Chapter 2

Global Gas Market Trend

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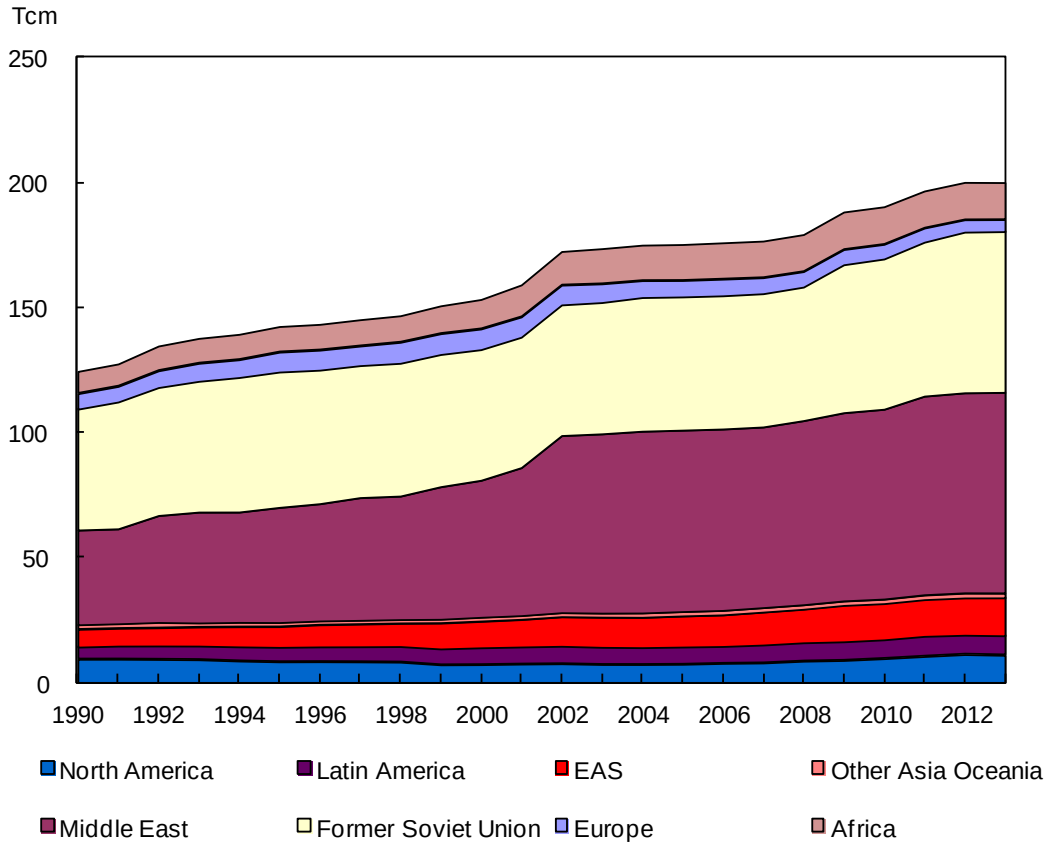
CHAPTER 2
Global Gas Market Trend

This chapter looks at global natural gas market trend in resources, production, consumption, international trade, and international prices. While conventional gas reserve and production are dominated by certain countries, unconventional gas is increasingly recognized as a game changer of the world gas market. International trade is growing faster than the demand, and regional gap has widened to an unprecedented extent.

Resources

Proven reserves of natural gas in the world at the beginning of 2013 were 200 trillion cubic metre (Tcm). The Middle East and the Commonwealth of Independent States took a share of 40 percent and 32 percent, respectively. Indeed, Russia, Iran, and Qatar together took a share of as much as 54 percent of the world total. As far as the reserve growth is concerned, the Middle East and the EAS region increased their respective growth at three percent per annum since 1990. Europe, on the other hand, decreased its reserves by one percent per annum for the same period.

Figure 2-1 Proven Reserves of Natural Gas, by region



Source: Cedigaz Statistical Database.

Whilst the above figures are those of conventional gas, it is increasingly known that the world possesses vast amounts of unconventional gas resources, especially shale gas. For example, the *World Energy Outlook 2013* of the International Energy Agency (IEA) estimates that technically recoverable resources of natural gas are as much as 810 Tcm, comprising 468 Tcm of conventional gas and 343 Tcm of unconventional gas. This resource is equivalent to 235 years of current world demand (Table 2-1).

Unconventional gas is important not only because the world possesses much more gas resources than previously thought, but also because natural gas resources, including unconventional gas, are more evenly distributed geographically. Although Eastern Europe and Eurasia—majority of which is Russia—and the Middle East to which Iran and Qatar belong still share 23 percent and 17 percent, respectively, of the world total, it is important to note that major consuming regions like Asia-Pacific and North America can

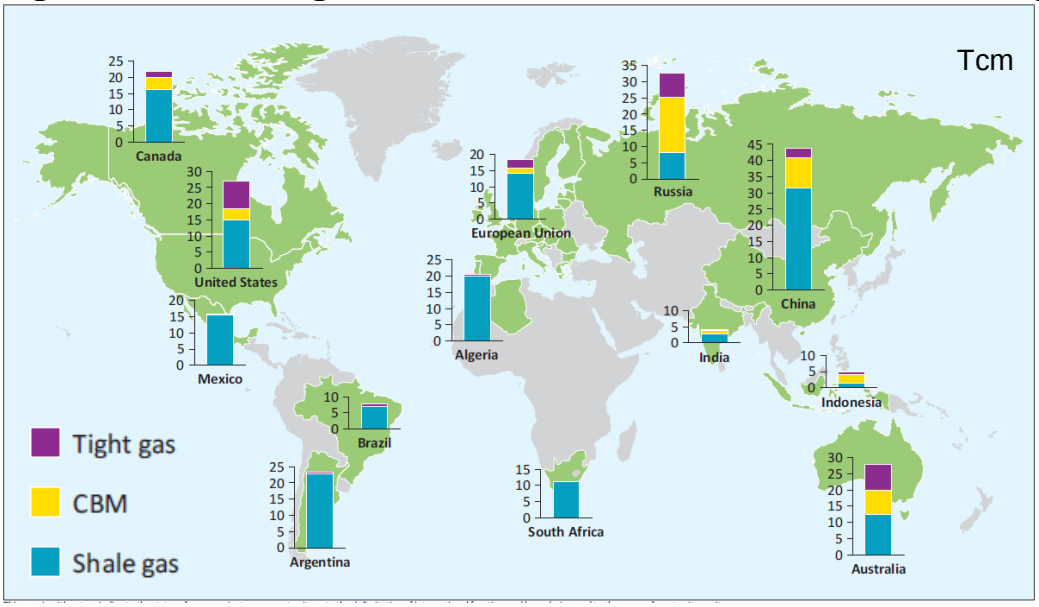
become major resource holders, with their share at 17 percent and 14 percent, respectively.

Table 2-1 Technically Recoverable Resources of Natural Gas, at end 2012 (Tcm)

	Conventional	Unconventional			Total
		Tight gas	Shale gas	CBM	
Eastern Europe and Eurasia	143	11	15	20	190
Middle East	124	9	4	-	137
Asia-Pacific	44	21	53	21	138
OECD North America	46	11	48	7	112
Africa	52	10	39	0	101
Latin America	32	15	40	-	86
OECD Europe	26	4	13	2	46
Total	468	81	212	50	810

Note : CBM = coal bed methane, OECD = Organisation for Economic Co-operation and Development.
Source: International Energy Agency (IEA), *World Energy Outlook 2013.*

Figure 2-2 Remaining Unconventional Gas Resources in Selected Regions



Note : CBM = coal bed methane.

Source: IEA, *World Energy Outlook 2013.*

According to the Energy Information Administration (EIA) of the United States (US), technically recoverable resources of shale gas in the world are estimated to be 7,299 trillion cubic feet (Tcf) (or 207 Tcm), which is the similar figure as the IEA assessment. China holds the largest shale gas resources of 32 Tcm, followed by Argentina of 23 Tcm, Algeria of 20 Tcm, the US of 19 Tcm, Canada of 16 Tcm, and Mexico of 15 Tcm (Table 2-2).

Table 2-2 Technically Recoverable Resources of Shale Gas

Tcm

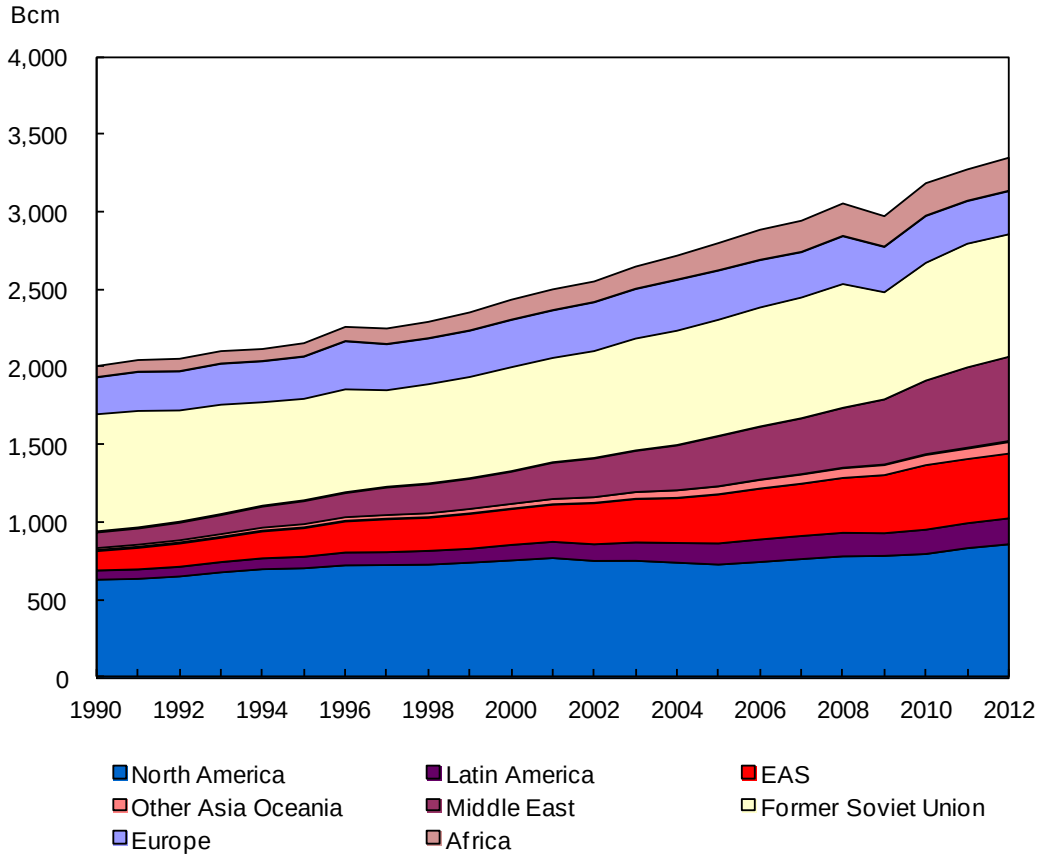
Country	Risked Gas in-Place	Technically Recoverable Resources
USA	-	18.8
Canada	68.3	16.2
Mexico	63.2	15.4
North America Total	**131.5**	**50.5**
Columbia	8.7	1.6
Venezuela	23.1	4.7
Argentina	91.8	22.7
Brazil	36.2	6.9
Bolivia	4.4	1.0
Chile	6.5	1.4
Paraguay	9.9	2.1
Uruguay	0.4	0.1
Latin America Total	**180.8**	**40.5**
Poland	21.6	4.2
Lithuania	0.1	0.0
Kaliningrad	0.6	0.1
Russia	54.4	8.1
Burgalia	1.9	0.5
Romania	6.6	1.4
Ukraine	16.2	3.6
UK	3.8	0.7
Spain	1.2	0.2
France	20.6	3.9
Germany	2.3	0.5
Netherlands	4.3	0.7
Denmark	4.5	0.9
Sweden	1.4	0.3
Europe Total	**138.5**	**25.0**
Morocco/West Sahara/Mauritania	2.7	0.6
Algeria	96.8	20.0
Tunisia	3.2	0.7
Libya	26.7	3.5
Egypt	15.1	2.8
South Afrida	44.1	11.0
Africa Total	**188.6**	**38.5**
China	134.3	31.6
Mongolia	1.6	0.1
Thailand	0.6	0.1
Indonesia	8.6	1.3
India	16.5	2.7
Pakistan	16.6	3.0
Jordan	1.0	0.2
Turkey	4.6	0.7
Australia	57.9	12.4
Asia Pacific Total	**241.7**	**52.0**
Total	**881.2**	**206.6**

Note : UK = United Kingdom, USA = United States of America.
Source: Energy Information Administration (EIA), Technically Recoverable Shale Oil and Shale Gas Resources

Production

World natural gas production increased at two percent per annum from 2,009 BCM in 1990 to 3,350 BCM in 2012. North America and the Former Soviet Union currently share 26 percent and 24 percent, respectively, followed by the Middle East at 16 percent, the EAS region at 12 percent, Europe at 8 percent, Africa at 6 percent, and Latin America at 5 percent. Regionally, production in the Middle East and the EAS region has grown rapidly at eight percent and six percent per annum, respectively, since 1990.

Figure 2-3 Natural Gas Production, by region

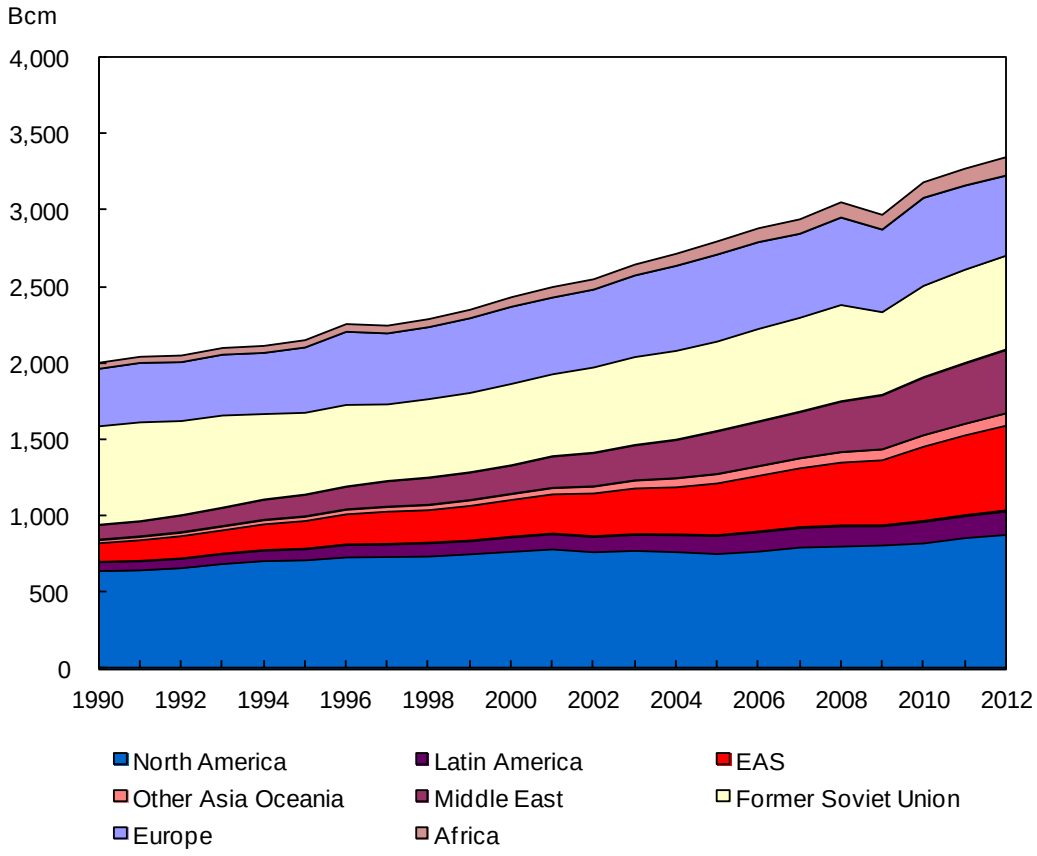


Source: Cedigaz Statistical Database.

Demand

World natural gas demand declined to 2,992 BCM in 2009, resulting from a global economic downturn. However, demand decreased only in Europe, the Former Soviet Union, and Africa, whilst demand in North America, Middle East, and the EAS region actually increased even in 2009.
Demand in Japan expanded significantly after the Fukushima Daiichi nuclear accident in March 2011. On the other hand, demand in Europe decreased in 2011 and 2012. North America is the largest demand region, sharing 26 percent of the world, followed by the Former Soviet Union at 18 percent, the EAS region at 17 percent, Europe at 16 percent, the Middle East at 12 percent, Latin America at 5 percent, and Africa 4 percent. Demand has increased rapidly particularly in the Middle East and the EAS region (both seven percent per annum) since 1990.

Figure 2-4 Natural Gas Demand, by region



Source: Cedigaz Statistical Database.

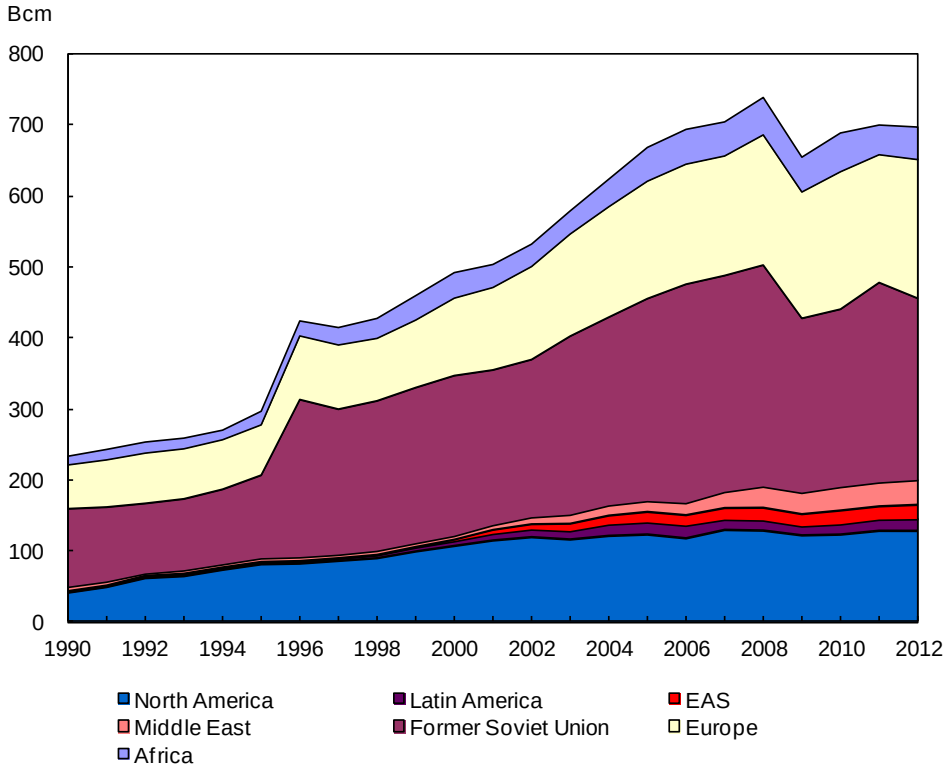
International Trade

In 2012, 1,011 BCM—30 percent of total production—was traded internationally. Sixty-nine percent of international trade was via pipeline, and 31 percent in the form of LNG, in the same year.

Pipeline Gas

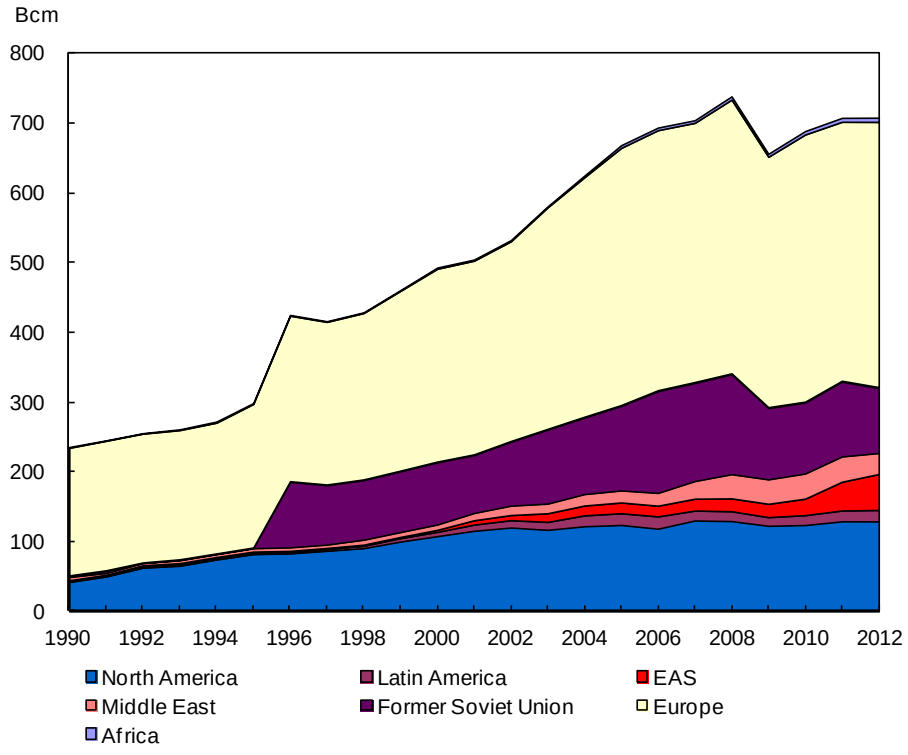
A total of 698 BCM of natural gas was traded via pipeline in 2012. International pipeline gas trade has grown yearly at five percent since 1990. However, weak demand in Europe led to significant decline of pipeline gas imports by Europe in recent years. Indeed, the European imports have not yet recovered to the pre-Euro crisis level. The largest pipeline gas–exporting region is the Former Soviet Union, sharing 36 percent of the world total. European (mainly Norway and Netherlands) and North American (mainly Canada) exports are for respective regional markets: Norwegian and Dutch gases are consumed mainly in the United Kingdom, Germany, and France, whilst Canadian gas is consumed in the USA.

Figure 2-5 Pipeline Gas Exports, by region



Source: Cedigaz Statistical Database.

Figure 2-6 Pipeline Gas Imports, by region

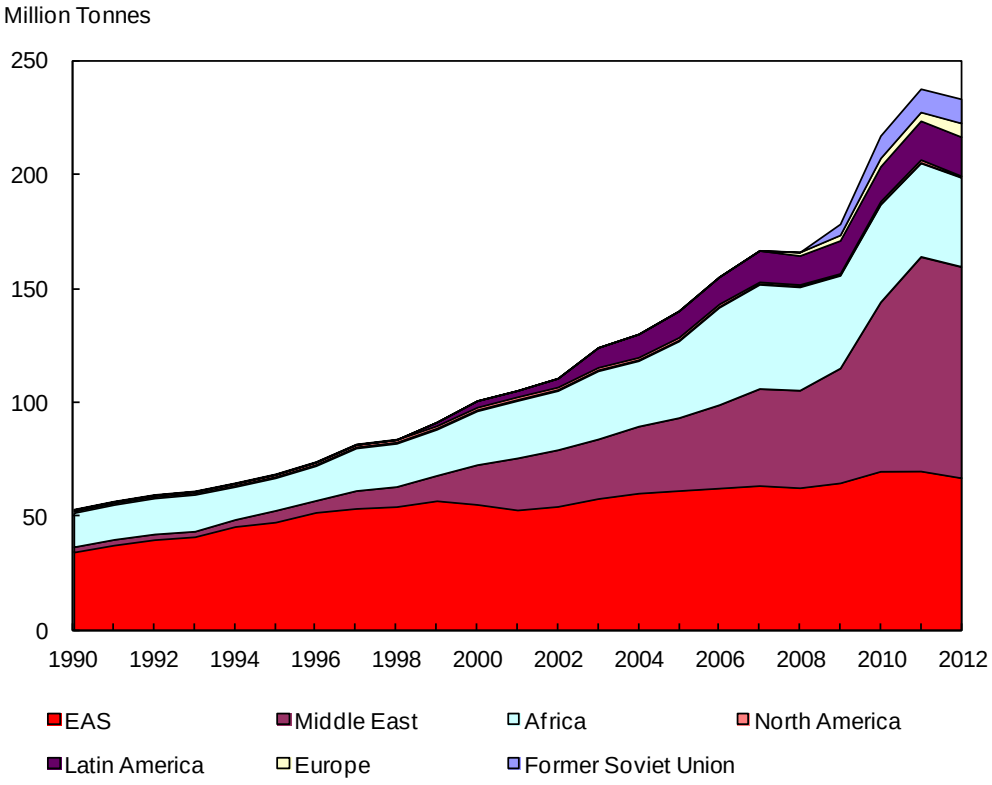


Source: Cedigaz Statistical Database.

Liquefied Natural Gas

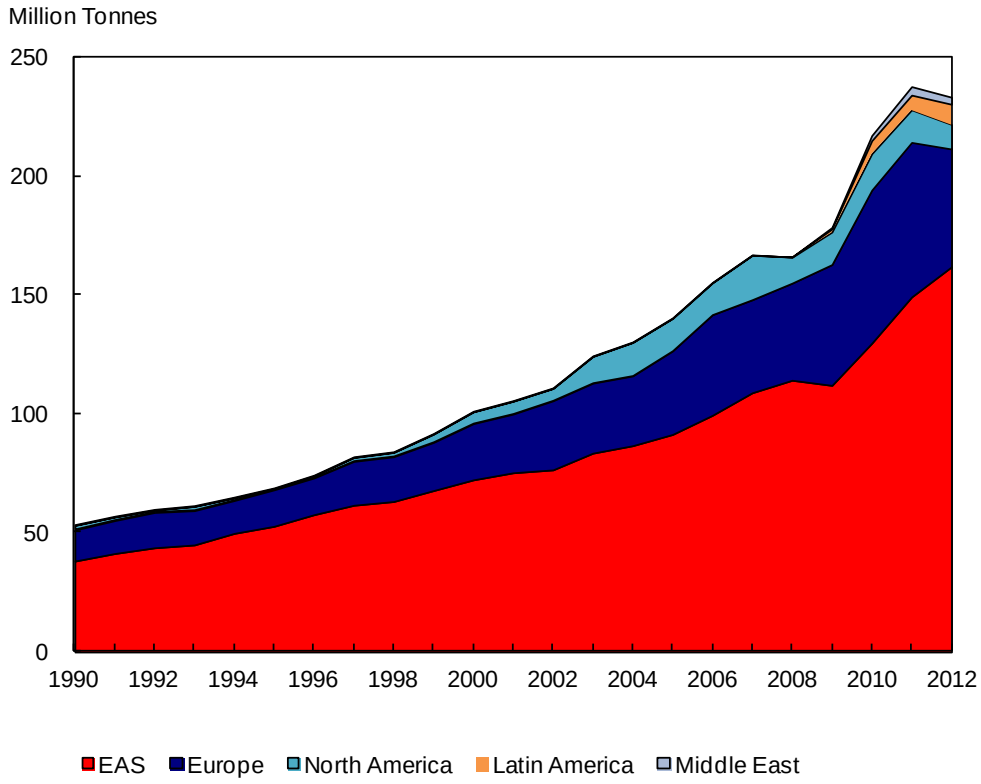
In 2012, 230 million tonnes (MT) (313 BCM) of LNG was traded worldwide. The LNG trade increased at seven percent per year since 1990, more rapidly than that of pipeline gas. However, the year 2012 saw a decline of LNG trade mainly due to weaker demand in Europe and the United States. Major LNG-exporting regions are the Middle East, the EAS region, and Africa, sharing 40 percent, 25 percent, and 17 percent of the world total, respectively. The EAS region and Europe import most of the LNG.

Figure 2-7 LNG Exports, by region



Source: Cedigaz Statistical Database.

Figure 2-8 LNG Imports, by region



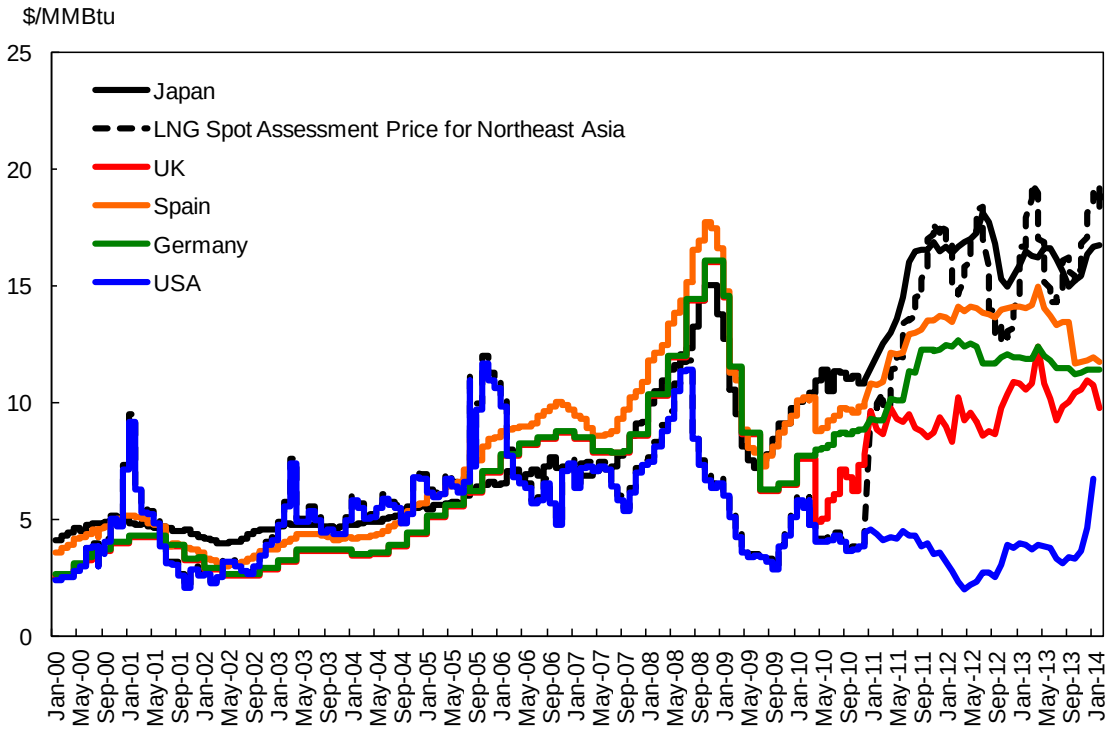
Source: Cedigaz Statistical Database.

International Price

Figure 2-9 represents the import prices of natural gas of Japan, the USA, and European countries. As crude oil prices started to rise in the 2000s, the import prices of Japan and European countries also increased partly because of oil-linked pricing formula applied to long-term contracts for these countries. The USA price also increased until 2008 mainly due to tight domestic market balance.

Post-2009 period is characterized by widening regional price gap, especially between the USA and Japan, at an unprecedented level. This Asian Premium resulted from a combination of factors, such as the shale gas revolution in the USA, high oil prices, robust demand increase in Asia, and illiquidity of the Asian LNG market.

Figure 2-9 International Natural Gas Prices



Note : LNG = liquefied natural gas, UK = United Kingdom, USA = United States of America.

Source: Energy Intelligence.