

# Institutional Fragility of Japanese Nuclear Legislations and Some Amendment Proposals for Their Improvement

## Background

Japanese nuclear legislation sets business-based regulatory categories of nuclear fuel cycle and provides regulations for each category as a general rule. This vertical regulatory structure is quite different from the structure of nuclear legislation of foreign nuclear power development and utilization countries that have introduced nuclear facility-based and nuclear material-based regulations. It is becoming impossible however, for Japanese nuclear legislation to cope with today's assignments surrounding nuclear power such as necessity for regulation of nuclear materials possessed by those who are not assumed to be regulated by the current law and achievement of efficient business implementation.

## Objectives

First, this study analyzes some problems of the Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors (The Nuclear Reactor Regulation Law) that is legislation which constitutes the core of nuclear regulation in Japan from the view point of (1) efficient implementation of regulation and (2) effectiveness of regulation. Secondly, this study obtains suggestions from surveying some nuclear legislation of foreign nuclear power development and utilization countries, and proposes some legislative solutions that overcome problems associated with the Nuclear Reactor Regulation Law.

## Principal Results

### 1. Analysis of problems of Japanese nuclear legislation

This study demonstrated that the regulatory framework of the Nuclear Reactor Regulation Law, which regulates nuclear safety and nuclear material control in each business category, causes inconsistent regulation for real nuclear power facilities use and nuclear material use and constitutes an obstacle to the efficient implementation of regulation and effectiveness of regulation by showing some concrete example (Table 1). This study also shows that there is a possibility of not being able to cope enough with today's assignments surrounding nuclear power such as progress of electric utilities deregulation and nuclear counter-terrorism because this institutional obstacle constitutes limiting factors of proper rationalization of nuclear business and incurs incompleteness of nuclear material control.

### 2. Comparative study on nuclear legislation with major foreign nuclear power development and utilization countries, and implications for Japanese nuclear legislation to resolve the problems.

This study implemented comparative analysis for the nuclear legislation of Germany, Britain, and the United States that have an independent law for nuclear power regulation. As a result of this comparative study, it was clarified that these countries introduced comprehensive legislation which regulated nuclear facilities and materials irrespective of nuclear operators instead of regulating them for each operator, and this comprehensive legislative approach made implementation of nuclear business efficient and safeguards effective (Table 2). Based on this comparative analysis, this study argued that Japanese nuclear legislative framework should be revised from the business categories-based legislative style to three comprehensive legislations across business categories, namely, (1) nuclear facility-based permission scheme, (2) nuclear material-based permission scheme, and (3) legislation for final disposal of radioactive waste.

### 3. Legislative proposals

Based on the comparative analysis, this study indicated two legislative proposals that resolve the problems of Japanese nuclear legislation. The two legislative proposals are follows; (1) complete revision of nuclear legislation that sets aside the Nuclear Reactor Regulation Law and enacts three new legislatives responding to characters of real use and nuclear development, assuring rationalization of business implementation and nuclear material control, and (2) make the existing business-based legislative framework hold to some degree, in the meantime enacting new additional legislation that enables rational business implementation and assuring nuclear material control. This study discussed the merits and weak points of these two proposals (Table 3). And considering the fact that the problem of regulatory failure of nuclear material control is a problem that should be resolved urgently, this study argued that as the priority level of legislative solution, it is necessary to reinforce the regulation for nuclear material under the current law to secure nuclear material control, and then to adopt the approach for complete revision of the Nuclear Reactor Regulation Law to contribute to realization of rational nuclear business implementation.

## Future Developments

Considering the current condition of overlapping and complicated inspection systems at nuclear plants under nuclear regulations, this study will examine an ideal way of reasonable regulatory schemes of inspection systems that assure the effectiveness of nuclear safety promoting nuclear operators' voluntary efforts.

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## Reference

Tomoyuki Tanabe, 2005, "The Structural Problems and their Amendment Proposals in the Japanese Legislature on Nuclear Energy Regulation", Research Report Y04006 (in Japanese)

## 1. Socio-economy - Clarification of socioeconomic trends

**Table.1** Arrangement of problems of nuclear regulation seen in some concrete case

Classification of problems		Obstacles to efficient implementation of regulations		Obstacles to effectiveness of regulations		
Problems		Obstacle to flexible correspondence to new nuclear business	Inducing duplication of nuclear facilities investment	Mistake of business classification	Indirect remedial action and accident relapse prevention	Halfway measures on nuclear material regulation
Concrete cases		(i) Law revision was needed to implement storage of spent fuel away from reactors. (1999) (ii) Barriers to entry of new nuclear business such as the trading company import of nuclear source materials.	(i) There is a possibility of overlapping consolidation facilities are needed. (JAEA Tokai Office) (ii) Sharing the waste storing facilities is difficult. (Japan Nuclear Fuel Limited)	In JCO criticality accident, the manufacture of the fuel was categorized “Regulations Concerning the Fabrication Business”, not “Regulation Concerning the Uses, etc. of Nuclear Fuel Material, etc.”	(i) The nuclear power operator is provided only as for the report collection to the person who implemented the maintenance check. (ii) The administrative penalty is not executed to the manufacturer in facilities and purchaser of the fuel fabrication.	(i) The nuclear materials that a civilian had with no aim were almost all exported to North Korea. (ii) The case where nuclear fuel material bought before the law was enforced is discovered at the university happens frequently.
Cause	Rigid business-based regulatory style	The business permission is given only for the business decided by the law.	Facilities are individually regulated under the business-based legislative.	There is a possibility which the regulation is implemented in the shape that depends on the business-based legislative structure in excess.	The Law and Regulation mainly targets nuclear undertakers who are decided by the Reactor Regulation Law.	(i) There is no regulation for nuclear materials possessed by those who are not assumed to be regulated as operators. (ii) Retroactive measures are insufficient.
	Halfway measures of nuclear material regulation	The management of nuclear materials not classified into an existing business is not regulated.	There is a possibility of becoming an irrational regulation compared with the regulation that pays attention to the character of the nuclear materials.	The regulation that pays attention to the characters of the nuclear materials is not implemented.	The regulation that pays attention to manufacturing the nuclear materials (fuels) is not implemented.	

**Table.2** Comparison of nuclear power legislations in main nuclear power use countries

States		Japan	Germany	United Kingdom	United States
Law name		The Reactor Regulation Law	The Atomic Energy Act	The Nuclear Installations Act 1965, The Radioactive Substance Act 1991	The Atomic Energy Act of 1954
Public safety	Facilities	Each facility is regulated in each nuclear business.	Regulated under facility-based permission across the business.	Regulated under facility-based permission across the business. (The Nuclear Installations Act 1965)	Regulated under material-based permission across the business. Some facilities including nuclear reactors are additionally required nuclear facility permissions.
	Nuclear materials use	Regulated in each nuclear business. Material use other than the business is regulated under the use permission clause.	Regulated under material-based permissions across the business. Material Use involving the nuclear facilities is regulated under facility-based permission.	Regulated under the material-based permission across the business. (The Radioactive Substance Act 1991) Material use involving the nuclear facilities is regulated under facility-based permission.	
Controls of materials	Physical Protection	Regulated under the use permission clause. Material use involving the nuclear business is regulated in each business.			
	Safeguard	Regulated under the use permission clause.			
Correspondence to new nuclear business		Law revision is necessary in every case.	At least in a theoretical sense, a new business might be enforceable without legislative amendment.		
Regulations suited for actual use of nuclear materials		There is a possibility the regulation is implemented in the shape that depends on the business-based legislative structure in excess.		Regulations suited for actual use of nuclear materials are easy.	
Regulations for simple possession of nuclear materials.		Simple possession is not regulated, because the law requires the possessor the aim of nuclear business.		Simple possession is regulated under the material-based permissions across the business.	

**Table.3** Some Comparative Analysis of Two Amendment Proposals concerning Nuclear Regulation in Japan

	Complete revision of the reactor regulation law	Partly amendment of the reactor regulation law
Contents of Proposals	Relinquishing the reactor regulation law and enacting three new legislations responding to character of real use and development of nuclear, assuring rationalization of business implementation and nuclear material control.	Enacting new additional legislation that enables rational business implementation and assures nuclear material controls, and revision to some clauses of the reactor regulation law.
Merits	The problem of the present nuclear regulations that originates in the business-based legislative structure can be solved in the complete revision.	The opportunity cost according to the regulatory system transition is relatively small, and the institutional reckoning is comparatively easy.
Problems	The opportunity cost according to the regulatory system transition is relatively high.	(i) The contents of regulation become more complicated. (ii) The solution depends on actual administrative implementation of the regulation.