

NUCLEAR POWER

Concentrated supplier networks*Energy Policy* **128**, 838–852 (2019)

Nuclear power can decrease national energy security risks because it reduces reliance on imported fossil fuels, diversifies the electricity system and protects consumers from fluctuations in fossil fuel prices. However, because only a few countries can supply nuclear technology, countries that pursue nuclear power depend on long-term cooperative relationships. To better understand the nature of these relationships, Jessica Jewell and colleagues from the International Institute for Applied Systems Analysis, University of Bergen and Central European University analysed the interactions between states in 737 international nuclear agreements signed or announced between 2000 and 2015.

The full nuclear cooperation network includes 83 countries and the European Union, but the United States and Russia have agreements with the most countries and are closest to all other countries in the network. While the United States is more active in supportive arrangements related to knowledge building and capacity building, Russia is more active in concrete arrangements that reflect involvement in nuclear power plant construction and operation, reactor supply and the nuclear fuel cycle. Concrete cooperation networks are more centralized than supportive cooperation networks, with only 6 countries serving as suppliers in 96% of concrete agreements; Russia alone is the supplier in 46% of concrete agreements, and supplies technology to 35 countries. The concentration of nuclear suppliers introduces the potential for technological dependence, which could undermine the energy security aims of domestic nuclear energy programmes.

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