Implications and Prospects of the GNEP

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1. Introduction

As increased recognition for a role of an economical carbon-free nuclear energy, it is expected that possibility for introduction and an expansion of nuclear power plants (NPPs) will be increased around the world,[1)] with pursuing self-reliant nuclear fuel cycle in certain states to secure assurances of nuclear fuel supply. However, the pursuit of sensitive nuclear technology such as enrichment and reprocessing has led to concerns about nuclear proliferation. The disclosure of nuclear black market has threatened the current global non-proliferation regime.[2)]

To respond to these concerns, efforts have been made to overcome the loophole of the existing nuclear non-proliferation regime. In February 2004, US President Bush proposed that nuclear exporters refuse to transfer sensitive nuclear technology to prevent new states from producing fissile material to close a loophoole in the NPT.[3)] Meanwhile as the amount of spent nuclear fuel (SNF) by once-through fuel cycle increases, the US needs multiple repositories by the end of the century.[4)]

In February 2006, therefore, Bush administration announced the Global Nuclear Energy Partnership (GNEP), which can bring about expansion of nuclear energy including SNF management while decreasing the risk of nuclear proliferation. It is expected that the GNEP will have an effect on national nuclear programs of participating countries as well as nuclear international cooperation. In this regard, this paper discusses the implication of the GNEP and its prospects.

2. The Present State of the GNEP

2.1 Developments of the GNEP

The US Department of Energy (DOE) has domestically made many efforts to realize the GNEP such as establishment of a two track approach and the GNEP strategy plan, and a preliminary study for a site selection.[5)] The GNEP key facilities consist of a Consolidated Fuel Treatment Center (CFTC), an Advanced Burner Reactor (ABR), and an Advanced Fuel Cycle Facility. The CFTC and ABR will be deployed under the first track led by the industry consortia including light-water reactor SNF recycling. The second track led by DOE's national laboratories would further research and develop transmutation fuels technologies in the long term, which will be applied to an AFCF.

DOE has strengthened cooperation with so-called supplier nations such as Russia, France, china and Japan. They share the GNEP goal to support expansion of nuclear energy and pursue nuclear nonproliferation at the same time. They will play an important role in developing the GNEP technology and fuel supply mechanism. In particular, the US-Russia Declaration which includes assistance on construction and infrastructure development of a NPP and take-back of SNF can work as an incentive to some states which only operate a NPP without SNF management. Also, international structure of the GNEP was established, consisting of Executive Committee, Steering Group, and two Working Groups to address reliable fuel services and infrastructure development.

2.2 Emergence of the GNEP Statement of Principles and its Objectives

Participation of so-called 'user nations' is of importance to achieve the nuclear nonproliferation goal of the GNEP. But the initial GNEP proposed that user nations forgo sensitive nuclear facilities in condition of guaranteeing a nuclear fuel supply. In this respect, non-sensitive nuclear technology states including Non-Alignment Movement hold the view that initiatives on fuel supply assurances like GNEP may affect the inalienable right of a nation on the peaceful uses of nuclear energy provided for in Article IV of the NPT and promote formation of a cartel on fuel services.[6)] There aren't any reasonable criteria to classify certain states into supplier or user nations either. These views make it difficult to globalize the GNEP. Hence, it is concluded that Bush administration prepared the GNEP Statement of Principles (SOP) which leads to supporting of international community and the goal of nuclear nonproliferation, to mitigate dichotomy and guarantee the right of each state.[7)]

The SOP expresses that states participating in the GNEP would not give up any right. The SOP didn't include expression of supplier or user nations, and renouncement of sensitive nuclear facilities in it, to reduce the opposition of non-nuclear sensitive technology states. Instead, it includes the establishment of international supply frameworks to enhance reliable fuel services and supplies to the world market.

3. Implications and Prospects of the GNEP

3.1 Implications and Evaluation of the GNEP

Policy engagement of the GNEP SOP not to give up any right is positively evaluated, that is, non-sensitive nuclear technology states can independently pursue sensitive nuclear facilities if the conditions are fully matured in the future. Its expression to jointly develop the relevant GNEP technology is more positively evaluated

than that of the initial GNEP. The recycling of SNF by the ARR will exhaust the existing plutonium and SNF which will be produced. Consequently, concerns about nuclear proliferation will be ultimately reduced in nuclear weapons states as well as non-nuclear weapons states.

However, it is plausible that the GNEP facilities will be built within states that already have sensitive nuclear technology despite the requests of non-nuclear weapons states and absence of obvious criteria to distinguish supplier nations and user nations. Currently, the US is now going ahead with a plan to build them. In a global aspect, they may be deployed in specific states or areas such as a North American zone led by the US, a Western European zone led by France and UK, a East Asian zone led by China and Japan, and a Eastern European- and Central Asian zone led by Russia, according to the interests of supplier nations. But the position of states that have advanced technology and/or capabilities to supply fuel services is ambiguous.

It is also expected that states which have an intention for nuclear proliferation won't participate in the GNEP. Hence, the effect on practical nuclear non-proliferation is in some doubt. Also, return of SNF can be a big burden to suppliers while discussing the establishment of a fuel supply mechanism. The take-back of foreign SNF is positive from the aspect of nuclear nonproliferation but negative from the aspect of public acceptance.

3.2 Prospects of the GNEP

As the GNEP establishes a global implementation system along with the participation of major supplier countries, it will become a central part of international nuclear cooperation. In this regard, self-reliant pursuit of sensitive nuclear technology outside the GNEP will raise distorted views. Also, aid for infrastructure development to introduce NPPs can give rise to increasing the interest of developing countries. If developing countries can reduce the burden on a disposal of high-level radioactive wastes from the take-back of SNF, the GNEP will work as an effective incentive to those only operating NPPs. For this reason, it is expected that developing countries or states wanting to develop advanced nuclear technology will participate in the GNEP.

In case of establishing international supply frameworks by the GNEP, the world market of nuclear fuel services and nuclear power reactors can be affected in the long term. For this reason, participants will make efforts to achieve their national interests within the GNEP. As the GNEP can also influence the national nuclear program of participating countries, activities to coordinate international cooperation between the GNEP and them will become a key factor. Accordingly, states will concentrate on two working groups of fuel service and infrastructure development at this moment to secure a bridgehead for entering the market and not to affect the future rights and the existing market. Activities to assure nuclear nonproliferation will go on at the same time.

4. Conclusion

The GNEP SOP not give up any right of each state is positively evaluated. As the implementation mechanism of the GNEP was established, it is expected that participating countries will focus on strengthening relevant activities to maximize their national interests hereafter. However, there is a possibility for the GNEP facilities to be built in so-called supplier nations. Finally, a controversy between haves and have-nots is expected in implementing the GNEP depending on their national interests.

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