

# Chapter 7

## Legal Framework for LNG Supply Chain Infrastructure

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# Chapter 7

## Legal Framework for LNG supply chain infrastructure

### 7.1 Introduction

Most countries in Southeast Asia have limited or no experience using LNG domestically, although some have exported LNG to other countries. Some ASEAN countries also have little experience using city gas/natural gas delivered through pipe networks. The use of LNG requires special safety considerations as it is flammable. It is important to let countries in Southeast Asia know about the legal and regulatory system, with emphasis on the safety standards for LNG and city gas supply.

The study of the legal framework of LNG and city gas aims to show:

- the legal and regulatory system regarding city gas business in Japan;
- the list of laws, government documents, and voluntary regulations by industrial associations; and
- the suggestions from the Japanese legal and regulatory system.

### 7.2 Methodology

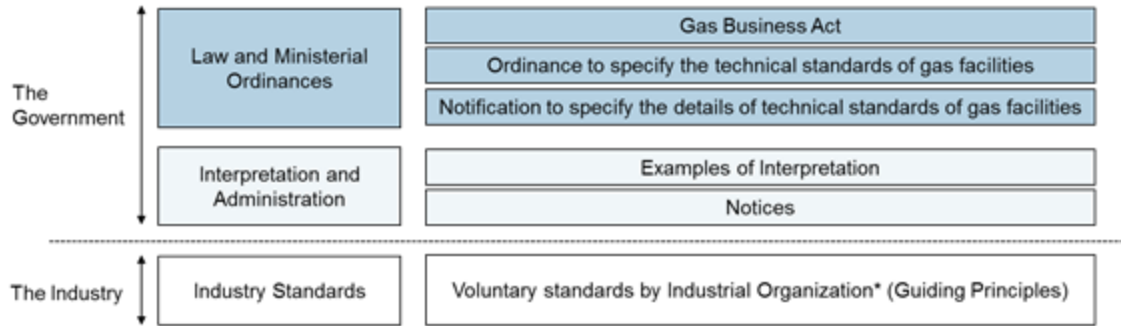
#### 7.2.1 Scope of the study

The scope of the legal framework study covers LNG/NG value chains after LNG-receiving terminal to city gas use at customers' sites.

#### 7.2.2 Literature review

There are three layers of regulations on Japan's gas business: law and ordinances; interpretation and administration; and industry standards (see Figure 19). The Gas Business Act was enacted by the Diet in 1954 and it has been amended many times. Ordinances and notifications were issued by the Ministry of Economy, Trade and Industry to supplement the details not specified in the law. Even ordinances are sometimes not considered concrete enough. Thus, the ministry issues examples of interpretations and notices. Those documents were reviewed for this chapter.

**Figure 19. Legal and Regulation Layers of Japan's Gas Business**



\*Japan Gas Association.

Source: Ministry of Economy, Trade and Industry, Japan.

**7.2.3 Interviews**

Interviews with five institutions consisting of a plant engineering company, a pipeline manufacturing company, a city gas company, a trading company, and Japan Gas Association (JGA) were conducted.

**7.3 Results**

Japan has a well-organized legal and regulatory system regarding LNG/NG. Experts agree that the law on gas business must be the basis of regulations and manuals, and those documents must be a package. As laws may differ from country to country, straight importation of the Japanese system will not be very effective.

Also, the Japanese system is very complicated and the ASEAN countries and India may not need it. However, Japan's governmental as well as industrial regulations and standards based on the Gas Business Act could be a good reference for the countries in Southeast Asia and India.

The standard on operation and maintenance (O&M) is another important area, though such standards are not usually stipulated in laws and regulations. The transfer of O&M expertise may be necessary. Japan is one of the few countries in Asia which succeeded in deploying dense piped-gas networks underneath the metropolitan areas. Also, many of Japan's standards on gas are aseismic. Thus, countries in metropolitan areas with earthquake risks may be interested in the Japanese regulations and standards.

There may be exceptions, but the Japanese system might help policy makers of countries that have not introduced LNG supply system yet.

JGA is an industrial organization and it has issued many documents on voluntary standards regarding LNG/NG. JGA's documents (see Table 32) are very detailed, and companies in the gas business usually only need to follow the instructions in the documents. If the documents are followed, the user automatically follows the laws and ministerial ordinances.

**Table 32. JGA Documents Regarding Industrial Standards**

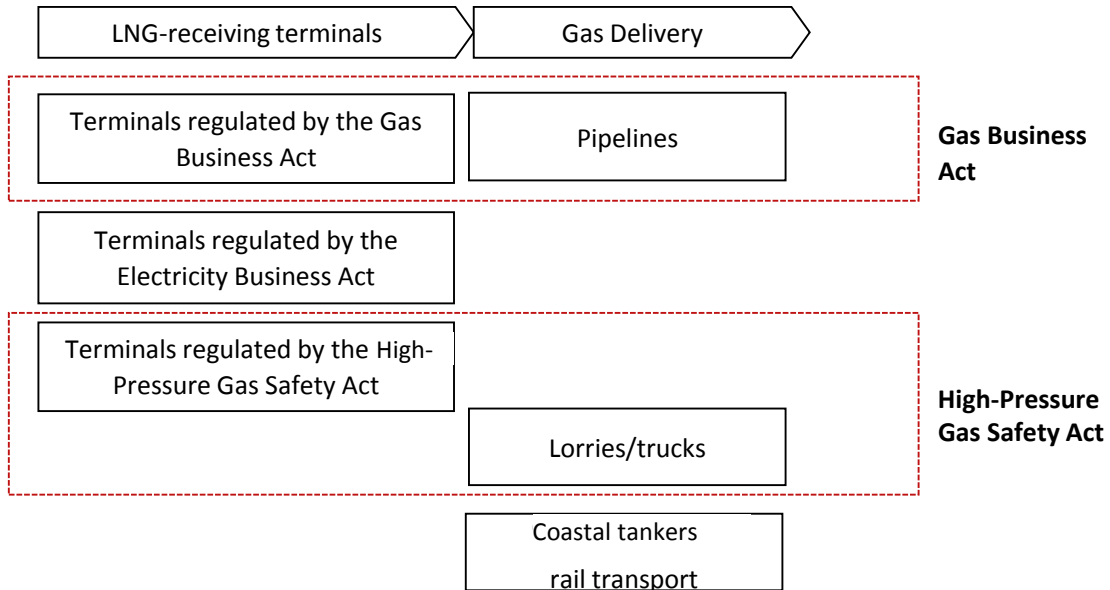
<b>Category</b>	<b>Date of Issue</b>	<b>Documents</b>	<b>Pages</b>
Manufacturing	2015.07	Direction on LPG tanks	387
	2015.03	Direction on facilities of LNG-receiving terminals	257
	2014.07	Direction on the test, evaluation, and maintenance of erosion and fatigue cracks of containers and pipes	115
	2014.06	Examples of memorandum on the self-inspection of gas production facilities prior to use	111
	2014.06	Guidelines on self-inspection of gas facilities prior to use	179
	2014.06	Guidelines on periodical self-inspection of gas facilities	118
	2014.04	Direction on spherical gas holders	329
	2012.04	Direction on underground LNG tanks	305
	2012.04	Direction on ground type LNG tanks	295
	2012.03	Direction on the aseismic design of the manufacturing facilities, and the like	280
Delivery	2016.07	Direction on main branch conduits (operation and maintenance)	234
	2016.07	Direction on main branch pipe, supply pipe, and internal pipe (supplementary on medium-pressure polyethylene pipe)	58
	2016.03	Direction and materials on aseismic (liquefaction) design of high-pressure gas conduits	530
	2014.06	Direction on high-pressure conduits	387
	2014.06	Implementation guidelines on recommendation labelling of polyethylene gas pipe, and the like (5 <sup>th</sup> revision)	157
	2014.06	Training manual for education and work on polyethylene gas pipe bonding	127
	2014.06	Technical materials on polyethylene gas conduits	117
	2013.04	Direction on the aseismic design of high-pressure gas conduits	357

Category	Date of Issue	Documents	Pages
	2013.04	Direction on aseismic design of middle- and low-pressure gas conduits	131
	2013.04	Direction on aseismic design for the prevention of column buckling	82
Customer appliances	2010.07	Commentaries on laws regarding industrial installation	309
	2009.07	Gas cogeneration system	24
	2009.01	Safety technical indices for industrial gas combustion facilities	127
	2004.06	Technical indices for small gas engine cogeneration units for business use	24
	2003.05	Qualifications for comfortable kitchen	CD-ROM
	2002.10	Qualifications for comfortable kitchen	89
	2001.05	Home gas appliances	123
	2002.06	Safety technical indices for gas boiler combustion facility	127
	1996.06	Gas shut-off valve	391
	1988.10	Safety technical direction on gas appliances such as simple boilers, and the like	86
Laws and regulations	2015.04	Commentaries on technical standard and examples of interpretation of gas facilities (5 <sup>th</sup> revision) digital book version	CD-ROM
	2015.04	Commentaries on technical standards and examples of interpretation of gas facilities (5 <sup>th</sup> revision) paper book version	678
Examination for a chief gas engineer's licence	2016.04	Commentaries on the examination for a chief gas engineer's licence (2015)	620

JGA = Japan Gas Association, LNG = liquefied natural gas, LPG = liquefied petroleum gas.  
Source: Japan Gas Association.

The Gas Business Act is not the sole law governing LNG/NG in Japan. As Figure 20 shows, an LNG terminal could be regulated by one of the three laws, depending on its use. The scope of high-pressure gas safety act is broader than LNG/NG, and its scope, for example, includes liquefied petroleum gas. Lorries and trucks used for LNG transport are regulated by this law. Experts, in general, comment that Japanese regulations are often very complicated and stringent.

**Figure 20. Legal Framework of LNG/NG Terminal and Delivery**



LNG = liquefied natural gas, NG = natural gas.

Source: Authors.

In countries other than Japan, an engineering, procurement, and construction contractor does not need to observe laws and regulations as stringent as those of the Japanese. Almost all LNG projects globally are based on either the US or European codes. Though such codes are quite looser than the Japanese standards, they are usually considered adequate. To our knowledge, Taiwan adopted similar standards to the Japanese.

As an engineering and manufacturing company, we expect only knowledgeable experts to handle LNG/NG-related equipment and facilities since the use of gas has its risks. On the other hand, decent users such as energy companies know the risks posed by gas and observe the above-mentioned codes. LNG users in developing countries also know the danger of gas leakage and are thus committed to at least a minimum quality control. Due to such practice, there are seldom serious problems.

The local risks in Southeast Asia regarding gas projects include inconsistency in the construction approvals. There are a variety of approvals, often ambiguous, and the authorities often have a large discretion. Some countries have used domestic natural gas, but only few of them have experience in handling LNG. They would be at a loss once they replace domestic natural gas with LNG. Thus, these countries need laws and technical standards on LNG.

The packaging of projects, regimes, and legal systems are required. However, the standards and manuals of Japan are formulated in accordance with Japanese laws. Thus, the simple transfer of the Japanese legal and regulatory system is not enough. Each ASEAN country needs to enact their own laws before formulating the standards and manuals on LNG and city gas.

To spread the use of city gas, the government/regulator as well as city gas company needs to establish systems through which proper pricing is established and use of city gas is promoted, including cross subsidy. The operation and maintenance of LNG facilities, especially inspection works, are not determined in laws and regulations. Training for personnel engaged in LNG is often considered difficult. The transfer of such O&M expertise may be needed.

Developing countries often want to develop an LNG/NG network as soon as possible, and do not like very stringent regulations that require the developers use a lot of time on compliance. Retail price regulation is another issue. Though developing countries like cheap retail price, for a project to achieve a reasonable return, higher retail price is often required. Time to market and reasonable return for developers are important factors in developing countries.