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## 2<sup>nd</sup> World Congress on Wind and Renewable Energy

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## Role of climate change, small, meso and large scale factors on wind and solar energy potential

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This paper covers definition of local, meso and large-scale factors and climate changing role on wind and solar energy L potential. Hourly and daily wind speed and solar radiation data define monthly and seasonal variations of wind and solar energy potential. The main aim of the paper is to define wind and solar energy potential variations at two study areas in Istanbul, (Asian Side: Kandilli and European Side: Maslak). Wind speed, solar radiation data cover the interval of 1911-2017. The paper presents some results on descriptive statistics, Wavelet applications, Speedy Model estimates and ANN (Artificial Neural Networks) simulations. Wind data makes use of the Weibull Distribution Function as a tool to represent the frequency distribution of wind speed. Solar energy potential analyses based on Wavelet shows the role of small, meso and large-scale factors on energy potential variations. Extreme winds are associated with large-scale events with periodicities between 5-20 hrs, 5-30 hrs, 30-45 hrs or 20-60 hrs in winter. Small scale and meso scale factors is associated with lower wind speed with periodicities changing up to 35 hrs. A Speedy Model approach was applied when estimating wind - solar energy potential at the site was assessed using a historical data for every 30 year period. As a conclusion available wind speed and solar radiation by using Speedy Model and ANN simulation approach realistic estimate of energy potential. This paper is dedicated to researching the potential wind-solar energy production in Istanbul. They show the role of climate changing on energy policy.

## **Biography**

Zafer Aslan has completed her PhD in 1987 and Professor Degree at KU in 1994. She visited University of Washington, USA; IFAand International Centre for Theoretical Physics (ICTP), Italy as part of her Postdoctoral studies. She has been working at the Faculty of Engineering, Istanbul Aydin University since 2005. She is the Director of IRD and General Coordinator of EUA (European University Association) IEP (Institutional Evaluiation Programme). She is Member of Organization for Women in Science for the Developing World - The World Academy of Sciences is and the Board Member of OSTIV FAI. She received Paul Tissandier Award, Geneva in 2013, and Simons Associate Award, ICTP, Italy in 2014. She is the Editor of nine international journals. She has more than 100 national/international papers and 23 papers pubhlished in SCI journals.

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