

id	session code	title	Presenter name	Affiliation
Invited-8	E-1-1	Brazil as the New Latin American Wind Power Locomotive	Prof. Dr. Everaldo Alencar Feitosa	President, Eolica Tecnologia, Brazil
Invited-9	E-1-2	Offshore Technology Development and Deployment in Korea	Prof. Dr.-ing. Choong-Yul Son	Technical Advisor, Korea Wind Energy Industry Association (KWEIA)
152	E-1-3	Development and Realisation of Wind Energy Projects in Emerging Markets	Dr. Patric Kleineidam	Lahmeyer International GmbH, Bad Vilbel, Germany
Invited-4	E-1-4	Barriers and Opportunities for Rapid Employment of Wind Farms in Turkey	Prof. Dr. Tanay Sıdkı UYAR	Energy Section, Marmara University Turkey
151	E-1-5	Transition of renewable energy policies and vision of 100% renewable energy region in Japan	Dr. Hironao Matsubara	Institute for Sustainable Energy Policies
190	E-1-6	Accelerating Wind Power Deployment in Pakistan: Capacity Building and Policy Solution	Mr. Muhammad Zeeshan Ashfaq	World Wind Energy Association

[Invited Speaker]

Brazil as the New Latin American Wind Power Locomotive

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President, Eólica Tecnologia Brazil

Abstract:

The Brazilian wind energy market celebrated the milestone of 10,000 MW installed capacity in 2016. The country has witnessed an remarkable wind energy growth in the last years. The year of 2015 was marked by the installation of the largest historic amount of wind energy totaling 2,754 MW placing the country as the 4th largest wind power capacity expansion market.

There are over 18,000 MW (total capacity) of wind energy projects contracted by the government in the Brazilian auction system. By the end 2020, the target for the wind sector is of 20,000 MW installed capacity. The evolution of wind energy installed capacity from 2007 up to 2020 is presented in Figure 1.

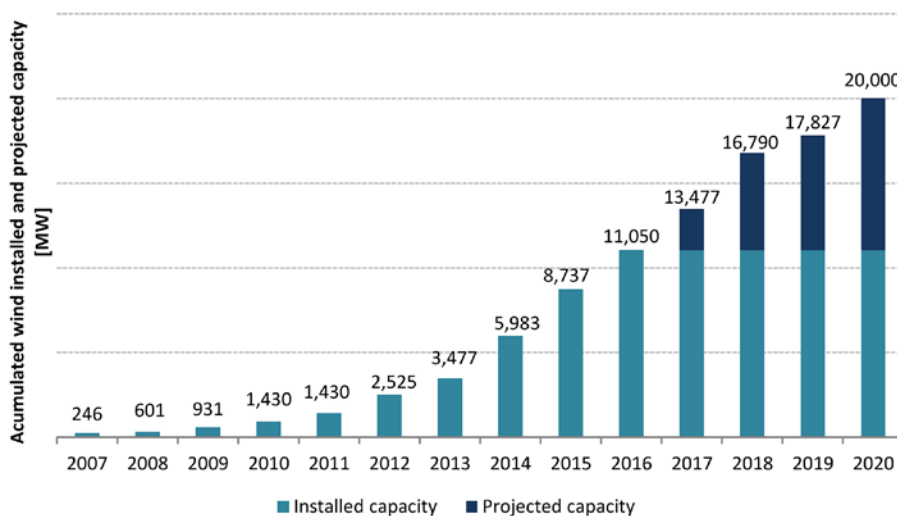
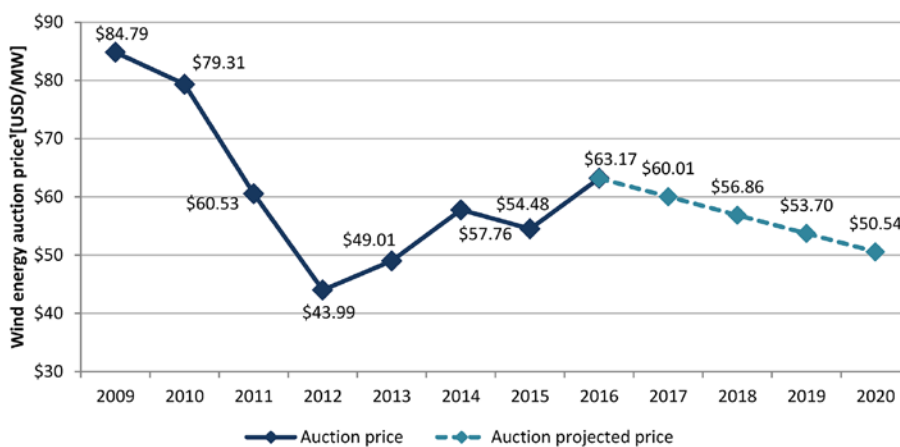


Figure 1 Evolution of wind energy installed capacity in Brazil.

The success of the Brazilian wind energy market was due to the Government commitment in an energy matrix diversification. The auction systems strategy adopted is favorable to the wind energy development and have generated very low wind prices. Figure 2 presents the past wind energy prices and its forecast.



¹ Exchange rate (Real to Dollar) from the auction date employed.

Figure 2 Brazilian wind energy auction prices.

The 20,000 MW installed capacity for 2020 is part of the Brazilian Energy Expansion Plan goals. Wind energy will continue to play a major contribution for the Brazilian energy needs. This paper presents the political, industrial and commercial strategy for the success of wind energy in Brazil.

[Invited Speaker]

Current status and Future prospects of Korea RPS system (RPS : Renewable Energy Portfolio Standard)

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Abstract:

The government adopted the Climatic Change Convention and has implemented the RPS system since 2012 to actively cope with the dependence on imported energy, and to grow and expand the new renewable energy industry. But RPS may be concentrated in specific energy depending on economic.

· In terms of the standard price per certificate, REC for solar power was KRW175,503 averagely in 2013, while REC for non-solar power was determined to be KRW 137,844. In 2014, the average price of REC for solar power was KRW113,997, and that of REC for non-solar power was KRW113,174.

· The total RPS target for 2015 is set by 12,339,927 MWh, increased from the last year's target of 11,578,809 MWh, while the RPS target for solar power rose 46 percent from 1,353,000 MWh to 1,971,000 MWh in 2015. It was announced that the total RPS target for 2015 is 12,339,927 MWh; increasing 9.3 percent from the target for 2014, while the RPS target for solar power after 2015 is 1,971,000 MWh increased by 6.8 percent from the last year target. The Renewable Fuel Standard (RFS) has been launched on 31 July 2015. The RFS requires oil refiners and oil importers and exporters to blend a certain amount of new and renewable energy fuel into their transportation fuels. The RFS target in 2015 has been affirmed as 2.5 percent with biodiesel only.

One Million Green Homes Project

As a part of the 2009 budget, the government appropriated KRW94.3 billion (USD72 million) for the One Million Green Homes Project. The intent is to build one million homes by 2020 that use one of the following renewable energy technologies: solar thermal, solar photovoltaic, geothermal, biomass and wind energy. Each year, the government will set a new budget for the coming year. The budget in 2014 is KRW54.9 billion, and the cumulative budget for the Project reached KRW671.2 billion from 2004 to 2014.

The green homes being built are environment-friendly and use new and renewable energy resources. In addition, green homes create no carbon emissions and use less energy, water and natural resources.

New Energy Businesses

The government announced six new energy businesses in 2014:

- electricity demand response
- integrated energy management service
- independent microgrids
- PV rentals
- electric vehicle servicing and charging
- recycling wasted heat from thermal power plants.

The new energy businesses are expected to create a market worth KRW4.6 trillion by 2017. This is based on an investment of KRW1.83 trillion in 2015, including KRW800 billion raised in the private sector.

Development and Realisation of Wind Energy Projects in Emerging Markets

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Abstract:

More than 430 GW of wind energy capacity has been installed world wide during the last 20 years with continuing growth rates. Anyhow, the majority of these projects are concentrated on a limited number of established markets (50% only in two countries and 85% in 10 countries). But in recent years it could be detected that an increasing number of countries are intending to use the technology of wind energy to enhance their electricity production capacities. Some of these countries have established framework conditions which regulate the implementation of such projects, so the markets for wind energy are emerging and local companies and organisations following up these developments on a commercial basis. On the basis of some exemplary countries like South Korea, Egypt and Pakistan major challenges as well as success factors for the development and realisation of wind energy projects are described. It becomes clear that beside the availability of sufficient infrastructure conditions, e.g. regarding transport and electrical grid, especially the stability of the framework conditions are ensuring the successful realisation of wind energy projects.

The analyses are based on the experiences of the authors in the international wind energy markets, for example, in Egypt the companies Lahmeyer and Oriental Consultants Global are supporting jointly the implementation of a 220 MW wind farm project, financed by JICA. Therefore, also experiences from development bank financed projects will highlighted to reflect the chances of using these financing methods to support the further implementation of wind energy projects.

[Invited Speaker]

Barriers and Opportunities for Rapid Employment of Wind Farms in Turkey

Tanay Sıdkı Uyar

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Abstract:

Due to its favourable wind conditions , Turkey is about to practice a boom in wind energy installations. The technology is now available with moderate prices and the production cost of wind electricity is almost 3 times cheaper than the market prices of electricity in Turkey.

Companies which were planning to install nuclear waste heat power plants or fossil fuel power plants can not compete anymore with the electricity market prices which are forced to be as low as 2 US cents/ kWh due to the availability and supply of cheap electricity from 5 GW wind turbines distributed all over Anatolia.

There is no FIT in Turkey which pays more than the market electricity prices. There is no energy decision support system which plans the future energy mix of Turkey with the technologies of the future. The future energy system is based on the technologies of the past which is dislocated to foreign markets with the export credits from the mother markets to other markets with low environmental standards.

The owners of the licences for coal power plants and nuclear power plants are expecting to receive support from the government as so called harmful subsidies. The agreement with Russia for Akkuyu Nuclear Power Plant includes a long term purchase of electricity at a price of 12.35 US cents per kWh and the remaining power will be sold in the open market by the producer.

As the take or pay agreements of natural gas , these agreements will be the main barriers for the decision makers who are on the solution side to employ more wind farms in Turkey.

Financial institutions such as World Bank, EBRD, American EXIM Bank and biggest petroleum fund of Norway declared that they will not finance coal power plants anymore. Turkey as an accession country to Europe is in a position to follow and implement the outcome of the Paris Meeting of UNFCCC after 2020.

Turkey has enough resources, manpower and conscious to divert from fossil fuels and reach 100 % renewable energy in 2023 by giving priority to energy end use efficiency using best available end use technologies and preventing import of inefficient and polluting equipment from other markets.

Transition of renewable energy policies and vision of 100% renewable energy region in Japan

Hironao Matsubara

Institute for Sustainable Energy Policies

Abstract:

Rapid growth of renewable energy in Europe and from the 2000s began. Especially in European countries, looking ahead to not only reduction of fossil fuels but also the limit of nuclear power generation already started to go towards 100% renewable energy as mentioned in COP21 with Paris Agreement. In Japan, in the wake of severe accident of Fukushima Daiichi Nuclear Plant in 2011, it was expected progressing rapidly conversion to renewable energy. In this paper, especially feed-in tariffs (FIT) in the dissemination policy of renewable energy and the role that has played such as for the evaluation, while comparing the overseas and domestic, and the future status quo in Japan discussing the outlook. On top of that, as the outlook to 100% renewable energy in the region, to discuss the efforts and possibilities to 100% renewable energy region and should aim ultimately future.

Toward the realization of long-term 100% renewable energy, medium- and long-term introduction goal setting but important, such as the percentage and greenhouse gas reduction targets as a percentage of renewable energy, in the European countries over 30% share of renewable power generation until 2020 country listed an ambitious goal that exceeds a certain number. In addition it has been made efforts for the realization of 100% renewable energy regions with community power. In doing so, not only electricity, is also important conversion to energy efficiency and renewable energy for heat utilization and transportation fuel. On the other hand, in Japan, it began a rapid growth with the focus on the solar power generation mainly by the introduction of the FIT scheme from 2012. Some evaluations of regional economy effects are made in Fukushima Prefecture based on the vision of 100% renewable energy by 2040. Besides, an indicators of energy sustainable zone are estimated in all municipalities as a move towards 100% renewable energy region in Japan.

Accelerating Wind Power Deployment in Pakistan: Capacity Building and Policy Solution

Muhammad Zeeshan Ashfaq

World Wind Energy Association

Abstract:

This paper attempts to analyze capacity building needs of public and private decision makers working in the wind energy sector of Pakistan. Perspectives from public and private sector officials recognize effective management of higher level of renewable energy (RE) integration; better understanding for RE costs and tariff determination; and financial modelling techniques for a better financial close as three dominant areas where officials require professional capacity development. The paper finds that these capacity gaps can be overcome by making officials familiar with different policy tools designed to scale up RE deployment in developed and developing countries alike. Firstly, by strengthening grid through private investment, developing hybrid (wind-solar) projects, using latest wind forecasting techniques and applying demand side management, variable RE can effectively be integrated in power grids. Secondly, the paper offers better understanding of RE costs and finds that wind energy is fast becoming cost competitive with other sources of energy including fossil fuel and coal. Moreover, it discusses that RE auctions have resulted in reduced cost of power generation in many countries and Pakistan also needs to introduce auctions mechanism to bring the cost down. Lastly, to mobilize finance in wind energy market, the study provides an insight into project finance as a viable solution for RE projects as compared to corporate finance.