9 Natural Gas Transmission and Distribution

Thirty-three developing countries introduced private participation in natural gas transmission and distribution (transport) in 1990–2001. These countries awarded 146 projects with private participation in the sector, attracting investment commitments of $34 billion—5% of the investment in all private infrastructure projects in developing economies.[1]

Driving the increasing participation of the private sector was a growing demand for gas transport facilities coinciding with a growing consensus in favor of private participation in infrastructure and tightening constraints on public sector budgets. And driving the increasing demand for transport facilities were strong growth in energy demand, the discovery of new gas fields, and environmental concerns.

The diverse development levels of the natural gas sector in developing countries raise policy issues quite different from those in other infrastructure sectors. Except in Europe and Central Asia and some parts of Asia and Latin America, most developing countries have limited transport facilities or none at all. Some have promoted private involvement in existing facilities, while others have relied on the private sector to establish new gas networks. Still others have no gas network—public or private.

Recent private activity in natural gas in developing countries started in 1992, when Argentina privatized its transmission and distribution assets. Annual investment in gas transport projects with private participation grew to a peak of $6.5 billion in 1998, then declined (figure 9.1). Three export-oriented gas pipelines (one from Bolivia to Brazil and two from Argentina to Chile) and the partial divestiture of RAO Gazprom in the Russian Federation explained the peak in investment in 1998. The number of projects with private participation also grew, with the peak in 1995 driven by the privatization of distribution companies in the Czech Republic and Hungary and that in 1997 by the greenfield projects to build and operate gas distribution networks in Mexico (figure 9.2).

Although private participation in natural gas transport involved numerous projects and sponsors, the biggest projects and the top sponsors accounted for most of the investment commitments (boxes 9.1 and 9.2).

Private participation in natural gas transport tended to focus on private ownership and management. This approach was reflected in the predominance of divestitures and greenfield projects, which led the sector in both investment and projects (figure 9.3; table 9.1). As might be expected, divestitures predominated in countries with well-developed pipeline networks, while greenfield projects occurred mainly in countries with little or no transport infrastructure for natural gas.

Divestitures in the sector took different forms across regions. In Latin America and some countries in Europe and Central Asia (such as Hungary and Kazakhstan) divestitures were usually structured as the sale of controlling stakes to strategic operators, which took control of the privatized companies. In other countries in Europe and Central Asia (such as the Czech Republic) divestitures took the form of voucher privatizations, with control of the privatized companies remaining with the government. In East Asia and Pacific (China, the Republic of Korea, Malaysia, and Thailand) natural gas transport facilities were divested through public offerings of minority stakes on local or regional stock exchanges, with the government retaining control of the companies.

Latin America and the Caribbean led in investment in the sector, followed by East Asia and Pacific (figure 9.4). Latin America and the Caribbean also led in projects, followed by Europe and Central Asia (table 9.2). Most Latin American countries undertook natural gas reforms as part of broader reforms aimed at liberalizing energy markets (see chapter on Latin America and the Caribbean for further discussion). In East Asia and Pacific most countries partially privatized state-owned operators and used greenfield projects to expand transport capacity. In Europe and Central Asia the focus was on privatizing existing assets. In the other developing regions private activity in natural gas transport was limited to a few greenfield projects.

Initially concentrated in a few countries, private activity in natural gas transport spread over time. Private investment in the sector began in 1992, when the five most active countries accounted for 100% of the annual investment in natural gas infrastructure projects with private participation. In 2001 the top five countries still accounted for 99% of investment. During this period the group of top five consisted of Argentina, Brazil, Algeria and Morocco (combined), Mexico, and Bolivia, which together drew 58% of the cumulative investment in natural gas transport projects with private participation in 1990–2001 (table 9.3). When investment is measured in per capita terms, however, Hungary, Uruguay, and Chile move into the top five (table 9.4).

Private activity in the sector focused on vertically separated facilities. Stand-alone transmission pipelines dominated investment, with 33 projects accounting for 57% of the investment in private natural gas transport projects in 1990–2001 (table 9.5; figure 9.5). This predominance of transmission projects is due largely to two big export-oriented projects (the Maghreb and Bolivia-Brazil gas pipelines). Of the 33 stand-alone transmission projects, 22 were awarded in Latin America and the Caribbean. Projects for stand-alone distribution facilities, capturing 33% of the investment in private natural gas transport projects, were awarded mainly in Latin America and the Caribbean (50 projects) and Europe and Central Asia (25).

Just nine projects involved vertically integrated gas utilities, most in Europe and Central Asia (ArmRosGazprom in Armenia, Eesti Gaas in Estonia, Latvijas Gaze in Latvia, Lietuvos Dujo in Lithuania, Moldovagaz in Moldova, and RAO Gazprom in the Russian Federation). The other companies were scattered across regions (Gujarat Gas Company in India, Nile Valley Gas in the Arab Republic of Egypt, and Petronas Gas in Malaysia).

In countries without gas fields, developing or expanding a domestic natural gas industry requires international gas trade—and thus, typically, export-oriented pipelines. Nine export-oriented pipeline projects with private participation, attracting investment of $8 billion, reached financial closure in 1990–2001: the Yadana pipeline from Myanmar to Thailand, the Maghreb pipeline from Algeria to Morocco to Europe, the Bolivia-Brazil pipeline, sections of the Yamal pipeline in Belarus and Poland, Gasoducto Cruz del Sur from Argentina to Uruguay and Brazil, and four pipelines from Argentina to Chile (GasAndes, GasAtacama, Gasoducto del Pacifico, and NorAndino). The last four projects, which launched the development of the natural gas business in Chile, were developed by fully private consortia on a competitive basis.[2]

Notes

1. The PPI Project Database covers projects that transport natural gas to end users. Captive pipelines owned by private upstream gas producers and condensate operations are not included.
2. Alejandro Jadresic, "Investment in Natural Gas Pipelines in the Southern Cone of Latin America," Policy Research Working Paper 2315 (World Bank, Private Sector Advisory Services Department, Private Participation in Infrastructure, Washington, D.C., 2000) [http://econ.worldbank.org/docs/1069.pdf].

Box 9.1

Largest Natural Gas Transmission and Distribution Projects with Private Participation in Developing Countries

In 1990–2001 the 10 largest natural gas transport projects with private participation in developing countries accounted for half the investment in such projects (see table). These 10 projects covered the range of approaches to bundling services—from stand-alone distribution companies to vertically integrated utilities to export-oriented pipelines. Most were in Latin America, which led the developing regions in private participation in natural gas transport.

Top 10 Natural Gas Transmission and Distribution Projects with Private Participation, Developing Countries, 1990–2001

Project	Investment (2001 US$ billions)	Country
Transportadora de Gas del Sur SA (TGS)	2.9	Argentina
Maghreb Gas Pipeline	2.8	Algeria and Morocco
Bolivia-Brazil Gas Pipeline	2.4	Bolivia and Brazil
Transportadora de Gas del Norte	1.8	Argentina
RAO Gazprom	1.4	Russian Federation
Petronas Gas Sdn Bhd	1.4	Malaysia
Comgas	1.4	Brazil
Distribuidora de Gas Metropolitana	1.3	Argentina
GasAtacama	0.9	Argentina and Chile
Korea Gas Corporation	0.9	Korea, Rep. of
Total	17.2	

Source: World Bank, PPI Project Database.

Top Sponsors of Natural Gas Transmission and Distribution Projects with Private Participation in Developing Countries

The top five sponsors of private natural gas transport projects in developing countries in 1990–2001 accounted for more than 26% percent of such projects—and their projects for just over 47% of the investment (see table). A breakdown of the major players by region shows that most have a large business base in Latin America and the Caribbean, reflecting that region's predominance in private participation in natural gas transport. The top three sponsors participated in large cross-border transmission projects, while the fourth and fifth focused on transport assets for the domestic market.

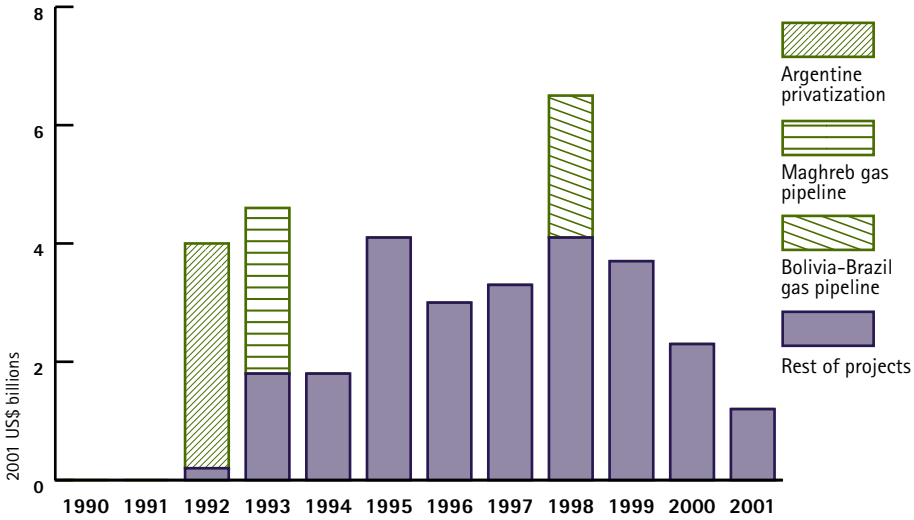
Top Five Sponsors of Natural Gas Transmission and Distribution Projects with Private Participation, Developing Countries, 1990–2001

			Projects by region					
Sponsor	Investment[a] (2001 US$ billions)	Projects	East Asia and Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
Enron Corporation	7.4	22	7	0	15	0	0	0
Gas Natural	5.0	10	0	0	9	1	0	0
Shell	4.5	4	1	0	3	0	0	0
Pérez Companc SA	4.2	2	0	0	2	0	0	0
British Gas	4.0	7	0	0	3	2	2	0
Total[b]	16.1	38	8	0	25	3	2	0

a. Investment from all sources in projects in which sponsor had an equity participation of 15% or more.
b. Data may not sum to totals because projects can be associated with more than one sponsor.
Source: World Bank, PPI Project Database.

Figure 9.1

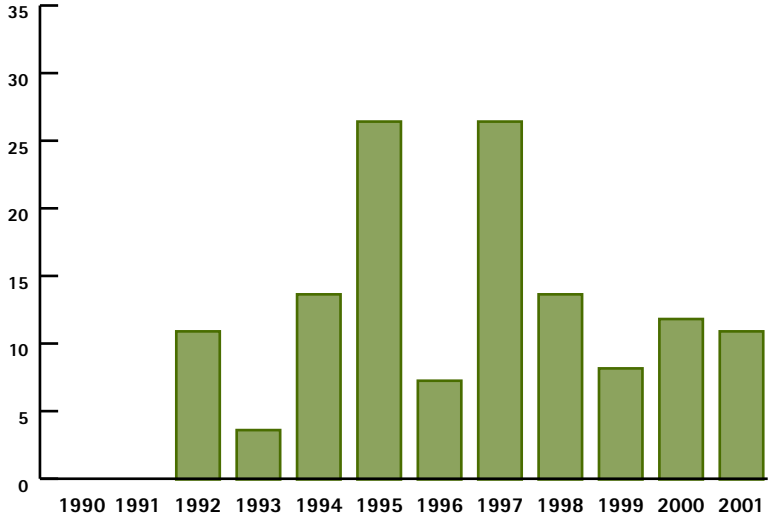
Annual Investment in Natural Gas Transmission and Distribution Projects with Private Participation, Developing Countries, 1990–2001



Source: World Bank, PPI Project Database.

Figure 9.2

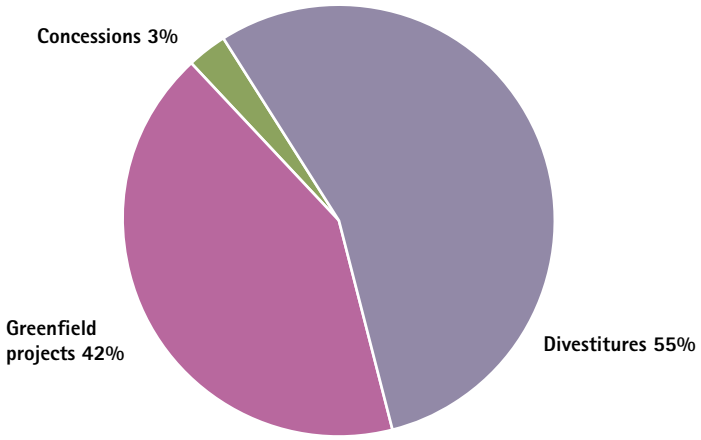
Natural Gas Transmission and Distribution Projects with Private Participation by Year of Financial Closure, Developing Countries, 1990–2001



Source: World Bank, PPI Project Database.

Figure 9.3

Cumulative Investment in Natural Gas Transmission and Distribution Projects with Private Participation by Type, Developing Countries, 1990–2001



Source: World Bank, PPI Project Database.

Total $34 billion

Table 9.1

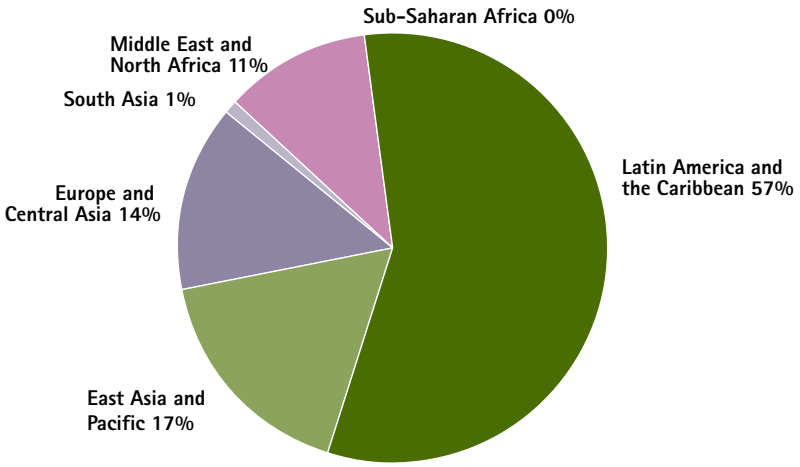
Natural Gas Transmission and Distribution Projects with Private Participation by Type, Developing Countries, 1990–2001

Type of private participation	Projects
Concessions	4
Divestitures	64
Greenfield projects	78
Management and lease contracts	0
Total	146

Source: World Bank, PPI Project Database.

Figure 9.4

Cumulative Investment in Natural Gas Transmission and Distribution Projects with Private Participation by Region, Developing Countries, 1990–2001



Source: World Bank, PPI Project Database.

Total $34 billion

Table 9.2

Private Participation in Natural Gas Transmission and Distribution by Region, Developing Countries, 1990–2001

Region	Countries	Projects	Investment (2001 US$ billions)
East Asia and Pacific	7	31	6.0
Europe and Central Asia	12	35	4.7
Latin America and the Caribbean	7	71	19.6
Middle East and North Africa	4	4	3.9
South Asia	1	3	0.2
Sub-Saharan Africa	2	2	0.1
Total	33	146	34.5

Source: World Bank, PPI Project Database.

Table 9.3

Top Five Developing Countries by Cumulative Investment in Natural Gas Transmission and Distribution Projects with Private Participation, 1990–2001

Country	Investment (2001 US$ billions)	Investment as a share of developing world total (%)
Argentina	10.6	31
Brazil	4.9	14
Algeria and Morocco	2.8	8
Bolivia	2.7	8
Mexico	2.0	6
Total	20.1	58

Source: World Bank, PPI Project Database.

Table 9.4

Top Five Developing Countries by Per Capita Cumulative Investment in Natural Gas Transmission and Distribution Projects with Private Participation, 1990–2001

Country	Per capita investment (2001 US$)	Total investment (2001 US$ billions)
Bolivia	314	2.7
Argentina	282	10.6
Hungary	162	1.6
Uruguay	131	0.4
Chile	120	1.8

Source: World Bank, PPI Project Database.

Table 9.5

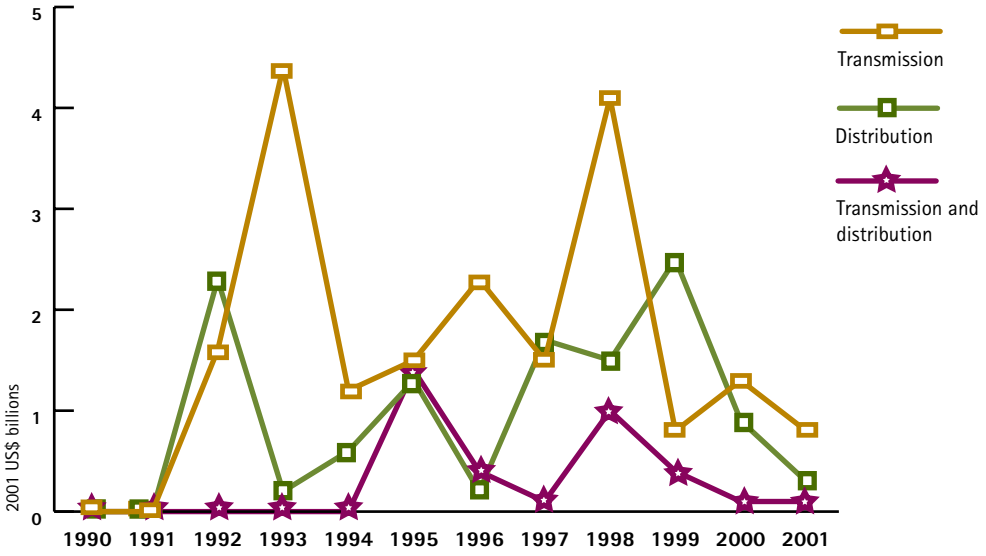
Private Participation in Natural Gas Transmission and Distribution by Segment, Developing Countries, 1990–2001

Segment	Projects	Investment (2001 US$ billions)
Transmission	33	19.6
Distribution	104	11.5
Distribution and transmission	9	3.4
Total	146	34.5

Source: World Bank, PPI Project Database.

Figure 9.5

Annual Investment in Natural Gas Transmission and Distribution Projects with Private Participation by Segment, Developing Countries, 1990–2001



Source: World Bank, PPI Project Database.