

Challenges and policy suggestions of eco-friendly onshore wind power development in China



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Challenges

Onshore wind power in China has experienced rapid development since 2005. By 2019, the cumulative installed capacity of wind power reached 210 GW, among which more than 200 GW was onshore wind. Besides, the conflicts between environmental protection and onshore wind development are becoming more intense. In order to achieve an ecological civilization, it is important to recognize the most essential issues and enact policies to alleviate the conflicts in order to achieve eco-friendly development of onshore wind power.



Land-use policies are lack of scientific support and consistency, which dramatically increase the risk of wind power investments regionally. Under the ecological civilization strategy, all levels of government carry out great efforts to avoid environmental damage. However, it is an overreaction sometimes. For instance, some specific provinces stop the construction of new onshore wind farms or forbid new wind farms at an altitude over 500 meters without sufficient scientific evidence. Moreover, the *China Ecological Conservation Red Line* (ECRL) policy and relevant forest protection policies issued in the past few years bring big uncertainty on availability of land-use, because some of the land approved for new wind power plants become ineffective. As a result, the built-up wind farms are demolished, and approved wind projects are not allowed to start construction.



The environmental concerns are poorly understood in some respects due to the research gap. For instance, the effects of wind farm development on migratory birds has received significant attention, Anhui and Hunan governments require new onshore wind farms to keep away from bird migratory routes with official policies issued. However, it is a big challenge for wind power developers because of the missing GIS data and operational methods. Moreover, the current national and provincial energy planning rarely consider the land environmental constraints. How to build an effective cooperation mechanism between energy and ecological researchers, as well as to integrate land ecological constraints into energy planning deserve deeper exploration and study.



China is still lacking of technical guidelines on ecological restoration. Ecological restoration is very important for environmental protection after the wind power plant completes. Liaoning is the only province that releases the *Technical Rule for Ecological Protection and Restoration of Wind Farms* in China. More provinces such as Zhejiang and Anhui issue policies focusing on conservation of water and soil, as well as green recovery. Nevertheless, there is still a considerable gap between the current environmental conservation measures and the required ecological restoration measures.

Policy suggestions

- To keep a rational and positive view on the eco-effects of onshore wind development in overall
- We recommend local governments to establish an information platform of eco-friendly wind farm site selection that coordinate ecological and environmental data together with wind resources information
- Strengthen scientific research on environmental impacts of wind power development through a stronger support from the National Natural Science Foundation of China and relevant funding
- To establish national ecological restoration technical guidelines, clarifying the responsibility of wind power developers in these tasks and setting up dedicated funds to support