Geophysical Research Abstracts
Vol. 21, EGU2019-6373, 2019
EGU General Assembly 2019

Environmental Policy for Korea's Photovoltaic Power Generation: Dilemma between Clean Energy and Nature Preservation

Young-Joon Lee, Jong-Yoon Park, Who Seung Lee, and Byung Kwon Lee
Korea Environment Institute, Environmental Assessment group, Sejong, Korea, Republic Of (yjlee@kei.re.kr)

The Korean government has set an energy policy goal to increase the ratio of renewable energy to 20% by 2030. To this end, it is necessary to supply renewable energy facilities with a total capacity of 48.7GW including 30.8GW of photovoltaic power generation and 16.5GW of wind power generation by the target year. In Korea, forests cover 63% of the country's land area. Therefore, there is a limit to the installation of large-scale photovoltaic power generation facilities requiring large areas. As the environmental problems and the social conflicts surrounding them grow, strategic approach is needed to achieve the distribution goal.
However, due to the nature of the photovoltaic power generation business, it is mainly located in forests or farm lands where land costs are relatively low, especially resulting in a decrease in forest resources and negative impacts on ecosystems and landscapes. The occurrence of such an environmental problem has faded the eco-friendliness that is the fundamental goal of renewable energy, causing conflict between conservation of nature and expansion of clean energy.
Based on environmental assessment data, forest area damaged by photovoltaic power generation project is 26.6[U+33A2] by 2017, which corresponds to 37.5% of the total development area (71.0[U+33A2]). The value of annual ecosystem service for the 26.6[U+33A2] forest depletion area caused by the photovoltaic power generation project is estimated to be about 83.2 billion Korean won (about 74 million US dollars) as of 2017. In order to achieve the photovoltaic power supply target of the government's renewable energy implementation plan, 444[U+33A2] of land for new photovoltaic power facilities of 28.4GW is additionally required. Assuming the same forest area ratio as present, the forest area of about 166.5[U+33A2] by 2030 would be damaged. And its ecosystem service value (based on 2017) is estimated to reach 520 billion Korean won (about 462 million US dollars).
Therefore, evaluation factors and judgment criteria for location appropriateness and environmental impact required in environmental assessment stage should comprehensively be considered in terms of the environmental value, economic efficiency and social acceptability.