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## Daidalos Forum

### Renewables and Energy Security - Can They Deliver?

18 March 2010 by Heiko Borchert and Karina Forster,

The provision of safe, clean, and affordable energy has become a strategic priority. Current reliance on fossil fuels is of growing geopolitical and environmental concern. Renewables are seen as an alternative due to their availability and potential to mitigate climate change. In order to make maximum use of renewables to advance energy security, however, we believe that five issues should receive closer attention.



- *Resource concentration*  
Renewable energy sources may be more abundant than oil and gas, but renewable energy technology depends on resources that are even more locally concentrated than fossil fuel. China possesses the world's largest share of key minerals such as dysprosium, lanthanum, and germanium, which are needed for some electric vehicle batteries, wind turbines, and solar PV cells. Recently, China has started changing export regulations for these minerals. This "renewables paradox" thus reinforces the need for global governance approaches towards accessing and exploiting the world's resources.
- *Climate change*  
Climate change can negatively affect renewable energy production. Some regions might become hotter and drier, thus impacting hydropower or increasing the need for water supplies for solar thermal power generation. Other regions might suffer from changed wind strength and patterns that could endanger renewable energy installations on- and offshore. More attention should be paid to the impact of climate change on renewable energy installations before commissioning them.
- *Domestic stability*  
In countries rich in fossil energy resources loyalties and support of societal groups are linked to revenue streams generated by exploiting these resources. It is very likely that we will see similar behavior if renewables replace oil and gas as major sources of income. Promoting the use of renewables in countries that have so far been dependent on revenues from selling oil and gas could lead to "eco regime change." Supporting policies are needed to avoid possibly detrimental effects of "eco regime change" on local and regional stability.
- *Network design*  
Liberalizing national energy markets puts a premium on interconnecting capacities, which are in short supply because grids were designed to satisfy national energy demand. Accommodating renewable energy requires smart grids that can simultaneously handle fluctuating renewable energy flows and provide adequate base load capacity. More attention should be paid to designing pan-regional networks, assessing the interplay between base load capacities and renewable energy, and evaluating the capability to absorb peaks in renewable energy production.
- *Infrastructure vulnerabilities*  
Smart grids are indispensable to be able to use renewables efficiently. Today's cyber security concerns are of key relevance for smart grids, as they depend on information and communication technology. Recent news about the increase in cyber attacks against energy infrastructure operators is worrisome. Therefore, it is high time to address this "cyber achilles heal" by setting up smart grid cyber security requirements and strategies at national and international levels. Failure to do this could lead to smart grids causing more rather than fewer safety and security concerns.

The authors are from IPA Network International Public Affairs GmbH, <http://www.ipa-international.org/>.

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### REN21 News and Update

 Oct-Dec 2009

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#### 3 Feb 2010 Global wind power boom continues despite economic woes

The Global Wind Energy Council today announced that the world's wind power capacity grew by 31% in 2009, adding 37.5GW to bring total installations up to 157.9GW.

#### 6 Jan 2010 Renewables Interactive Map published by REN21



The map contains a wealth of information on renewable energy, including support policies, expansion targets, current shares, installed capacity, current production, future scenarios, and policy pledges.

#### 3 Dec 2009 IRENA and REN21 Side Event at COP15 in Copenhagen

On 15 December, IRENA and REN21 together with IEA, RETD, EREC and Greenpeace will present the leading renewable energy scenarios to show how renewables can help meet CO<sub>2</sub> reduction targets and secure affordable energy supply.

#### 2 Dec 2009 REN21 Steering Committee member was named to head Greece Public Power Corp

Greece named renewable energy expert Arthouros Zervos to head state-controlled Public Power Corp (PPC), the country's biggest electricity provider.

#### 26 Nov 2009 The Economics of Renewable Energy - True Costs and Value

A one-day experts meeting hosted jointly by IEA and