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| 8:15–9:00                 | Registration of Participants—Western Room on the 11th Floor, Minzu hotel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Morning Sessions</b>   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 9:00–10:00                | Opening Remarks and Keynote Address by Representatives from the Government of the People's Republic of China, the State Grid Corporation of China, and the Asian Development Bank                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                           | National Energy Administration, NDRC <b>Mr. Shi Lishan</b> , Deputy Director General, Department of New and Renewable Energy NDRC (to be confirmed)<br>National Center for Climate Change, NDRC <b>Mr. Li Junfeng</b> , Director General<br>Asian Development Bank <b>Mr. Ayumi Konishi</b> , Director General, East Asia Department<br>State Grid Corporation of China <b>Mr. Shen Jiang</b> , Director General, Science and Technology Department                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 10:00–10:30               | Introduction to the Grid Integration of Wind Power Workshop<br>( <b>Mr. Pradeep Perera</b> , Principal Energy Specialist, Asian Development Bank)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                           | <ul style="list-style-type: none"> <li>Goals of the workshop</li> <li>Wind power myths debunked (Nature of wind energy, issues related to integration, bring everyone to think about what are the real issues)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 10:30-10:45               | C O F F E E / T E A B R E A K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Session 1<br>10:45–12:15  | Strategic and Policy Issues Affecting Scale up of Wind Power Development<br>(Session Chair, <b>Mr. Ashok Bhargava</b> , Director, Energy Division, Asian Development Bank and the participants include <b>Mr. Wang Weisheng</b> , National Wind Research and Testing Center; <b>Mr. Sanjay Garg</b> , General Manager, Ministry of Power in India; <b>Mr. Geoff James</b> , Senior Scientist, CISIRO Australia; and <b>Mr. Pramod Jain</b> , Senior Consultant, USA):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                           | Panel Discussion with the participation of several key experts from Asian countries including the PRC on Strategic and Policy Issues Confronting Wind Power Integration <ul style="list-style-type: none"> <li>Each participant will provide a brief introduction on the status of wind power integration in their country and the key issues they are facing at present (10 minutes each)</li> <li>The panelist discusses how these issues are expected to be resolved and the strategic approach of the government and the industry to overcome them</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 12:15-1:00                | L U N C H — M a i n R e s t a u r a n t G r o u n d F l o o r                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Afternoon Sessions</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Session 2<br>1:00–3:00    | Issues and Challenges in Having Significant Share (over 10%) of Electricity Generation from Wind Power<br>(Session Chair, <b>Mr. Aiming Zhou</b> , Senior Energy Specialist, Asian Development Bank)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                           | Long-term System-Wide Analysis of Maximum Amount of Wind Energy in a Grid ( <b>Mr. Nick Miller</b> , GE Energy Management) <ul style="list-style-type: none"> <li>Analyzing the ability of an electrical network to absorb variable sources of energy (wind energy)</li> <li>Tools and methodologies used to determine the amount of RE penetration in the grid?</li> <li>What does it take to increase the amount of variable source on the grid?</li> <li>Economics of increasing variable generation</li> <li>Managing variable generation with hydro, gas plants</li> </ul> <p>Chinese Experiences and Challenges of Integrating Large-Scale Wind Power to Power System<br/>(<b>Dr. Bai Jianhua</b>, Deputy Chief Economist, State Grid Energy Research Institute)</p> <ul style="list-style-type: none"> <li>Current state of wind power development in the PRC (Capacity Distribution)</li> <li>Key issues on wind power absorption</li> <li>Long-term planning of wind power development</li> <li>Solutions for wind power absorption (relationship between wind power curtailment and installed capacity, wind power transmission planning based on UHV, etc.)</li> </ul>                                                  |
| 03:00–03:30               | C O F F E E / T E A B R E A K                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Session 3<br>3:30–5:00    | Grid Code for Integrating Wind Power to Grid<br>(Session Chair, <b>Mr. Zhang Lei</b> , Energy Specialist, Asian Development Bank)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                           | Grid Code Requirements and Best Practices ( <b>Mr. Nick Miller</b> , GE Energy Management) <ul style="list-style-type: none"> <li>Different components of grid code: LVRT, voltage &amp; frequency characteristics, harmonics, exchange of data between SCADA and dispatch center, others</li> <li>Review of the Danish grid code and how it provides balancing generation capacity for wind integration</li> <li>Customizing grid code to a country's grid capabilities and realities</li> <li>The different types of wind generators and their electrical characteristics</li> <li>Measuring compliance with grid code</li> </ul> <p>Chinese Experiences in the Development of Grid Code and Guidelines for Wind Power Interconnection<br/>(<b>Dr. Chi Yongning</b>, China Electric Power Research Institute)</p> <ul style="list-style-type: none"> <li>Chinese technical standards for wind power grid integration <ul style="list-style-type: none"> <li>Active power control and reactive power control</li> <li>Low voltage fault ride through capability</li> <li>Voltage and frequency requirements</li> <li>Harmonics</li> </ul> </li> <li>Shortcomings of PRC's existing grid code and proposed improvements</li> </ul> |
| 5:00-7:00                 | D I N N E R — M a i n R e s t a u r a n t G r o u n d F l o o r                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

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| 8:15–9:00                     | Registration of Participants—Western Room on the 11th Floor, Minzu hotel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Morning Sessions</b>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Session 4<br>9:00–10:30       | <b>Interconnection Studies for Integrating Wind Power Plants</b><br>(Session Chair, <b>Mr. Pradeep Perera</b> , Principal Energy Specialist, Asian Development Bank)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                               | Technical Studies for Impact of Wind Plant on the Grid ( <b>Mr. Nick Miller</b> , GE Energy Management) <ul style="list-style-type: none"> <li>Methodologies for determining impacts on the reliability, safety, (transient, voltage, and frequency) stability, and thermal loading capacity of the power system</li> <li>Best practices for modeling power flow, analyzing stability, and short circuit</li> <li>Approaches to determine the grid improvements and upgrades triggered by the proposed wind farms, and develop cost estimates</li> </ul> <p>Chinese Experiences on Wind Interconnection Studies. Different Types of Interconnection Studies, Based on Size of Wind Farm (<b>Dr. Zhu Lingzhi</b>, Chief Engineer, State Grid Electric Power Research Institute)</p> <ul style="list-style-type: none"> <li>Data requirements for performing interconnection study</li> <li>Processes and tools employed for studies</li> <li>Shortcomings of PRC's interconnection studies and proposed improvements</li> </ul> |
| 10:30–10:45                   | <b>C O F F E E / T E A B R E A K</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Session 5<br>10:45–12:45 p.m. | <b>Emerging Technologies and Approaches to Wind Power Integration and Mainstreaming</b><br>(Session Chair, <b>Mr. Pramod Jain</b> , Senior Consultant, United States of America)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                               | Future of Integration of Variable Sources of Generation (integration wind, pV, and storage) demonstration projects<br>( <b>Mr. Yao Hongchun</b> , Chief Engineer China Electric Power Research Institute)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                               | Advances in Wind Power Control Technologies: Reactive Power and Voltage Control<br>( <b>Dr. Chen Ning</b> , Chinese Society of Electrical Engineering)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                               | Wind Power Forecasting Technologies<br>( <b>Dr. Cao Xiao</b> , China Electric Power Research Institute)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 1:00–2:00 p.m.                | <b>L U N C H – M a i n R e s t a u r a n t G r o u n d F l o o r</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Afternoon Sessions</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Session 6<br>2:00–3:30        | <b>Issues and Challenges of Wind Power Dispatching</b><br>(Session Chair, <b>Mr. Geoff James</b> , CISIRO, Australia)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                               | Wind Energy Dispatching Methodology ( <b>Mr. Nick Miller</b> , GE Energy Management) <ul style="list-style-type: none"> <li>Wind farm as capacity source or energy source</li> <li>Policies for scheduling wind energy</li> <li>Policies for curtailing wind energy</li> <li>Comparison of different methods</li> <li>Software and other tools, processes for scheduling wind energy</li> <li>Role of wind energy forecasting</li> </ul> <p>Chinese Experiences on Wind Power Dispatching<br/>(<b>Dr. Fan Gaofeng</b>, Chief Engineer, National Dispatch Center, State Grid Corporation of China)</p> <ul style="list-style-type: none"> <li>Methodologies and tools used for dispatching wind</li> <li>Energy storage technologies</li> <li>Intelligent DSM technologies using smart grid technologies</li> <li>Prediction of consumer demand and wind power output</li> </ul>                                                                                                                                                |
| 3:30–3:45                     | <b>C O F F E E / T E A B R E A K</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Session 7<br>3:45–4:45        | <b>Panel Discussion Followed by Q &amp; A Session on the Technical Issues of Wind Power Integration</b><br>(Session Chair, <b>Mr. Pramod Jain</b> , Senior Consultant, USA) and the panel members consists of Mr. Nick Miller, Mr. Geoff James, Dr. Chi Yongning, Dr. Zhu Lingzhi and Dr. Fan Gaofeng )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |