serve as an excellent vehicle for delivering the message on energy;
- **Strengthen UN Energy** – Thomas Stelzer said UN Energy provides frameworks of using energy-related resources and making them available to other global processes. He praised Yumkella for the strong role he had played towards linking energy to the other UN agencies;
- **Global energy support** – Stelzer noted the need for reliable research to push forward energy issues, noting that reliable scientific knowledge such as the GEA would help to increase global knowledge and support on energy issues.

Irene Freudenschuss-Reichl thanked the organizers and the co-hosts, and thanked Austria for its strong support of the GFSE. She said she hoped the Vienna Energy Conference would reconvene in 2011.

In his closing remarks, Kandeh Yumkella underscored the importance of Vienna as an energy hub, which he said would help put energy where it belongs on the global agenda. Noting previous remarks on energy independence, he emphasized

energy “interdependence” and the need for international cooperation. He underscored the importance of energy access, giving an example of his hometown in Sierra Leone. Stating that, in energy and other areas, without “foot soldiers” things do not happen and remain just words, he thanked the UNIDO and ADC staff and organizers, and closed the meeting at 12:21pm.

UPCOMING MEETINGS

SECOND SESSION OF THE PREPARATORY COMMISSION OF THE INTERNATIONAL RENEWABLE ENERGY AGENCY (IRENA): This Session will take place from 29-30 June 2009 in Sharm El Sheikh, Egypt. During its second session, the Preparatory Commission will determine the Agency’s interim headquarters and its Interim Director-General. Moreover, decisions are envisaged regarding the work programme, financial regulations, staff regulations, and the budget. For more information contact: e-mail: info@irenaegyptconf.net; Internet: <http://www.irenaegyptconf.net/>

G8 SUMMIT 2009: The Summit of the eight leading industrialized nations (G8) will convene from 8-10 July 2009, in L’Aquila, Italy. For more information contact: Italian Prime Ministers office; tel: +39-06-6820-4090; Internet: http://www.g8italia2009.it/G8/G8-G8_Layout_locale-1199882116809_Home.htm

IPCC AR5 SCOPING MEETING: The first scoping meeting for the Inter-governmental Panel on Climate Change (IPCC)’s Fifth Assessment Report (AR5) will be take place from 13-17 July 2009 in Venice, Italy. For more information, contact: IPCC Secretariat; tel: +41-22-730-8208; fax: +41-22-730-8025/13; e-mail: IPCC-Sec@wmo.int; Internet: <http://www.ipcc.ch/>

INFORMAL MEETINGS OF THE AWG-LCA and AWG-KP: Informal meetings of the AWG-LCA and the AWG-KP are scheduled to take place from 10 - 14 August 2009 in Bonn, Germany. Observers will be allowed. For more information, contact: the UN Framework Convention on Climate Change (UNFCCC) Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; Internet: <http://unfccc.int/>

WORLD CLIMATE CONFERENCE 3: The Third World Climate Conference, to be held from 31 August to 4 September 2009 in Geneva, Switzerland, will take as its theme “Better Climate Information for a Better Future.” The conference will serve as an input to COP 15. For more information, contact: Buruhani Nyenzi, WCC-3 Secretariat, World Meteorological organization (WMO); tel: +41-22-730-8273; fax: +41-22-730-8042; e-mail: wcc-3@wmo.int; Internet: http://www.wmo.int/pages/world_climate_conference

INTERNATIONAL CONFERENCE ON GREEN INDUSTRY IN ASIA: This conference will convene under the theme of “Managing the transition from the resource-efficient and low-carbon industries,” from 9-11 September 2009, in Manila, the Philippines. It will serve as a platform to extensively discuss the opportunities generated and challenges posed by a move towards resource efficient industries and sustainable production and consumption patterns. For more information, contact the UN Industrial Development Organization (UNIDO); tel: +43-1-260-26-0; fax: +43-1-269-2669; e-mail: unido@unido.org; Internet: <http://www.unido.org/index.php?id=7503>

AWG-LCA 7 AND AWG-KP 9: The seventh session of the AWG-LCA and the ninth session of the AWG-KP are scheduled to take place from 28 September - 9 October 2009 in Bangkok, Thailand. For more information, contact: UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; Internet: <http://unfccc.int/meetings/items/2654.php>

GLOBAL RENEWABLE ENERGY FORUM 2009 - SCALING UP RENEWABLE ENERGY: This Forum will seek to promote dialogue in order to strengthen inter-regional cooperation and encourage innovative multi-stakeholder partnerships aimed at scaling-up investments in renewable energy, from 7-9 October 2009 in León, Mexico. It will be co-organized by the Ministry of Energy of Mexico and UNIDO. For more information, contact Pradeep Monga, UNIDO, tel: +43-699-111-23504; Internet: <http://www.unido.org/index.php?id=7341>

HIGH-LEVEL CONFERENCE ON CLIMATE CHANGE: TECHNOLOGY DEVELOPMENT AND TRANSFER: This conference will take place from 22-23 October 2009 in New Delhi, India. The Government of India and UN DESA are jointly organizing this high-level conference to help formulate a roadmap for technology in the context of climate change mitigation and adaptation to support the UNFCCC process. For more information contact: fax: +1-212-963-1267/9883; e-mail: DelhiConference@un.org; Internet: http://www.un.org/esa/dsd/dsd_aofw_cc/cc_conf1009.shtml

IPCC-31: The thirty-first session of the IPCC will be held from 26-28 October in Bali, Indonesia. For more information, contact: IPCC Secretariat; tel: +41-22-730-8208; fax: +41-22-730-8025/13; e-mail: IPCC-Sec@wmo.int; Internet: <http://www.ipcc.ch/>

RESUMED AWG-LCA 7 AND AWG-KP 9: A resumed seventh session of the AWG-LCA and the resumed ninth session of the AWG-KP are scheduled to take place from 2-6 November 2009 in Barcelona, Spain. For more information, contact: UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; internet: <http://unfccc.int/>

SECOND WORKSHOP ON ENERGY EFFICIENCY IN HOUSING: This workshop will be held from 23-25 November 2009 in Vienna, Austria. It is being organized by the UN Economic Commission for Europe (UNECE), in cooperation with the City of Vienna and CECODHAS (the European Liaison Committee for Social Housing). Results of the workshop and the related measures presented will feed into and contribute to the development of the Action Plan for Energy Efficient Housing to be developed under the UNECE. For more information contact: e-mail: paola.deda@unece.org; Internet: <http://www.energy-housing.net/>

UNFCCC COP 15 AND KYOTO PROTOCOL COP/ MOP 5: The 15th session of the Conference of the Parties to the UNFCCC and fifth session of the Meeting of the Parties to the Kyoto Protocol are scheduled to take place from 7-18 December 2009, in Copenhagen, Denmark. These meetings will coincide with the 31st meetings of the UNFCCC’s subsidiary bodies. Under the “roadmap” agreed at the UN Climate Change Conference in Bali in December 2007, COP 15 and COP/ MOP 5 are expected to finalize an agreement on a framework for combating climate change post-2012 (when the Kyoto Protocol’s first commitment period ends). For more information, contact: UNFCCC Secretariat; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.int; Internet: <http://unfccc.int/>