



Contribution ID: 285

Type: Oral

Global Coal Plant Potential for Coal-to-SMR Transition: Focusing on i-SMR as a Representation of the Technology

The global goal of achieving carbon neutrality by 2050 has led to a push for carbon-free energy sources to replace fossil fuels. Small Modular Reactors (SMRs) have the potential to support this energy transition by repurposing retired coal plants. This study identifies the size of coal plants in 54 countries where replacement with an SMR is suitable in terms of site-screening criteria. Using population density, capable faults, floodplains, and peak ground acceleration as siting criteria, we find that 108 GW could be considered for SMR siting, out of the 899 GW of coal plants retiring (or retired) between 2021 and 2050. The U.S. has 62.4 GW of coal plants available for SMR siting, which is sufficient to cover its nuclear capacity requirements of the IEA's 2050 net-zero scenario (NZE), 13.8 GW. In China, 2.5 GW of coal plants could be suitable for SMR siting, which is less than its nuclear capacity requirements of NZE, 110.6 GW. Using a power planning optimization model (WASP), we also examine the feasibility of i-SMR (680 MW) in Poland and Indonesia, which have a high share of coal capacity. The results indicate that Poland and Indonesia can deploy 11 and 85 units of i-SMR, respectively, by 2050.

Country OR International Organization

South Korea

Email address

jjshin@keei.re.kr

Confirm that the work is original and has not been published anywhere else

YES

Author: Dr SHIN, Jaejeong (Korea Energy Economics Institute)

Co-author: Dr KIM, Sunjin (Korea Energy Economics Institute)

Presenter: Dr SHIN, Jaejeong (Korea Energy Economics Institute)

Track Classification: Topical Group D: Considerations to Facilitate Deployment of SMRs: Track 13: SMRs in Energy Planning for Climate Change Mitigation