



SUMMARY OF THE WORKSHOP ON RENEWABLES – COMPETITIVENESS AND INNOVATION, AND THE OFFICIAL OPENING OF THE IRENA INTERNATIONAL INNOVATION AND TECHNOLOGY CENTRE (IITC): 6-7 OCTOBER 2011

On 6-7 October 2011, the International Renewable Energy Agency (IRENA) held events marking the inauguration of its IRENA Innovation and Technology Centre (IITC) in Bonn, Germany. The IITC is to complement the work of IRENA’s headquarters in Abu Dhabi, United Arab Emirates, by working towards a framework for renewable energy technology support as well as cost reduction potentials and policies to support innovation and increased use of standards.

On 6 October, a pre-inauguration workshop on renewables competitiveness and innovation was held. The workshop had sessions on: the economics of renewables, focusing on competitiveness, costs and benefits; costs of systems integration and benefits of renewables; innovation for accelerated development; upcoming developments in renewables; and the IITC roadmap.

On 7 October, the inauguration event was held, consisting of an opening ceremony and panel discussion entitled “Towards the Age of Renewables.” The events were attended by high-level government representatives, business and industry, intergovernmental organizations, and non-governmental organizations (NGOs).

A BRIEF HISTORY OF IRENA AND IITC

The statute of the International Renewable Energy Agency (IRENA) was adopted on 26 January 2009, and entered into force on 8 July 2010. IRENA’s purpose is to promote the widespread and increased adoption and sustainable use of all forms of renewable energy. To date, one hundred and forty-nine countries as well as the European Union (EU) are signatories of IRENA, with its statute having been ratified by 83 states and the EU.

IRENA is headquartered in Abu Dhabi, United Arab Emirates (UAE). Within IRENA’s overall mission to promote the widespread and increased adoption of renewable energy, its Innovation and Technology Centre (IITC) in Bonn supports this mission by working on frameworks for technology support and for the work on cost reduction potentials and policies to support innovation and the wider use of standards. IRENA’s presence

in Bonn, Germany, will positively contribute to, as well as benefit from, the network of international entities already based in Bonn.

PREPARATORY CONFERENCE: The Preparatory Conference for the Foundation of IRENA was held from 10-11 April 2008, in Berlin, Germany. Delegates from 60 countries expressed support for the creation of an international agency for renewable energy, and discussed issues such as objectives, activities, organizational structure, and financing for the new agency.

PREPARATORY WORKSHOPS: Two preparatory workshops for IRENA met in Berlin, Germany, on 30 June and 1 July 2008, focusing on IRENA’s work programme, statutes and finances.

FINAL PREPARATORY CONFERENCE: This meeting took place from 23-24 October 2008, in Madrid, Spain. Delegates concluded discussions on IRENA’s statute, resolving issues such as financing, the criteria and procedures for selecting the interim Director-General and the interim headquarters, and the design of the initial phase of IRENA.

FOUNDING CONFERENCE: IRENA’s Founding Conference took place on 26 January 2009, in Bonn, Germany, where 75 countries signed the IRENA statute.

PREPCOM 1: The first Preparatory Commission of IRENA met on 27 January 2009 in Bonn, Germany, following the founding conference. Delegates discussed next steps for IRENA and established committees to oversee the selection of the Interim Director-General and headquarters of the Agency. The Commission also established an administrative committee,

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chaired by Germany, to facilitate the effectiveness of the Commission's work, including through assisting in organizing regular sessions and contributing to the development of relevant documents.

PREPCOM 2: The second Preparatory Commission of IRENA met from 29-30 June 2009, in Sharm el-Sheikh, Egypt, to decide on the interim headquarters and interim Director-General for IRENA. Abu Dhabi, UAE, was designated as the interim headquarters, and H el ene Pelosse (France) was elected interim Director-General. Delegates also decided that Bonn, Germany, would host IRENA's Innovation and Technology Centre, and Vienna, Austria, would host IRENA's liaison office for cooperation with other organizations active in the field of renewable energy. Delegates further addressed issues such as the initial work programme, financial regulations, staff regulations and the budget.

PREPCOM 3: The third Preparatory Commission of IRENA met on 17 January 2010, in Abu Dhabi, UAE. Delegates completed IRENA's 2010 budget and work programme, as well as other measures to make IRENA operational.

PREPCOM 4: The fourth Preparatory Commission of IRENA met from 24-25 October 2010, in Abu Dhabi, UAE. The Commission accepted the resignation of H el ene Pelosse as Interim Director-General, and appointed Adnan Amin (Kenya) to the position until the first session of the Assembly.

PREPCOM 5: The fifth Preparatory Commission of IRENA met on 3 April 2011, in Abu Dhabi, UAE. The Commission finalized preparations and transitional measures for IRENA's first Assembly, and proposed Adnan Amin as Director-General elect to the Assembly.

FIRST ASSEMBLY: The first session of the IRENA Assembly was held from 4-5 April 2011, in Abu Dhabi, UAE. The Assembly focused, among others, on the election of the Council; the work programme and budget for 2011; rules of procedure; transitional arrangements; staff and financial matters; and organization of the second session of the Assembly. Adnan Amin was also confirmed as IRENA's first Director-General. The Assembly included a High-Level Segment attended by over 50 ministers.

IRENA HIGH-LEVEL AFRICA CONSULTATIVE FORUM ON RENEWABLE ENERGY: This meeting was held on 8-9 July 2011 in Abu Dhabi, UAE. The Forum informed IRENA's work programme for Africa on specific implementation challenges facing Africa with respect to renewable energy technologies, as well as practical approaches for generating the critical policy and technical information, advice and capacity required to support the extensive deployment of renewable energy. In addition, participants discussed strategic partnerships and how to further: Africa's priorities for sustainable energy in partnership with IRENA; best practices and challenges in promoting renewable energy investment; and opportunities to advance African renewable energy in other international negotiation fora. The forum resulted in the Abu Dhabi Communiqu e on Renewable Energy for Accelerating Africa's Development.

REPORT OF THE WORKSHOP ON RENEWABLES - COMPETITIVENESS AND INNOVATION: 6 OCTOBER 2011

WELCOME AND INTRODUCTORY REMARKS:

Adnan Amin, Director-General, International Renewable Energy Agency (IRENA), welcomed the participants, highlighting the importance of the Innovation and Technology Centre (ITC) and thanking the German government for its support and commitment to renewable energy. He said IRENA aims to become a nexus for international cooperation and offers a framework for practical discussions on providing the best possible information to decision-makers. Amin emphasized the significance of the workshop, which focuses on the complex issue of cost and innovation, and expressed hope that the workshop's findings will assist in the finalization of IRENA's upcoming work programme.



Adnan Amin, Director-General, IRENA (photo courtesy of GIZ)

Karsten Sach, Deputy Director-General, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany, spoke on renewable energy and climate change, and costs and innovation needs as limiting factors. He described the German government's strategy on phasing out nuclear energy, cutting GHG emissions, and making the transition to renewable energy, which will make the country's economy one of the most energy efficient in the world. He also said Germany's success is linked to technological innovation, diminishing production costs, and increased investment, stressing the importance of cooperation with the private sector. Sach highlighted IRENA's role as a platform for providing policy advice to governments, while taking into account different country conditions.

Manfred Konukiewitz, Deputy Director-General, Federal Ministry for Economic Cooperation and Development, Germany, took up the theme of renewable energy and cooperation for sustainable development, explaining that cost and innovation needs are intervening variables in renewables' successful deployment. He recalled divisive views on renewable energy during the Johannesburg 2002 Summit, and the change in government attitudes in many countries that has occurred since then, particularly due to recent increases in oil prices. He stressed the need to better understand intervening variables for costing renewables, and to conduct cross-cutting expert analyses. Konukiewitz closed by highlighting the needs of developing countries for clean, reliable, affordable and people-friendly renewable energy.

Session I: The Economics of Renewables – Competitiveness: This session was Chaired by Gauri Singh, Knowledge Management Innovation and Technology Cooperation, IRENA, Abu Dhabi.



Panel on “The Economics of Renewables - Competitiveness.” L-R: William Young, Bloomberg New Energy Finance; Eicke Weber, Fraunhofer Institute for Solar Energy Systems; Christine Lins, Executive Secretary, REN21; Dolf Gielen, Director, IITC; and Chair Gauri Singh, IRENA.

Dolf Gielen, Director, IITC, presented a preview of a draft IRENA study on the competitiveness of renewable energy technologies. He emphasized its aim of assisting governments in decision-making. He explained the report’s methodology and difficulties IRENA researchers have had in getting fact-based figures and objective cost data. He touched upon cost indicators and categorization of technologies, such as solar photovoltaic, concentrated solar power and wind turbines. He pointed out that the study is the start of a dialogue, and called for comments from participants.

Christine Lins, Executive Secretary, Renewable Energy Policy Network for the 21st Century (REN21), lamented the myth that renewable energy is expensive. She welcomed collaboration with IRENA, complimented its focus on indicators and mentioned the need for improved cost estimates. Lins closed by underlining the need to prioritize electricity, followed by transport.

Eicke Weber, Director, Fraunhofer Institute for Solar Energy Systems, commented on scientific progress to lower costs. He emphasized that transforming the global energy picture is the responsibility of our generation. He said cost calculations should be regularly updated, and learning curves for different technologies should be carefully followed.

William Young, Bloomberg New Energy Finance, spoke on risk assessments from a financial market perspective. He mentioned the effect of fluctuating markets and factors such as credit ratings, risks (including political risks) and the need for constant updating of statistics and arriving at correct forecasts.

In the ensuing discussion, one participant said reduction of renewable energy costs does not work as effectively in small economies as in large ones. Other participants observed that sometimes changes in cost are due to currency fluctuations and inflation, and disparities in electricity costs reflect different financial conditions in different countries, something that should be taken into account when advising decision makers.

Chair Gauri Singh concluded by highlighting the need for a bottom-up approach in setting renewable energy goals, proceeding from national to global. She admitted the complexity of modeling renewable energy scenarios, the need for objective data and constant updating to determine trends.

Session II: The Economics of Renewables – Costs and Benefits, Part I: Hugo Lucas, IRENA, introduced the panel and said it would focus on the macroeconomics of renewables.

Nicolai Zarganis, Danish Energy Agency, highlighted that the new Danish government recently announced strong renewable energy and climate policies, including increasing wind energy as a percentage of total electricity production from the current 22% to 50% by 2020 and establishing 100% renewable energy by 2050. He said this will cost Denmark 0.6% of GDP, but must be considered with the cost savings that will materialize in an era of increasingly expensive fossil fuels. Zarganis noted that Denmark has witnessed real energy security increases from wind energy, which has insulated the country from fossil fuel price fluctuations, and said wind energy has become competitive with coal fired power plants when plant investment costs are considered.

Ulrike Lehr, Institute of Economic Structures Research (GWS), discussed the effects on employment of renewable energy in Germany and Tunisia. She noted that, in Germany, 160,000 renewable energy jobs existed in 2004, and in 2010 this number had jumped to 370,000. She discussed a study that found domestic investment, domestic production and exports drive employment in renewable energy. On Tunisia, she described the UNEP-supported PROSOL solar water heating programme, which has created 3400 direct jobs and 2500 indirect jobs, with estimates of 15-18,000 new jobs in the future.

Joo Sueb Lee, Global Green Growth Institute (3GI), said a paradigm shift in growth ideology is needed in developing countries. He introduced 3GI as a new institute with the vision of spreading good green growth policies and practices



Panel on “The Economics of Renewables - Costs and Benefits, Part I.” L-R: Joo Sueb Lee, 3GI; Nicolai Zarganis, Danish Energy Agency; Chair Hugo Lucas, IRENA; and Ulrike Lehr, GWS

around the developing world. He explained that 3GI activities include green growth planning, facilitation of public-private partnerships, and research and knowledge sharing. He said 3GI is working with Cambodia to develop a national Green Growth Master Plan and the establishment of a National Committee on Green Growth within the Ministry of Environment. He said that the appropriateness of technologies and using step-by-step approaches to policymaking are key.

In the ensuing discussion, participants questioned how to apply successes seen thus far to niche markets such as in Small Island Developing States and the need for adaptable data that can be used in any context.

Lucas then summarized the results of the panel, stressing the importance that renewables development remain policy driven in the near term, but also that changes are needed to create more holistic approaches which take into account changes in technology, maximize social benefits and include the private sector. He closed by supporting a participant’s comment that the donor approach to renewables deployment in developing countries needs to end.

Session II: The Economics of Renewables – Costs and Benefits, Part II: A second panel after lunch continued the discussion started in the morning, with Lucas chairing once more.

Andrea Ricci, Institute of Studies for the Integration of Systems (ISIS), described results of the EU research project New Energy Externalities Development for Sustainability (NEEDS). He said the project looked at methods used to estimate external and lifecycle analysis of costs of new technologies. He found that by far, wind energy produces the lowest externalities of all conventional and renewable technologies. He said that in 2050, nuclear, photovoltaic, and wind become nearly equal in their low externalities. He contrasted this with biomass, gas with carbon capture and storage, and coal which have the highest external costs in all scenarios. He noted that including external

costs changes the “ranking” of technologies considerably. He said that public fear of certain conventional technologies seem to be higher than science justifies and that public praise of some renewables is higher as well.

Paolo Frankl, International Energy Agency (IEA), talked about the cost of system integration of variable renewables, discussing results of the IEA study “Harnessing Variable Renewables,” which found that load balancing depends on traits of variability, being: demand fluctuation, variable renewable power plants, and unexpected outages; and on traits of flexibility, being: dispatchable power plants, demand side issues, storage, and interconnection. Frankl said the report quantifies the flexibility of supply and storage analyzed over one minute, one hour, one day and one week. He indicated the penetration rate of renewables is different for different regions in different scenarios.

Richard Taylor, International Hydropower Association, discussed costs of traditional hydropower as well as matching demand. He reminded participants of the need to differentiate between river, storage and pump hydropower. Taylor explained that hydropower used in tandem with wind can overcome variability issues. He closed by saying renewables costs should be discussed in terms of ranges, not fixed numbers, especially if one considers externalities.

Brigitte Knopf, Potsdam Institute for Climate Impact Research, compared costs of GHG reductions via renewables with other options. She illustrated that amongst current global models of renewables at 2050, a large variability exists amongst study results in terms of renewables mitigation potential. On a study she coordinated, Knopf said in low bioenergy scenarios costs of bioenergy remain high, and that mitigation with nuclear is not especially cost-effective. She said that, although renewables costs remain high in many cases, some are already cost-competitive, and current learning rates indicate that costs will continue to decrease.



Panel on “The Economics of Renewables - Costs and Benefits, Part II.” L-R: Richard Taylor, International Hydropower Association; Brigitte Knopf, Potsdam Institute for Climate Impact Research; Paolo Frankl, International Energy Agency; Hugo Lucas, IRENA; and at the podium, Andrea Ricci, ISIS, described results of the EU research project NEEDS

In the ensuing discussion, one participant said that to adequately compare price differences between renewables and conventional power, it is important to convey costs of integration, externalities, and other costs of not only renewables, as has been the recent trend, but of conventional electricity production as well. Responding to a question on methods underlining his consideration of nuclear risks, Ricci acknowledged its subjectivity.

Session III: Innovation for Accelerated Deployment:

This session focused on best practices and lessons learned on the framework conditions for renewable energy technological innovation, and was chaired by Mohamed El-Ashry, Chair, Steering Committee, REN21.

Bob van der Zwaan, Energy Research Centre of the Netherlands, touched upon learning curves for renewable technologies. He emphasized the high cost of new technologies, noting that 21st century society will have to pay more for energy, referring to the rapid increase in the price of commodities used in renewables construction, such as copper and steel.

Mario Ragwitz, Fraunhofer ISI, Karlsruhe, concentrated on the electricity sector, including feed-in tariffs and feed-in premiums, and the pros and cons of RES-E support schemes. He highlighted conditions for innovation: long-term targets, stable demand, education, information provision, existence of a global market, and continuous cost reduction.

Ron Benioff, National Renewable Energy Laboratory (NREL), United States, contemplated the US experience with efficiency and effectiveness of renewable energy innovation. He advised a mixture of: government price support; market instruments; loan programmes; dedicated research, development and demonstration; cooperation with industry; tax policies to promote investments; and educational programmes and training. He indicated that not enough attention is given to delivering power at the community level or to fundamental research in renewable energy.

Steve Sawyer, Global Wind Energy Council, described innovation drivers in wind technology. He expressed the view that future technical progress will be incremental and will be mostly in increased efficiency, noting that we are getting close

to the maximum of energy extracted from air. He gave the example of offshore wind turbine foundations as a challenge to reducing cost, and mentioned floating anchored turbines as a viable option.

Fumiaki Ishida, New Energy and Industrial Technology Development Organization, Japan, recounted the history of Japanese innovation policy before the 2011 earthquake. He shared lessons derived from Fukushima, which was followed by a policy of rapidly accelerating development and deployment of renewable energy. He informed participants that a new policy now requires companies to purchase renewable energy at a fixed price beginning in 2012.

Session IV: Innovation for Accelerated Deployment: The Next Big Developments in Renewables: Mohamed El-Ashry, REN21, chaired this session.

Reiner Buck, Institute of Solar Research (DLR), talked about the next generation of concentrated solar power, highlighting the new 19 megawatt GEMASOLAR plant in Spain as the state-of-the-art due to its 15 hours energy storage capacity, meaning it can provide power 24 hours per day at an efficiency level of 44%. He said the major challenge remains high costs, which can be reduced by increasing production, lowering risks and improving technologies.

Øyvind Leistad, Enova SF, discussed innovations in wind power and argued that increased public funding of technology development, such as Enova SF, is needed. He said that there are proven linkages between increased wind market share and lowering costs. Leistad explained that there is on average 90% higher wind potential over the sea compared to on land, and introduced a revolutionary floating turbine tower construction concept called the Sway Turbine, with a ten megawatt potential.

Günther Ebert, Fraunhofer Institute for Solar Energy Systems, talked about smart grids and electric vehicles as an energy storage option. He said in the first half of 2011, 20.8% of German energy was renewable, and estimated by 2050 it would be 80-100%, with wind and solar dominating the mix. Ebert then explained elements needed for a successful smart grid, highlighting demand side management as particularly important, along with finding the optimal energy and storage mixes.

In the ensuing discussion, a participant inquired what role IRENA should play in the development of these technologies, with Leistad answering that assistance to better understand costs would be helpful, as would outreach assistance.

To close the session, Dolf Gielen, IITC, offered a summary and outlook of IITC's activities in the field of innovation. He said five projects are ongoing: scenarios and strategies, especially for Africa with Pacific country projects in the pipeline; roadmaps for renewables, currently in manufacturing, and for cities in 2012; work with the World Intellectual Property Organization on making the 200,000 existing renewable energy patents available online; collaboration with the IEA Energy Technology Systems Analysis Program (ETSAP) on renewables fact sheets; with NREL on translating general innovation policy frameworks to developing countries; and finally on technology transfer and cooperation and the question of whether IRENA needs Technology Centers. He said in coming years, systems integration, especially smart grids will take precedence, along with work on equipment standards and testing procedures.

Session V: IITC Roadmap – Initial Steps: Thomas Johansson, Lund University, chaired the panel and introduced it, asking what challenges loom ahead for renewables.

Louis Seck, Minister of Renewable Energy, Senegal, and President Designate of IRENA's Second Assembly, highlighted the problem of access to modern energy services as well as a lack of renewable energy policies in Africa. He said the largest hurdles to renewables deployment in Africa are access to technology and lack of human capacity. He called for technical, educational, and financial assistance in realizing the vast renewables potential of Africa.

Martin Schöpe, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany, noted several issues that could be addressed by IRENA, in particular: scenarios, cost analyses for modeling, synergies for energy efficiency, and policy analysis. Accepting that IRENA is a global organization, he said conditions vary at different levels, so aggregating goals should start at the local level, and take into account sectoral areas and factors. Schöpe urged cooperation among and inside member states on the IRENA agenda, and suggested following the method of work demonstrated by this workshop.

Ron Benioff, NREL, United States, said IRENA occupies a unique niche for learning, creating collaborations across sectors, providing an objective analysis on new technology, and leadership for transformative solutions for the next generation. He offered specific suggestions for assisting countries with tailored documentation, training including through videos and blogs, standards and certification, workforce development programmes, and building capacities of educational institutions by sharing curricula. He expressed his preference that IRENA build a network of existing centers of excellence, rather than creating new ones.

Eicke Weber, Director, Fraunhofer ISE, said IRENA could help introduce renewable energy goals for 2020 and 2050, noting that it would be easier than targeting CO2 reductions.

He evoked the example of the EU, which has adopted ambitious targets for renewables, and proposed technology centers where there are none, international laboratories and a virtual renewable technology transfer center with on-line instructions.

In the ensuing discussion, one participant said that more thinking outside the energy box is needed to make real progress in Africa, and recommended broader thinking in scenario and target work. He then cautioned against offering conflicting guidance, or repeating work done elsewhere. Another participant noted that IRENA needs to build on existing work on Technology Needs Assessments and Technology Action Plans with the United Nations Framework Convention on Climate Change. A third participant said IRENA must be a facilitator in discussions on the future of the energy system and take on concrete projects with nations interested in building renewables policy regimes.

Offering concluding statements, Weber suggested IRENA could be the leading global think tank on renewables and also on energy efficiency. Benioff said IRENA serving as a neutral and objective source of information, as a global forum for work on innovative policy, frameworks and innovative technologies, and as a partner in work with individual countries, is critical. Schöpe said the current discussion must be incorporated into next year's work programme in cooperation with Member States. Seck stressed the importance of encouraging renewables for the energy poor.

Dolf Gielen, IITC, noted that all presentations will be made available on IRENA's website and closed the workshop at 6:49pm.

REPORT OF THE OFFICIAL OPENING OF THE IRENA INTERNATIONAL INNOVATION AND TECHNOLOGY CENTRE: FRIDAY, 7 OCTOBER 2011

OPENING CEREMONY

The ceremony began with a musical recital by the Marcus Schinkel Trio of a jazz version of Beethoven's "Für Elise."

Norbert Röttgen, Federal Minister for the Environment, Nature Conservation and Nuclear Safety, Germany, said the inauguration of the IRENA International Innovation and Technology Centre (IITC)

demonstrates that the transition to renewable energy has begun and is taking concrete shape. He lauded the goals of IRENA and the key functions of IITC. Noting it was a special day for Bonn and Germany, he underscored his country's commitment to renewable energy, particular in the light of its recent decision to phase out nuclear energy after the Fukushima disaster. Evoking the global challenges of excessive consumption, the debt crisis,



Norbert Röttgen, Federal Minister for the Environment, Nature Conservation and Nuclear Safety, Germany

insecurity and the risk of conflicts over resources, he called for the decoupling of economic growth from consumption of finite resources. He said the transition to renewable energy must be at the heart of such a shift, and highlighted ethical aspects, including the goal of global equity.

Adnan Amin, Director General, IRENA, voiced his appreciation to Germany and the city of Bonn for hosting the IITC. He paid tribute to Germany and the United Arab Emirates (UAE) for their visionary policies regarding the transition to renewable energy. He said opportunities for transition have never been greater, and provided examples of countries and regions currently making impressive strides in deploying renewable energy technologies. He explained IRENA and IITC's mission in promoting collaboration on technological innovation, policy support development for renewables and enhancing their competitiveness, and concluded by quoting the late Hermann Scheer in observing that renewable energy is "a powerful idea whose time has come."

Guido Westerwelle, Federal Minister for Foreign Affairs, Germany, pledged that Germany would be a reliable partner for IRENA and its work to promote renewable energy. He underscored that Germany's decision to phase out nuclear energy by 2022 is a chance to accelerate innovation, environmental conservation, and improve competitiveness. He stressed however, that real progress on renewables can only be accomplished via international cooperation, and that with its



Guido Westerwelle, Federal Minister for Foreign Affairs, Germany

headquarters in Abu Dhabi, and its IITC in Bonn, IRENA is symbolic of the strong partnerships between diverse regions of the world needed to realize a renewable energy revolution. He then noted that the accession of the United States to IRENA was an important signal, but that hard work remains to bring in other large economies such as Brazil, China and Russia.

Sultan Ahmed Al Jaber, Assistant Minister of Foreign Affairs and Special Envoy for Energy and Climate Change, UAE, declared that the inauguration of the IITC represents an important milestone in the history of IRENA. He said IRENA was created to help overcome global challenges

and enable all countries to access and deploy renewable technologies, and its mission touches on key issues of our generation. Al Jaber said the UAE is dedicated to supporting open and constructive international dialogues within IRENA, and that, through the MASDAR initiative, Abu Dhabi aims to provide an open platform for renewables development to combat climate change and foster sustainable human development. He concluded by indicating that the opening of the IITC will provide crucial input to IRENA's overall mission and plans, and will contribute to technology frameworks and cost reduction strategies needed to accelerate renewables deployment.

The session closed with Röttgen handing Amin the symbolic key to the IITC.



Sultan Ahmed Al Jaber, Assistant Minister of Foreign Affairs and Special Envoy for Energy and Climate Change, UAE



Adnan Amin, IRENA, and **Norbert Röttgen**, Federal Minister for the Environment, Nature Conservation and Nuclear Safety, holding the symbolic IITC key (photo courtesy of GIZ)



The panel discussion on “Towards the Age of Renewables.” L-R: Mohamed El-Ashry, Chairman, REN21 and Senior Fellow, UN Foundation; Norbert Röttgen, Federal Minister for the Environment, Nature Conservation and Nuclear Safety, Germany; Louis Seck, Minister of Renewable Energy, Senegal; Adnan Amin, Director General, IRENA; Maria van der Hoeven, IEA; and Ottmar Edenhofer, Deputy Director and Chief Economist, Potsdam Institute for Climate Impact Research. (photo courtesy of GIZ)

PANEL DISCUSSION: TOWARDS THE AGE OF RENEWABLES

This session was moderated by Mohamed El-Ashry, Chairman, Renewable Energy Policy Network for the 21st Century (REN21) and Senior Fellow, UN Foundation. He said the world is entering a new energy era, but stressed that although we know demand for renewables will continue to grow, the same trend will be seen in carbon dioxide emissions, and overcoming this challenge will require an energy revolution. He explained that, even against the backdrop of a global recession, investment in renewables was 32% higher in 2010 than in 2009, but underscored that they remain a very small part of the total energy mix. He asked panelists what is required to scale up renewables given these facts, and about the role IRENA should play in this context.

On scaling-up, Norbert Röttgen, Federal Minister for the Environment, Nature Conservation and Nuclear Safety, Germany, stressed that Germany’s explosive renewables growth has been based on strong political commitments to renewables and roadmaps based on reliable regulatory frameworks and incentives, and establishing the technological foundations for energy supply.

Louis Seck, Minister of Renewable Energy, Senegal, lamented that current efforts to harness renewables hardly begin to capture the potential that exists. In order to scale this up, he also emphasized that heads of state must stand firmly behind renewables expansion. In Senegal, he said, this has begun with the recent creation of the Ministry of Renewable Energy, but that remains insufficient as human resources are lacking. He expressed hope that the IITC can assist developing countries in this regard. He also noted the desperate need for funding facing African countries.

On this note, El-Ashry interjected that although 118 countries currently have policies or goals for renewables, most of them do not have the capacity or financing to reach these goals, and asked remaining panelists to comment on this fact.

Adnan Amin, Director General, IRENA, said it is the barriers to increasing renewables use that must be understood and overcome for deployment to begin in earnest. On funding, he said the cost of capital is indeed a significant barrier, but recalled the IITC’s work showing that costing trends are developing favorably, and that this problem should not exist much longer. He stressed that: currently, despite crises of market confidence and liquidity, there are large investors looking for places to put their money; that IRENA aims to work on improving the private investment perspectives of emerging markets; and that African countries also represent emerging markets.

Maria van der Hoeven, Executive Director, International Energy Agency (IEA), said all IEA energy scenarios show



Maria van der Hoeven, Executive Director, IEA (photo courtesy of GIZ)

that renewables will grow in future energy systems and it is important to keep momentum via sustained and dependable policy frameworks. She noted that the cost-effectiveness of policies must be increased globally, and in addition, that massive private investment is needed.

She then added that expanding renewables market growth in developing countries is where IRENA can play a significant role.

Ottmar Edenhofer, Deputy Director and Chief Economist, Potsdam Institute for Climate Impact Research, said the world is not on track with renewables. He said it is imperative to be clear that, despite the financial crisis, global greenhouse gas emissions have been at record levels. He said many analysts ignore that we are seeing a renaissance in the use and construction of coal-fired



Ottmar Edenhofer, Deputy Director and Chief Economist, Potsdam Institute for Climate Impact Research (photo courtesy of GIZ)

power plants. He added that we need carbon pricing, but this will not be enough on its own. He concluded by saying that the financial crisis indicates we have been spending too much for a long time, economically, socially and ecologically, and that we have made the wrong investments and lived beyond our collective means.

El-Ashry then posed the question of how to scale-up the panelists' ideas on scaling-up.

Röttgen said Germany is showing that rapid scaling-up of renewables can be done economically, without undermining growth.

Seck stressed that it is IRENA's job to sensitize world leaders to the plight of developing countries and to the possibilities of renewables to help them overcome their problems.

Amin said renewables currently have a communication problem, and the global public largely does not understand that they are feasible options for current energy systems. He indicated his optimism that IRENA will become a locus for messages that will reframe global discourses on energy and renewables, but warned that IRENA cannot accomplish this alone.

Van der Hoeven said that each institution has a role to play, and IEA's is providing analysis and modeling. She highlighted the 10 October launch of a special chapter of the IEA World Energy Outlook that will present a new architecture for financing universal access to modern energy services.

Edenhofer said storage technologies remain one of the biggest open questions, and although there are many interesting ideas in the pipeline in this area, stakeholders do not know which path to follow. He urged IRENA to also play a role in helping stakeholders better understand their options in situations such as this.

El-Ashry then thanked the participants for their contributions and closed the meeting at 2:28pm.

UPCOMING MEETINGS

Energy for All: Financing Access for the Poor: The Oslo Energy for All 2011 high-level conference is co-organized by Norway and the International Energy Agency (IEA), and aims to explore possible ways of financing access to energy for the 1.4 billion people without access to electricity and 2.5 billion people who still use traditional biomass for cooking. Five

countries from the South - Brazil, Ethiopia, India, Liberia and South Africa - have been invited to be organizing partners.

dates: 10-11 October 2011 **venue:** Radisson Blu Plaza Hotel Oslo **location:** Oslo, Norway **contact:** Anne Vinding **phone:** +47 975 93 944 **e-mail:** anvi@mfa.no **www:** <http://www.osloenergyforall2011.no/>

Caribbean Renewable Energy Forum 2011 (CREF):

This annual event is co-sponsored by the Inter-American Development Bank (IDB), Caribbean Community (CARICOM) and Organization of American States (OAS), among others. Participants will look at policy and regulatory issues and the forces driving finance and investment in renewable energy sources in the Caribbean context, and the scope for a regional approach. **dates:** 12-14 October 2011 **location:** Bridgetown, Barbados **contact:** Matthew Perks **phone:** +1 845 440 7800 **e-mail:** mperks@caribbeanenergyforum.com **www:** <http://www.caribbeanenergyforum.com>

World Renewable Energy Congress 2011: "Boosting the Use of Low Carbon Energy for a Better World" is the theme for the World Renewable Energy Congress 2011. **dates:** 17-19 October 2011 **venue:** Bali Nusa Dua Convention Center **location:** Bali, Indonesia **contact:** Masyarakat Energi Terbarukan (METI) **phone:** +6221 52912380-83 **fax:** +6221 52912382 **e-mail:** meti.ires@yahoo.com **www:** <http://wreec2011bali.com/web/index.php/main/home>

ICAO Aviation and Sustainable Alternative Fuels

Workshop: This ICAO workshop will provide a forum for information exchange on the state of worldwide activities on sustainable alternative fuels, especially biofuels, for aviation. In addition, the workshop aims to enhance dialogue among member States, financial institutions, fuel producers and operators over project financing for sustainable alternative aviation fuels. **dates:** 18-20 October 2011 **venue:** ICAO headquarters **location:** Montreal, Canada **contact:** Environment Branch of the Air Transport Bureau **phone:** +1 514-954-8219 extension 6321 **e-mail:** sustaf@icao.int **www:** <http://www.icao.int/sustaf/>

Sustainable Energy in Latin America and the Caribbean: Contracting and Financing for Business:

The Inter-American Development Bank (IDB) seminar on "Sustainable Energy in Latin America and the Caribbean: Contracting and Financing for Business" will cover energy trends and developments in Latin America and the Caribbean, procurement opportunities arising out of IDB-financed projects, and financing opportunities available to companies. **date:** 26 October 2011 **venue:** IDB headquarters, 1300 New York Avenue, N.W. **location:** Washington, D.C., United States of America **contact:** IDB **phone:** +1-202-623-1000 **fax:** +1-202-623-3096 **e-mail:** BusinessSem@iadb.org **www:** <http://events.iadb.org/calendar/eventDetail.aspx?lang=en&id=2916>

World Renewable Energy Asia Regional Congress and Exhibition (WREN Asia): This event will offer an opportunity for policymakers, designers, researchers, engineers and managers to share experiences on deploying

renewable energy technologies in built environments.

dates: 28-31 October 2011 **venue:** Chongqing University
location: Chongqing, China **contact:** Meng Liu **phone:** +86-18223006391 **fax:** +86-23-65127815 **e-mail:** SuDBE2011@vip.163.com **www:** <http://www.SuDBE2011.org>

Clean Energy Expo Asia 2011: This event will include a conference and a trade fair for exhibitors to showcase their technologies and other work. The Clean Energy Expo Asia 2011 Conference programme is developed in partnership with the Asian Development Bank and the Sustainable Energy Association of Singapore (SEAS). The event is taking place during Singapore International Energy Week (31 October-4 November 2011). **dates:** 1-3 November 2011 **venue:** SUNTEC **location:** Singapore, Singapore **contact:** Adrian Sng **phone:** +65 6500 6720 **fax:** +65 6296 2771 **e-mail:** a.sng@koelnmesse.com.sg **www:** <http://www.cleanenergyexpoasia.com/>

Bonn 2011 Conference - The Water, Energy and Food Security Nexus: Solutions for the Green Economy: This high-level, invitation-only conference is organized by the German Federal Government in collaboration with the World Economic Forum (WEF), the World Wildlife Fund (WWF) and the International Food Policy Research Institute (IFPRI). It will seek to contribute to the run-up to the UN Conference on Sustainable Development (UNCSD, or Rio+20). **dates:** 16-18 November 2011 **location:** Bonn, Germany **contact:** Bonn 2011 Conference Secretariat c/o Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH **e-mail:** bonn.conference2011@giz.de **www:** <http://www.water-energy-food.org/en/home.html>

UNFCCC COP 17 and COP/MOP 7: The 17th session of the UNFCCC Conference of the Parties (COP 17) and the seventh Meeting of the Parties serving as the meeting of the

Parties to the Kyoto Protocol (COP/MOP 7) will take place in Durban, South Africa. South Africa's website: <http://www.cop17durban.com> **dates:** 28 November - 9 December 2011 **location:** Durban, South Africa **contact:** UNFCCC Secretariat **phone:** 49-228-815-1000 **fax:** 49-228-815-1999 **e-mail:** secretariat@unfccc.int **www:** http://unfccc.int/meetings/unfccc_calendar/items/2655.php

International Year for Sustainable Energy for All: In December 2010, the UN General Assembly adopted a resolution proclaiming 2012 as the "International Year for Sustainable Energy for All" (Resolution 65/151), aimed at creating "an enabling environment for the promotion and use of new and renewable energy technologies, including measures to improve access to such technologies." **date:** 1 January 2012 **location:** worldwide **www:** http://www.un.org/ga/search/view_doc.asp?symbol=A/65/436

Second Session of the IRENA Assembly: The second International Renewable Energy Agency (IRENA) Assembly is scheduled to take place in January 2012. **dates:** 14-15 January 2012 **location:** Abu Dhabi, United Arab Emirates **contact:** IRENA Secretariat **phone:** +971-2-417 9001 **e-mail:** secretariat@irena.org **www:** <http://www.irena.org>

Fifth World Future Energy Summit: The fifth World Future Energy Summit will take place from 16-19 January 2012, in Abu Dhabi, UAE. In 2012, WFES will concentrate on energy innovation in policy implementation, technology development, finance and investment approaches, and existing and upcoming projects. The Summit will seek to set the scene for future energy discussions in 2012. **dates:** 16-19 January 2012 **location:** Abu Dhabi, United Arab Emirates **contact:** Naji El Haddad **phone:** +00971 2 444 6113 **e-mail:** naji.haddad@reedexpo.ae **www:** <http://www.worldfutureenergysummit.com/>



View of the Bonn region from the Steigenberger Grandhotel Petersberg, the venue of the official opening of the IRENA IITC