

Reference Materials and Business Environment

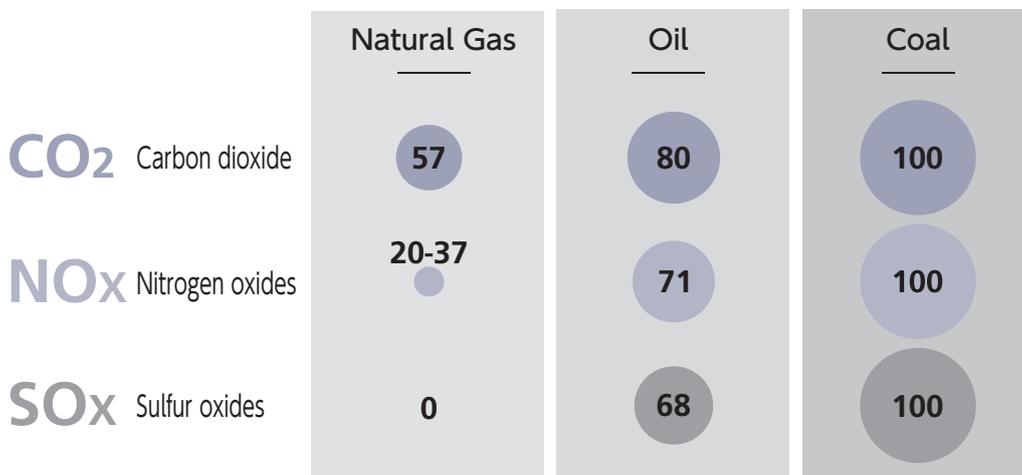
Characteristics of Natural Gas

Environmental Friendliness of Natural Gas

Natural gas, a fossil fuel like petroleum and coal, is an energy resource which contains methane as its principal component. A major advantage of natural gas over petroleum and coal is its low emissions of carbon dioxide (CO₂), a cause of global warming.

When it is burned, natural gas emits only limited amounts of nitrogen oxides (NO_x), a contributing factor in air pollution, because of its low nitrogen content, and emits no sulfur oxides (SO_x), which are a contributor to acid rain.

Comparison of Amount of Emissions with Coal as 100



Sources: (CO₂ figures) The Institute of Applied Energy, "Report on Thermal Power Plant Atmospheric Impact Assessment Technology Demonstration Surveys" (March 1990)
(SO_x and NO_x figures) International Energy Agency (IEA), "Natural Gas Prospects to 2010" 1986)

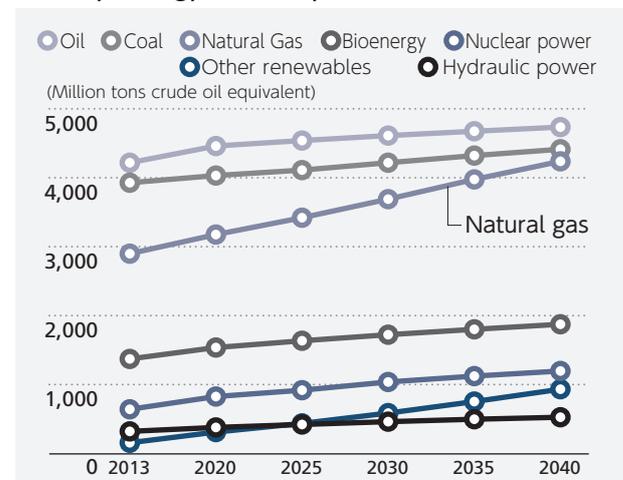
Prospects for Natural Gas

Against a backdrop of increasing demand for energy in emerging countries, the expanding use of natural gas as a non-conventional energy source, and changing conditions in electricity supply and demand in Japan, natural gas has been growing in importance. The International Energy Agency (IEA) predicts that the world's energy demand is going to continue to increase until 2040, and that the percentage of natural gas will increase in the world's primary energy consumption composition mix as we move toward the achievement of low-carbon, efficient energy systems.

Supply Stability of Natural Gas

Abundant reserves of natural gas have been discovered around the world, making it likely that a stable supply of natural gas will be available to meet growing demand. Proven reserves of natural gas are sufficient to satisfy global demand for more than 50 years.

Primary Energy Consumption Forecasts (Global)



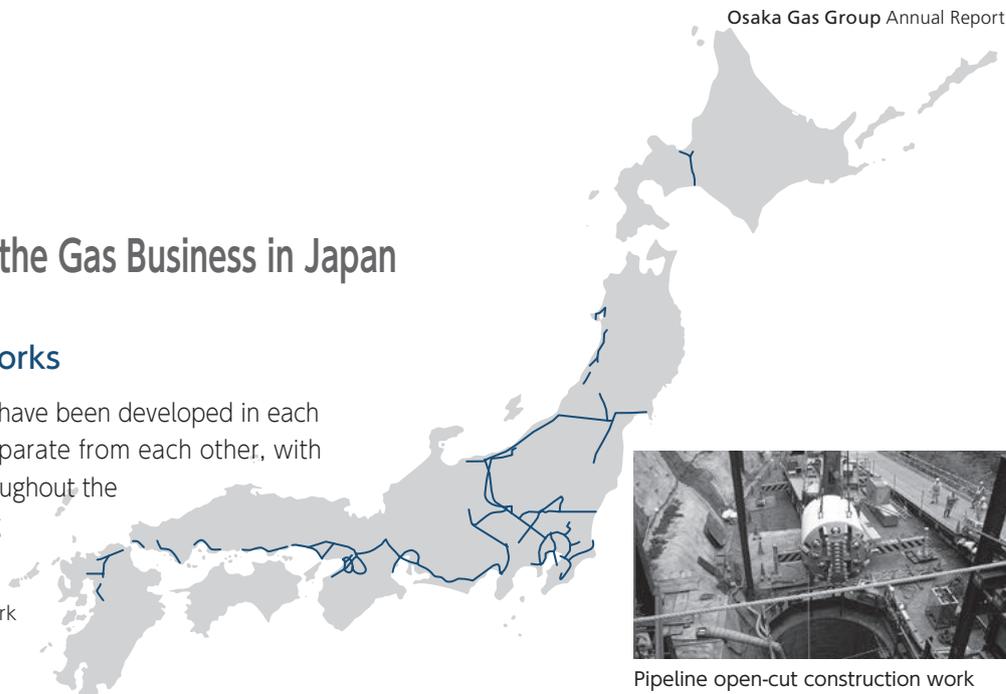
Sources: World Energy Outlook 2015 (New Policies Scenario)

Characteristics of the Gas Business in Japan

Gas Pipeline Networks

Gas pipeline networks have been developed in each region of the country, separate from each other, with no trunk line running throughout the entire country connecting local networks.

— Major pipeline network

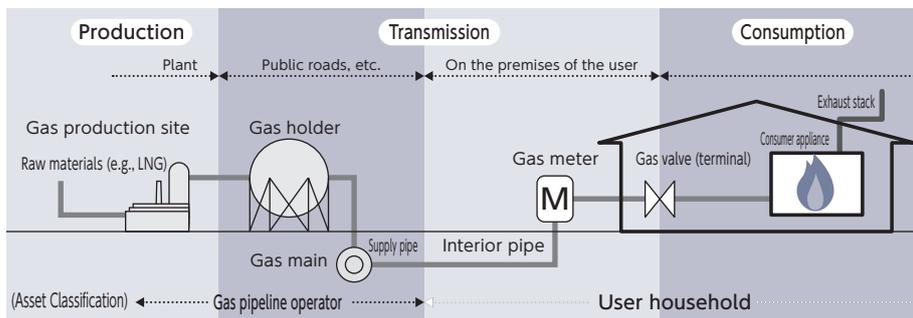


Pipeline open-cut construction work

Responsibility for Security

General gas pipeline operators engaged in the business of maintaining and operating gas pipelines (supply pipes) that connect directly to gas pipes on the premises of customers (interior pipes) have a duty to conduct emergency security checks of consumer gas equipment and appliances and on-site gas pipes and checks for leaks of on-site gas pipes.

Note that gas providers, including new market entrants, have a duty of intercommunication and mutual cooperation at all times during normal operations and in case of emergencies. Moreover, information dissemination to customers concerning the examination of and hazard prevention from consumer gas equipment and appliances has been made compulsory.



Division of Security Responsibility^{*1}



^{*1} Responsibility for security: Obligation to maintain compliance with technical standards for installed gas facilities stipulated in Article 28 of the Gas Business Act.

Fuel Cost Adjustment System

The purchasing prices of LNG and LPG, both raw materials for the gas supplied to customers, fluctuate in accordance with movements in foreign currency exchange rates and the price of crude oil. The mechanism for determining gas rates is referred to as the Fuel Cost Adjustment System. In addition to reflecting external factors in gas rates, this system is designed

to clarify the results of efforts in enhancing operating efficiency in areas other than raw material costs. Due to its structure, it also causes a time lag before price fluctuations of raw materials are reflected in gas rates, which impacts performance on a single fiscal-year basis. However, these impacts are neutralized over the medium to long term.

System Reflecting Changes in Resource Costs in Gas Rates (example)

	Jan.	Feb.	Mar.	Apr.	May	June	July
Large volume customers	Average fuel cost		One-month time lag	Reflected in gas rates			
			Average fuel cost	One-month time lag	Reflected in gas rates		
Small volume customers	Average fuel cost			Two-month time lag	Reflected in gas rates		
			Average fuel cost	Two-month time lag	Reflected in gas rates		