

Executive Summary

Small modular reactors (SMRs) are expected to offer a lower initial capital investment, greater scalability, and siting flexibility for locations unable to accommodate more traditional large-scale reactors. Their modularised design and inherent safety features would enhance the competitiveness of nuclear energy.

Because of such innovative features, many countries are considering the development and deployment of SMRs. In particular, the United States, the United Kingdom, and Canada are taking intensive policy measures to support the private sector in developing SMRs. What is important is that the governments of these countries are not only securing huge budgets but are also providing the sites, facilities, and technical data of national laboratories. The regulatory bodies of these countries are also having many discussions to prepare flexible and predictable regulatory schemes for SMR (and other advanced reactor) vendors, such as the Pre-Licensing Vendor Design Review in Canada. Recently, China and Russia have also been making great efforts to deploy SMRs. The governments have taken strong leadership in technology development in the two countries.

Not only such leading countries but also other countries, including those who do not have nuclear power plants today, are considering the deployment of SMRs. The smaller generating capacity and lower investment costs of SMRs make them more suitable than conventional large-scale reactors for developing countries, which have small-scale grid systems and limited financial capacity.

It is true that SMRs would bring many advantages, but there remain problems to be solved not only regarding technical issues but also in financing and licensing, as many international experts have pointed out. Due to such problems, as of 2022, no SMRs have been commercially deployed in the world. Keeping in mind the fact that customers ultimately decide whether to purchase a product or not, it is crucial to create a business environment that facilitates the decision-making of potential customers. To this end, this study makes the following policy proposals:

- 1) For the leading countries:

- Continue the current development and deployment projects for SMRs.
 - Clarify the timescales for their projects and make efforts to follow them.
 - Provide enough data so that potential newcomer countries can consider closely whether SMRs are suitable for their electric power systems.
 - Promote international efforts to harmonise the regulatory requirements for SMRs around the world.
 - Promote international cooperation with potential newcomer countries in the fields of energy planning, feasibility studies, infrastructure development, and so on.
- 2) For SMR vendors:
- Make an attractive proposal for customers (electric power utilities, in most cases).
 - Have intensive discussions with the regulatory authority and follow regulatory guidance.
 - Promote discussions in Asian or African countries that are considering the deployment of SMRs.
- 3) For countries that are considering the deployment of SMRs:
- Clarify their future energy plans and their needs for clean energy.
 - Develop attractive business environments for vendors and investors.
 - Develop and improve infrastructure, including regulation, which is necessary for the deployment of SMRs.
 - Conduct open discussions in the countries about the future utilisation of nuclear energy, including SMRs.