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ESMAP

Energy Sector Management Assistance Programme

Kazakhstan

Natural Gas Investment Strategy Study

Volume 3

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JOINT UNDP/WORLD BANK
ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAMME (ESMAP)

PURPOSE

The Joint UNDP/World Bank Energy Sector Management Assistance Programme (ESMAP) is a special global technical assistance program run by the World Bank's Industry and Energy Department. ESMAP provides advice to governments on sustainable energy development. Established with the support of UNDP and 15 bilateral official donors in 1983, it focuses on policy and institutional reforms designed to promote increased private investment in energy and supply and end-use energy efficiency; natural gas development; and renewable, rural, and household energy.

GOVERNANCE AND OPERATIONS

ESMAP is governed by a Consultative Group (ESMAP CG), composed of representatives of the UNDP and World Bank, the governments and other institutions providing financial support, and the recipients of ESMAP's assistance. The ESMAP CG is chaired by the World Bank's Vice President, Finance and Private Sector Development, and advised by a Technical Advisory Group (TAG) of independent energy experts that reviews the Programme's strategic agenda, its work program, and other issues. ESMAP is staffed by a cadre of engineers, energy planners, and economists from the Industry and Energy Department of the World Bank. The Director of this Department is also the Manager of ESMAP, responsible for administering the Programme.

FUNDING

ESMAP is a cooperative effort supported by the World Bank, UNDP and other United Nations agencies, the European Community, Organization of American States (OAS), Latin American Energy Organization (OLADE), and public and private donors from countries including Australia, Belgium, Canada, Denmark, Germany, Finland, France, Iceland, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Sweden, Switzerland, the United Kingdom, and the United States.

FURTHER INFORMATION

An up-to-date listing of completed ESMAP projects is appended to this report. For further information or copies of completed ESMAP reports, contact:

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Kazakhstan

Natural Gas Investment Strategy Study

Volume 3

Appendices 4 through 6

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Energy Sector Management Assistance Programme
(ESMAP)

Oil and Gas Division
Industry and Energy Department
The World Bank

Contents

Volume 3: Appendices 4 through 6

Appendix 4

Appendix 5

Appendix 6

Contents of Volume 2: Appendices 1 through 3

Appendix 1

Appendix 2

Appendix 3

Abbreviations and Acronyms

ADB	Asian Development Bank
BCF	Billion Cubic Feet (10^9 CF)
BCM	Billion Cubic Meters (10^9 CM)
BOD	Barrels of Oil Equivalent per Day
BOE	Barrels of Oil Equivalent
BOO	Build-Operate-Own
BOT	Build-Operate-Transfer
BOTAS	Turkish State Oil and Gas Company
BTU	British Thermal Units
CA	Central Asia
CAC	Central Asia Center
CAPEX	Capital Expenditure
CCGT	Combined Cycle Gas Turbine
CIF	Cost, Insurance and Freight (included)
CIS	Commonwealth of Independent States
CHP	Combined Heat and Power Plant
CM	Cubic Meter
CO_2	Carbon Dioxide
DFO	Distillate Fuel Oil (gas-oil)
EBRD	European Bank for Reconstruction and Development
EEPROM	Electrically Erasable Programmable ROM
EIB	European Investment Bank
EPC	Engineering, Procurement and Construction
ESMAP	Energy Sector Management Assistance Programme
ESCO	Energy Service Companies
ESR	Energy Sector Report
EU	European Union
FE	Far East
FGD	Flue Gas Desulphurization plant
FO	Fuel Oil
FSU	Former Soviet Union
G-7	USA, Japan, Germany, UK, France, Italy, Canada

GDP	Gross Domestic Product
GEF	Global Environment Facility
GOK	Government of Kazakhstan
GWh	Gigawatt hours (10^9 Wh)
HSE	Health, Safety and Environment
IAS	International Accounting Standards
IBRD	International Bank for Reconstruction and Development
IEA	International Energy Agency
IFC	International Finance Corporation
IOCs	International Oil Companies
IPP	Independent Power Plant
Kcal	Kilocalories
KWh	Kilowatt Hours (10^3 wh)
LDC	Local Distribution Company
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LRMC	Long-Run Marginal Cost
LSTK	Lump-Sum Turn-Key
MCF	Thousand Cubic Feet
MCM	Thousand Cubic Meters
MMCM	Million Cubic Meters
ME	Middle East
MENR	Ministry of Energy and Natural Resources
MG	Ministry of Geology
MIGA	Multilateral Investment Guarantee Agency
MMBTU	Million British Thermal Units
MMSCFD	Million Standard Cubic Feet per Day
MMTCE	Million Tonnes of Coal Equivalent
MMTOE	Million Tonnes of Oil Equivalent
MOEC	Ministry of Electricity and Coal Industry
MOG	Ministry of Oil and Gas
MT	Metric Tonne
MW	Megawatt
NAG	Non Associated Gas
NG	Natural Gas
OECD	Organization for Economic Cooperation and Development

OECF	Overseas Economic Cooperation Fund
Opex	Operating Expenditure
p.a.	per annum
PSC	Production Sharing Contract
RFO	Residual Fuel Oil
ROM	Read Only Memory
R/P ratio	Reserves to Production Ratio
SA	South Asia
SAR	Staff Appraisal Report
SCF	Standard Cubic Feet measured at 60°F and 30 inch Hg
SEA	Southeast Asia
TCM	Trillion Cubic Meters (10^{12} CM)
TCE	Tons of Coal Equivalent
TOE	Tons of Oil Equivalent
UAE	United Arab Emirates
UGSS	Unified Gas Supply System, the transmission network of the former Soviet Union.
VAT	Value Added Tax
WB	World Bank

Definitions

OECD Europe: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

Eastern Europe: Poland, Czech Republic, Slovakia, Hungary, Rumania, Bulgaria, Slovenia, Croatia, Bosnia and Herzegovina, Yugoslavia (Serbia).

Former Soviet Union (FSU): Central Asian Republics - Kazakhstan, Uzbekistan, Turkmenistan, Kirgizistan, Tadjikistan. Caucauses - Georgia, Armenia, Azerbaijan. European part - Russian Federation, Ukraine, Belarus, Moldova, Lithuania, Estonia, Latvia.

Units of Measure

Natural Gas

1 MCF (1,000 CF) = 28.32 cubic meter = about 1 MM BTU = 252,000 Kcal

1 CM = about 9,000 Kcal

1 BCM= 35.3 BCF= about 0.9 MMTOE = about 1.35 MMTCE = (about 2.7 million tonnes of lignite)

LNG 1 ton = LNG 2.35 m^3 = about 1,400 m^3 of natural gas

Energy & Power

1KWh= 3,412 BTU= 860 Kcal

1,000 KWh= 3.412 mm BTU

1 MW = 1,000 KW

1 GWh of electricity consumes approximately:

250 tons of oil in an oil-fired conventional steam power plant

390 tons of coal in a coal-fired power plant

8,000,000 CF of natural gas in a combined-cycle power plant

Currency Unit

75 Tenge = US$1 as of April 1997

Appendix 4.1

Supply-Demand Outlook in Europe

1. Many countries in Europe do not possess the domestic hydrocarbon resources to satisfy their growing energy demand, in particular, the need for natural gas. Most industrialized countries and countries in emerging economies need to import this shortfall of natural gas. For some countries, a supply gap will develop as the existing infrastructure cannot handle the increases in demand. At present western European markets seem saturated with long-term contracts up to year 2005 but there are a strong drive to use natural gas for power generation not only in western Europe but also in eastern Europe. On a broad brush basis, natural gas demand in Europe is estimated as follows:

Table 1 Natural Gas Demand in Europe

(Unit: BCM per year)

Region	Country	1995	2000	2005	2010
Western Europe	France	37.7	42.0	44.4	46.3
	Germany	84.6	109.3	119.3	125.3
	Italy	53.4	67.0	72.4	77.9
	Others		171.3	188.9	220.5
	(Sub-total)		**390.0**	**425.0**	**470.0**
Eastern Europe	Bulgaria	5.5	6.1	6.7	7.3
	Czech	7.7	10.0	12.8	17.1
	Slovakia	5.1	6.4	7.6	8.9
	Hungary	10.7	12.3	12.3	12.3
	Poland	9.1	13.0	19.5	26.2
	Romania		19.2	19.7	22.6
	(Sub-total)		**67.0**	**78.6**	**94.4**
Total			**457.0**	**503.6**	**564.4**

Sources: "World Energy Outlook- 1994 and 1995", IEA/OECD, "Oil, Gas and Coal Supply Outlook -1993 and 1995", IEA/OECD, and Statoil.
Bulgaria - ESMAP study, "Natural Gas Policies and Issues, Sep. 1996
Czech - IEA "Energy Policies of the Czech Republic", 1994
Slovakia - ESMAP study, "The Natural Gas in Eastern Europe", 1992
Hungary - IEA, "Energy Policies of Hungary", 1995
Poland - ESMAP staff's estimate based on the recent Bank's energy sector study in Poland
Romania - ESMAP study, "Natural Gas Development Strategy", Dec. 1996

Western Europe

2. As seen from Table 1 below, existing contracts more than exceed demand in year 2000, while there will be a supply gap of 60 BCM in 2010. This prospect is confirmed by the Norwegian Gas Export Association which is currently is looking for markets in Eastern Europe (Poland, Czech, Slovakia and Hungary).

Table 2:

Gas Balance for Western Europe

	(BCM)		
	2000	**2005**	**2010**
Demand	390	425	470
Production & Import Contracts	420	425	410
Potential Supply gap	-30	0	60

Source: Statoil: Gass U&M Gassinfo 1996

3. Most countries in Europe are active consumers of natural gas and the level of cross-border trade is very high. Large consuming countries such as France, Germany, Belgium, Switzerland, Austria and others have very little domestic gas production and must rely on imports. Traditional sources of these gas imports have been piped gas from the Netherlands, Denmark, Russia and Norway. Algeria also supplies gas via pipeline to Italy and one to Spain (completed in 1996). In 1996 Algeria expects to export 42 BCM, of which 50% by pipeline and 50% as LNG. The UK is not expected to have significant surplus gas available for export. Norway is the only country with substantial gas reserves which is keen to continue its export and is planning new gas export pipelines. Gas imports from Russia (and to a lesser degree from Turkmenistan) are expected to continue. However, the existing pipelines require major rehabilitation (in particular at gas compressor stations on the Soyuz , Progress, Urengoi-Uzhgorod and other export pipelines in Ukraine). Unless an urgent rehabilitation measure is taken and/or new pipelines are installed, gas imports from Russia through these pipelines may dwindle[1]. Even after extending existing contracts and utilizing all the spare capacity of the existing pipelines, a possible supply gap exists. However, new gas supplies from the Russian fields in the Yamal Peninsula are expected from 1997. They may reach an output of 30 BCM by year 2000. Gas from these fields will be exported to European markets via seven, 5000 km, gas pipelines running from Yamal to Belarus, Poland and Frankfurt/Oder in Germany.

Eastern Europe

4. At present, majority of gas supply to eastern European countries are made by Russia using the UGSS pipeline system. In 1995, a total of 40.3 BCM of Russian gas was imported to major Eastern European countries(Bulgaria: 5.8 BCM, Czech & Slovakia: 14.9 BCM, Hungary: 6.3 BCM, Romania: 6.1 BCM, and Poland: 7.2 BCM). Additional gas supply contracts are being discussed with Russia and Norway. Unlike western European countries, there seems a supply gap even in the near future as close as year 2000. In Poland, Czech and

[1] Gazprom is currently undertaking a 5-year rehabilitation of its trunk lines and compressor stations.

Hungary, there are many retiring power generation plants within 4-5 years. These countries' planners may consider the use of natural gas up to about 50% of the required fuel for the new power generation, provided that gas supply is secured at a market price for a long-term. Assuming the present level of gas supply is maintained, the gap is estimated as follows:

Table 3:

Gas Balance for Eastern Europe

	(BCM)		
	2000	**2005**	**2010**
Demand	67.0	78.6	94.4
Production & Import Contracts	60.0	60.0	60.0
Potential Supply gap	7.0	18.6	34.4

Source: Statoil: Gass U&M Gassinfo 1996

Appendix 4.2

Estimated Costs of Delivering Gas to East and West Europe

1. Two preliminary calculations have been conducted for the following cases:

   A. Based on a new pipeline or LNG scheme (for various gas producers); and
   B. Based on the UGSS (for CIS producers only).

2. The case A above used indicative gas transport presented in a World Banks IEN Occasional Paper No. 8, "Natural Gas Trade in Asia and the Middle East". The paper presents indicative costs for long-distance transportation of natural gas by quantity and distance as follows:

Table 1:

Indicative Costs of Long-Distance Transportation of Natural Gas by Quantity and Distance

(US$ per MMBTU)

		Distance		
Transport volume	*Transport method*	*1,200*	*3,800*	*7,600*
5 MMTY (6.9 BCMY)	Onshore pipeline	0.99	3.41	7.80
	Offshore pipeline	2.10	7.20	16.52
	LNG	3.05	3.62	4.26
10 MMTY (13.8 BCMY)	Onshore pipeline	0.74	2.52	5.65
	Offshore pipeline	1.58	5.37	11.43
	LNG	2.58	3.16	4.01
20 MMTY (27.6 BCMY)	Onshore pipeline	0.54	1.75	3.89
	Offshore pipeline	1.18	3.82	8.12
	LNG	2.21	2.78	3.55

The LNG transport cost above includes regasification. The major engineering yardsticks applied are:

- Onshore pipeline installation cost: average $20 per inch-diameter over 1 m;
- Installation cost of onshore compressor station: $ 1.3-.5 million per MW;
- Offshore pipeline installation cost: average $40 per inch-diameter over 1 m;
- Installation cost of offshore compressor station: $3.5-4.5 million per MW;
- Annual operating cost: 0.5-1.5 % of the initial pipeline investment plus 4-5% of the initial compressor station investment;
- Annual operating cost: 0.5-1.5 % of the initial pipeline investment plus 4-5% of the initial compressor station investment;
- LNG liquefaction plant cost: about $1,600 million for 4 million ton per year;
- Annual operating cost of LNG plant: 4-5% of the initial investment cost;

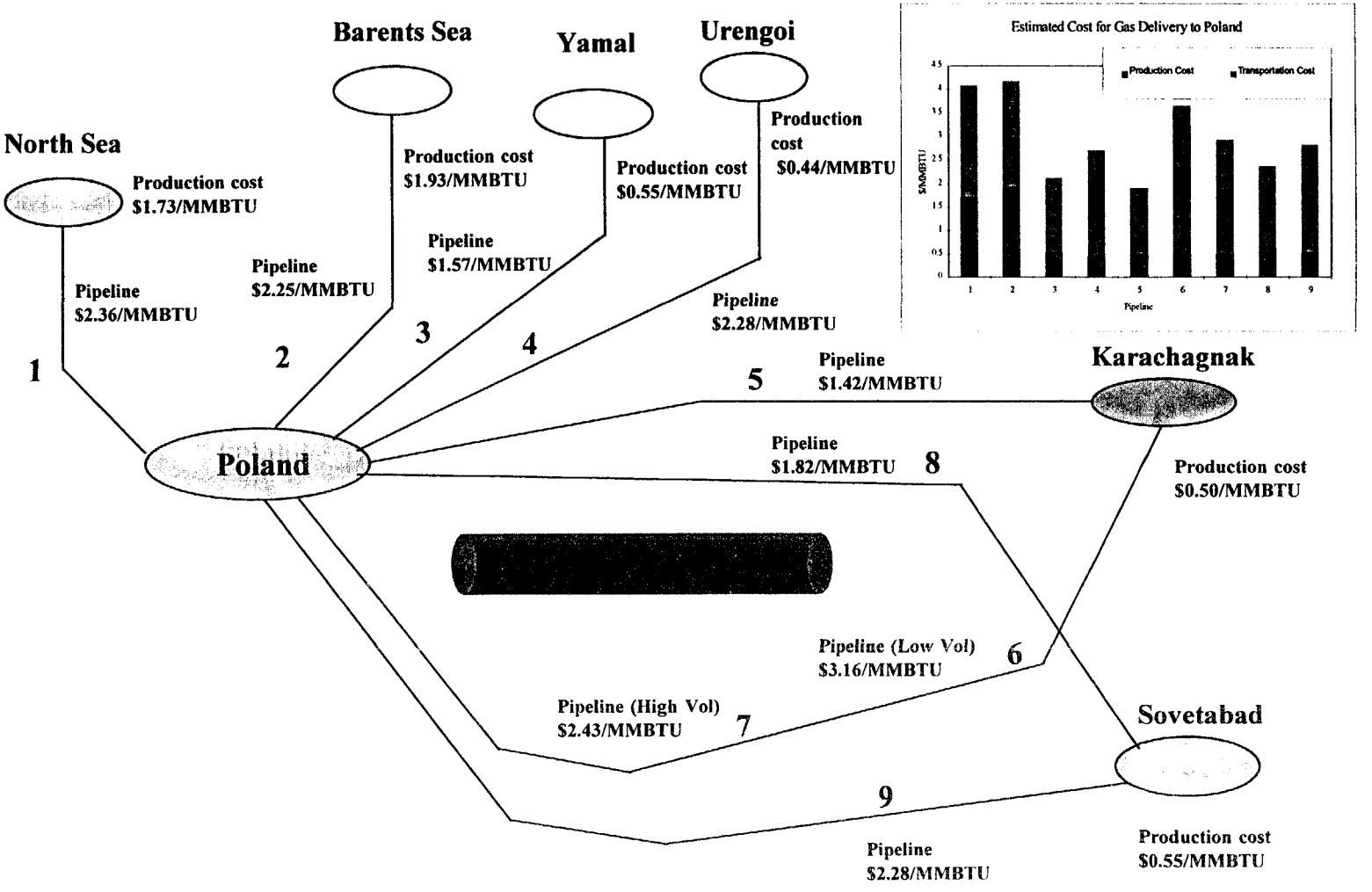
Appendix 4.2

Table 2: Indicative Gas Delivery Cost at Warsaw city gate, Poland

Gas Supply Source and Route	*Estimated Prod. Cost (US$/MMBTU)*	*Transport Option*	*Trunk Line*		*Branch Line*		*City gate Delivery Cost (US$/MMBTU)*
			Vol. & Distance (BCM/Y) x (Km)	*Trans. Cost (US$/MMBTU)*	*Vol. & Distance (BCM/Y) x (Km)*	*Trans. Cost (US$/MMBTU)*	
Russian gas (Urengoi/Ya via Uzhgorod, Ukraine	0.44	Onshore pipe	35 x 4000	1.98	5 x 400	0.30	2.72
Russian gas (Yamal) via Brest-Litovsk	0.55	Onshore pipe	35 x 3300	1.52	5 x 50	0.05	2.12
Norweigian gas (North S via Emden, Germany	1.73	Offshore pipe & onshore pipe	10 x 1000	1.56	5 x 1000	0.80	4.09
Russian gas (Barents Sea via Brest-Litovsk	1.93	Offshore pipe & onshore pipe	15 x 500 15 x 2200	0.65 1.40	5 x 250	0.20	4.18
Karachaganak gas via Uzhgorod, Ukraine	0.5	Onshore pipe	20 x 2000	1.12	5 x 400	0.30	1.92
Karachganak gas via Caspian Sea, Istanbul	0.5	Onshore pipe Offshore pipe	20 x 4100 20 x 400	2.39 0.47	5 x 400	0.30	3.66
Karachganak gas via Caspian Sea, Istanbul	0.5	Onshore pipe Offshore pipe	30 x 4100 30 x 400	1.77 0.36	5 x 400	0.30	2.93
Turkmen gas (Sovietbad) via Kazakstan and Ukraine	0.55	Onshore pipe	35 x 3300	1.52	5 x 400	0.30	2.37
Turkmen gas (Sovietbad) via Iran, Turkey	0.55	Onshore pipe	35 x 4200	1.98	5 x 400	0.30	2.83

Note: The calculation is based on construction of new pipeline infrasturucture.

Comparative Values of Supply Cost of Gas to Eastern Europe



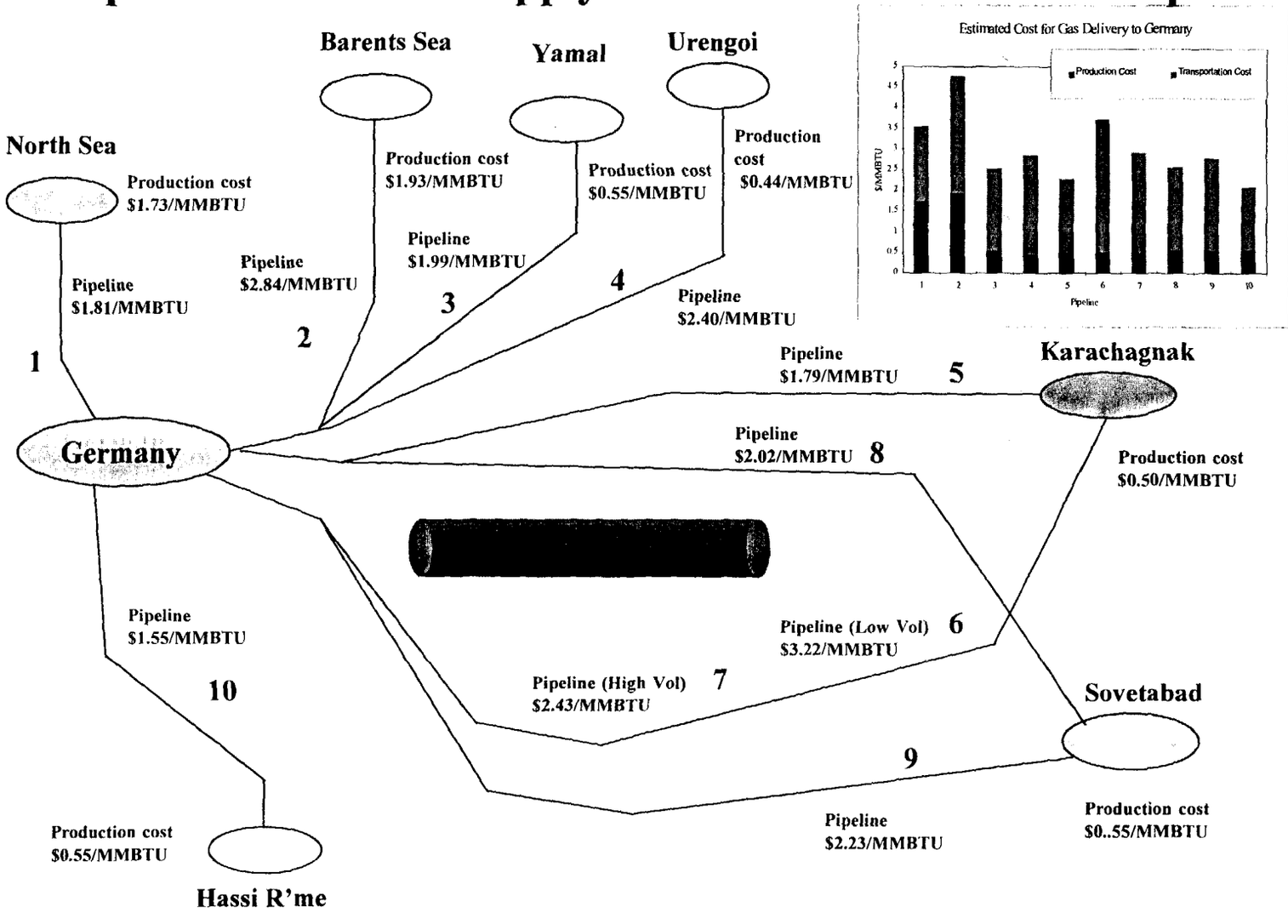
Appendix 4.2

Table 3: Indicative Gas Delivery Cost at Frankfurt city gate, Germany

Gas Supply Source and Route	*Estimated Prod. Cost (US$/MMBTU)*	*Transport Option*	*Trunk Line*		*Branch Line*		*City gate Delivery Cost (US$/MMBTU)*
			Vol. & Distance (BCM/Y) x (Km)	*Trans. Cost (US$/MMBTU)*	*Vol. & Distance (BCM/Y) x (Km)*	*Trans. Cost (US$/MMBTU)*	
Russian gas (Urengoi/Ya via Uzhgorod, Ukraine	0.44	Onshore pipe	35 x 4800	2.31	10 x 150	0.09	2.84
Russian gas (Yamal) via Brest-Litovsk	0.55	Onshore pipe	35 x 4100	1.93	10 x 100	0.06	2.54
Norweigian gas (North S via Emden, Germany	1.73	Offshore pipe & onshore pipe	10 x 1000	1.56	10 x 400	0.25	3.54
Russian gas (Barents Sea via Brest-Litovsk	1.93	Offshore pipe & onshore pipe	15 x 500 15 x 3100	0.65 2.04	10 x 300	0.15	4.77
Karachaganak gas via Uzhgorod, Ukraine	0.5	Onshore pipe	20 x 3000	1.70	10 x 150	0.09	2.29
Karachganak gas via Caspian Sea, Istanbul	0.5	Onshore pipe Offshore pipe	20 x 4400 20 x 400	2.6 0.47	10 x 250	0.15	3.72
Karachganak gas via Caspian Sea, Istanbul	0.5	Onshore pipe Offshore pipe	30 x 4400 30 x 400	1.92 0.36	10 x 250	0.15	2.93
Turkmen gas (Sovietbad) via Kazakstan and Ukraine	0.55	Onshore pipe	35 x 4100	1.93	10 x 150	0.09	2.57
Turkmen gas (Sovietbad via Iran, Turkey	0.55	Onshore pipe	35 x 4500	2.14	10 x 150	0.09	2.78
Algerian gas (Hassi R'me via Italy	0.55	Onshore pipe & Offshore pipe	10 x 2600 10 x 300	1.15 0.40			2.10

Note: The calculation is based on construction of new pipeline infrastructure

Comparative Values of Supply Cost of Gas to Western Europe



- LNG vessel cost (125,000 CM or gross 53,000 ton LNG): $250 to 300 million;
- The speed of LNG vessel: 18-19 knots (or 33.3 to 35.2 Km/h);
- Annual investment cost of LNG cargo: $10-20 million per vessel;
- LNG regasification plant: About $450 million for 4 million ton per year; and
- Annual operating cost of LNG regasification plant: 3-4% of the initial investment cost.

3. The calculation results are listed in Table 2 for the Warsaw case and in Table 3 for the Frankfurt case. The pipeline or LNG transport distances have been assumed the shortest with a contingency of about 15%.

4. In the case UGSS is used, it is assumed that $1.5 per 1000 CM (or $0.0425 per MMBTU) is charged over 100 Km transport distance. The gas transport cases by UGSS are limited to such gas sources as: Karachganak, Kazakhstan; Yamal, Russia; and Sobietbad, Turkmenistan. Table 4 presents indicative cost based on the gas transport by UGSS to Warsaw and Frankfurt.

Table-4:

Gas transport Costs by UGSS to Warsaw and Frankfurt

Gas Supply Source	*Estimated Production Cost ($/MMBTU))*	*Total Distance (Km)*	*Transport Cost ($/MMBTU)*	*City Gate Delivery ($/MMBTU)*
To Warsaw, Poland				
Karachganak	0.5	2400	1.02	1.52
Turkmen (Sovietbad)	0.55	3700	1.60	2.15
Russia (Yamburg)	0.44	4400	1.87	2.31
To Frankfurt, Germany				
Karachganak	0.5	3150	1.34	1.84
Turkmen (Sovietbad)	0.55	4250	1.81	2.36
Russia (Yamburg)	0.44	4950	2.10	2.54

Appendix 4.3

Potential Gas Exports from Kazakhstan

Export Gas Markets

1. Potential gas export markets from Central Asia include: Western Europe; the CIS; Eastern Europe; Turkey; South Asia (Pakistan and India) and the Far East (mainly China). Existing studies have largely focused on the European market options. Although there are a few studies of other export options (e.g. Pakistan), a comprehensive review of the challenges and opportunities has not yet been presented to the producing countries and all the potential importing countries.

2. The outline of European gas markets is presented in *Appendix IV-1*. This appendix presents other potential markets. The other markets conceivable would be: Turkey; South Asia (Pakistan and India); East Asia (mainly China). Gas demand in these countries are predicted as follows:

Table 1 Natural Gas Demand in Turkey, South Asia and East Asia

(Unit: BCM per year)

Region	Country	1995	2000	2005	2010
Middle East	Turkey	**6.5**	**8.6**	**11.6**	**16.6**
South Asia	Pakistan	19.6	27.1	35.8	47.2
	India	17.5	28.2	47.5	71.3
	(Sub-total)	**37.1**	**55.3**	**83.3**	**118.5**
East Asia	China	21.8	27.1	35.0	44.9
	Japan	50.4	50.9	60.4	72.0
	Korea	6.5	8.6	11.3	13.4
	Taiwan	4.3	6.0	8.8	13.3
	(Sub-total)	**83.0**	**92.6**	**115.4**	**143.6**

Sources: "World Energy Outlook- 1994 and 1995", IEA/OECD, "Oil, Gas and Coal Supply Outlook -1993 and 1995", IEA/OECD, and for the gas demand in Eastern Europe, "Prospects for Russian Gas Sales to Europe", ADL in 1992.

Gas Balance in Potential Export Markets

3. Many countries in Asia do not possess the domestic hydrocarbon resources to satisfy their growing energy demand, in particular, the need for natural gas. Gas balance in these countries are predicted on a broad brush basis as follows. It should be observed, however, that estimates of supply (in particular) and demand vary considerably among different sources.

Table 2: Gas Balance for Turkey

(BCM)			
	2000	2005	2010
Demand	23.7	31.4	37.9
Imports (Extension)*	8	8	8
Production	0.1	0.1	0.1
Potential Supply Gap	15.6	23.3	29.8

Source: BOTAS, Turkey 1996

South Asia (Pakistan and India)

Table 3: Gas Balance for Pakistan and India

(BCM)			
	2000	2005	2010
Demand	55.3	83.3	118.4
Production	46.5	55.0	63.5
Potential Supply Gap	8.8	28.3	54.9

East Asia (China, South Korea, Japan, Taiwan)

Table 4: Gas Balance for China, South Korea, Japan, Taiwan

(BCM)			
	2000	2005	2010
Demand	92.6	115.4	143.6
Production/Import Contracts	78.9	72.3	63.3
Extensions[1]	6.4	20.9	13.3
Potential Supply Gap	7.3	22.2	67.0

Source: "Natural Gas in the World", Cedigaz, "BP Review of World Gas", BP, and "World LNG Trade", Cedigaz

Competitiveness of Kazak Gas

Turkish Market

4. In the case of Turkish market, the main competitors of gas supply include Turkmenistan and Middle East producers in addition to Russia. The following table presents

[1] The LNG import contracts is extended to the maximum handling capacity of the Regassification terminals.

a very preliminary comparison of indicative gas costs from Kazakhstan, Turkmenistan and Middle East producers. In general, Turkmen gas is more competitive. However, a better option would be to collaborate with Turkmenistan and Azerbaijan to exploit competitive export markets for Central Asian gas producers.

Table 5 Indicative Gas Supply Costs from Selected Suppliers to Turkey

Gas Supplier	Gas Export Volume (BCM/Y)	Transport Distance (Km)	Indicative Transport Cost (US$/ MMBTU)	Gas Production Cost (US$/ MMBTU)	Indicative Gas Supply Cost (US$/ MMBTU)
Turkmenistan	5	1300	1.16	0.55	1.71
Middle East	5	500 to 1500	0.4 - 1.36	In the case of 0.5	0.9 - 1.86
	5	500 to 1500	0.4 - 1.36	In the case of 1	1.4 - 2.36
Kazakhstan	5	2000	1.86	0.5	2.36

South Asia Markets

5. The calculated Kazak gas supply costs to Pakistan (about US$ 1.80 per MMBTU) are far less than the estimated gas netback values for the power sector (US$ 5.7 per MMBTU in Pakistan) and well justify the economic viability. However, such a supply would have to be based on an agreement with Turkmenistan, to which it is a competitor. Moreover, a further challenge would be how to resolve geopolitical issues in Afghanistan and how to establish sound commercial arrangements with the related parties to the gas trade project. In the case of Pakistan, there is already an extensive gas transmission infrastructure. It would be logical to pursue the possibility of the gas trade from Central Asia to Pakistan once stability in Afghanistan can be foreseen.

Indicative Gas Supply Cost from Selected Suppliers to Turkey

Cost of Gas at City Gate
kazakhstan $2.36/MMBTU
Turkmenistan $1.71/MMBTU
Middle East
Scenario 1 - $0.90-1.86/MMBTU
Scenario 1 - $1.40-2.36/MMBTU

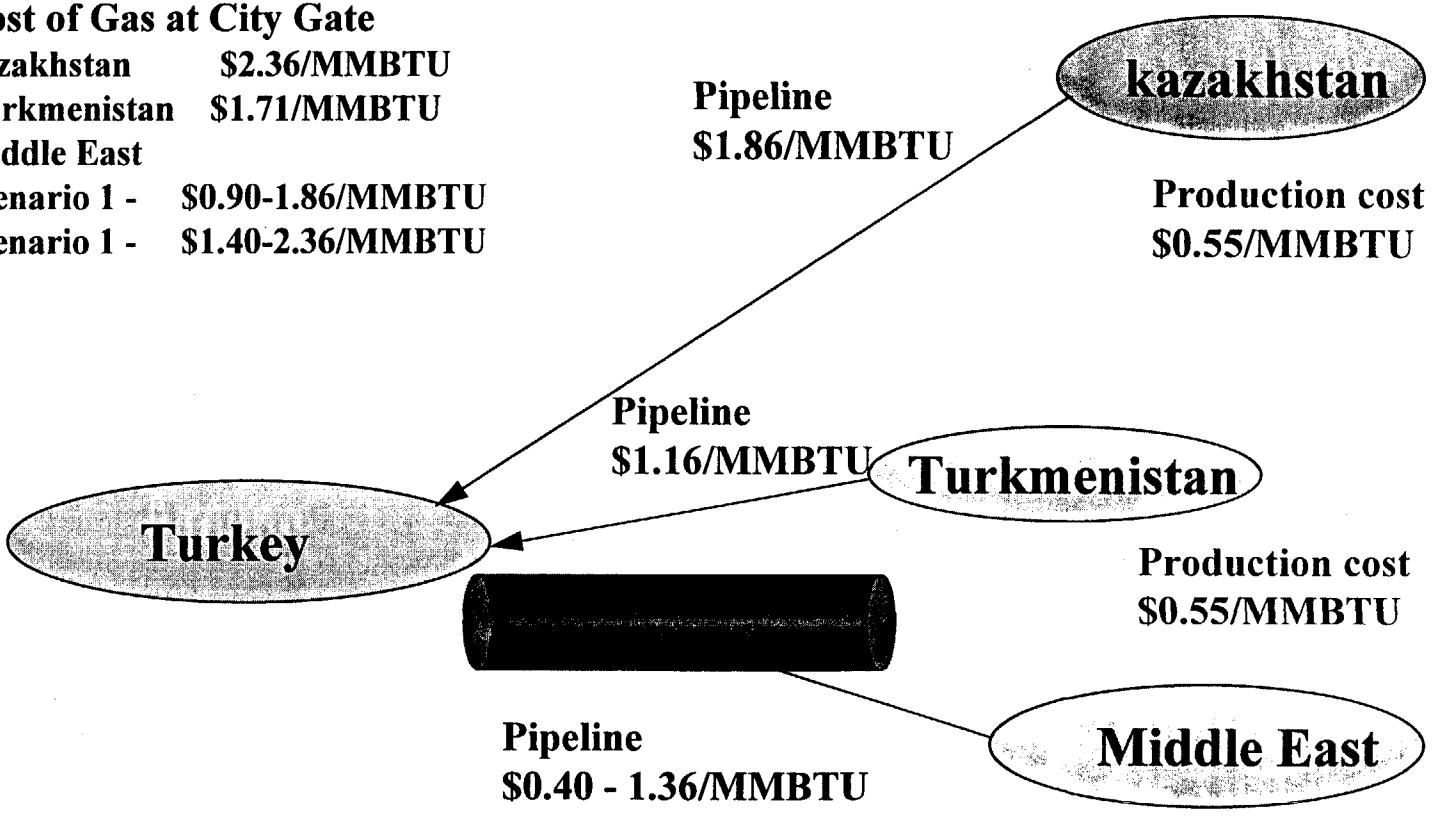


Table 6 Indicative Costs of Gas Supply to South Asia

Gas Supplier	Gas Export Volume (BCM/Y)	Transport Distance (Km)	Indicative Transport Cost (US$/MMBTU)	Gas Production Cost (US$/MMBTU)	Indicative Gas Supply Cost (US$/MMBTU)
Turkmenistan	15	2000 (to Pakistan)	1.33	0.55	1.88
	15	3000 (to India)	2.03	0.55	2.58
Middle East	15	1500 (to Pakistan)	2.0 (Offshore Pipe 2.6 (LNG)	0.5 -1	2.5 - 3 3.1- 3.6
	15	2500 (to India)	3.5 (Offshore Pipe 2.9 (LNG)	0.5 - 1	4.0 -4.5 3.4 - 3.9
Kazakhstan	15	3000	2.00 (to Pakistan via Turkmenistan)	0.5	2.5

China Market

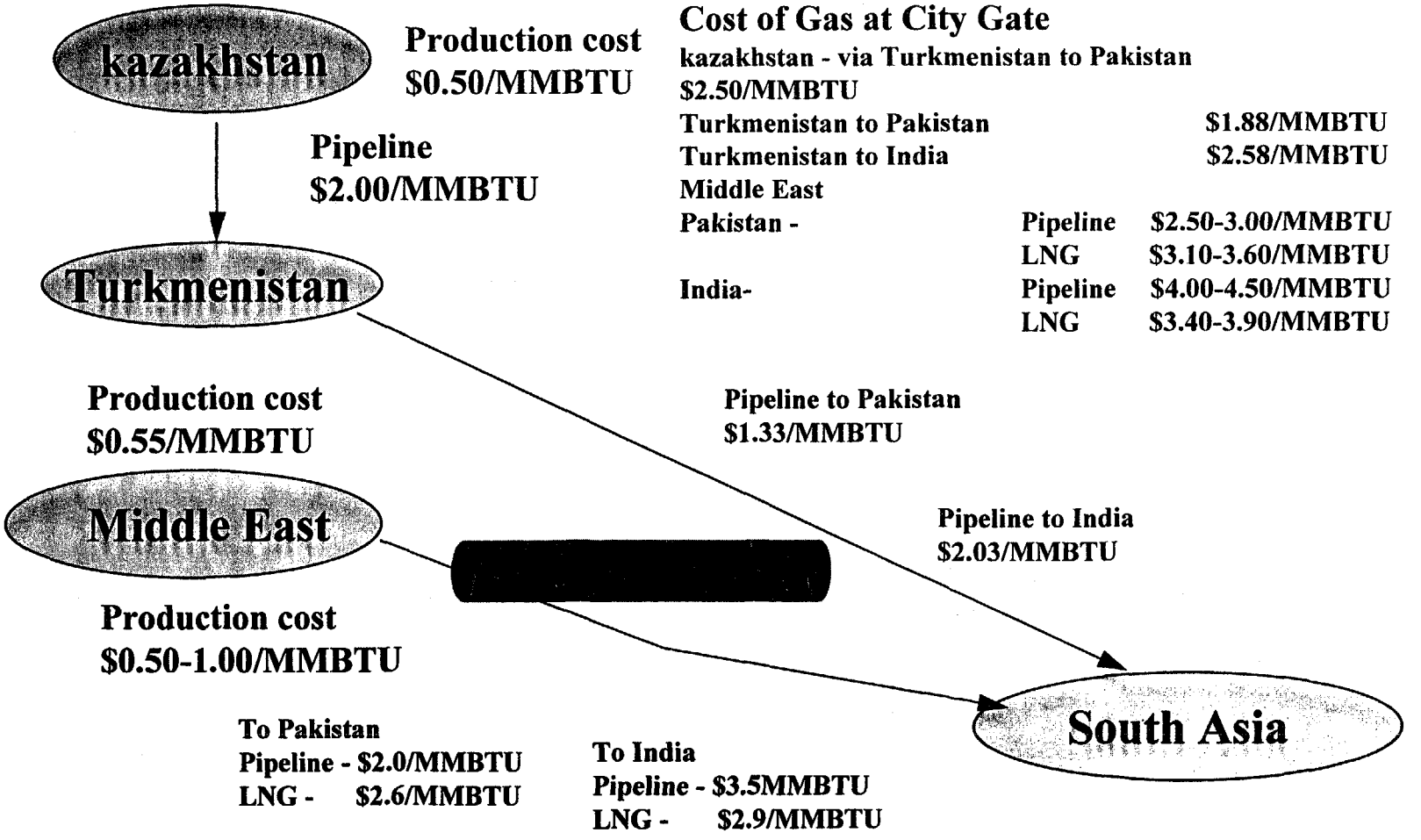
6. China has several gas import options including imports from Middle East producers (by LNG), Asia Pacific producers (Australia, Indonesia, Papua New Guinea, etc.) and East Siberia in addition to Central Asian producers. Using the same unit gas transport costs as for the other markets above, indicative gas supply costs are given as follows:

Table 7 Indicative Costs of Gas Supply to China

Gas Supplier	Gas Export Volume (BCM/Y)	Transport Distance (Km)	Indicative Transport Cost (US$/ MMBTU)	Gas Production Cost (US$/ MMBTU)	Indicative Gas Supply Cost (US$/MMBTU)
Turkmenistan	20	6300	3.94	0.55	4.49
	30	6300	2.91	0.55	3.46
Middle East	30	9000	3.8 (LNG)	0.5 -1	4.3 - 4.8
South East	15	3000	3 (LNG)	(Assumed)1	4
East Siberia	15	3500	2.3	(Assumed)1	3.3
Kazakhstan	20	7000	4.43	0.5	4.90

7. The supply of Kazak gas does not seem to be justifiable economically in China's power market in the case of 20 BCM/Y gas trade. However, a more detailed and rigorous market survey may lead to a more economically favorable situation. In particular, gas production from the Tarim basin is significant, there is a possibility to reduce the gas transport cost by installing a common gas carrier for Kazak gas and Tarim gas.

Indicative Cost of Gas Supply to South Asia

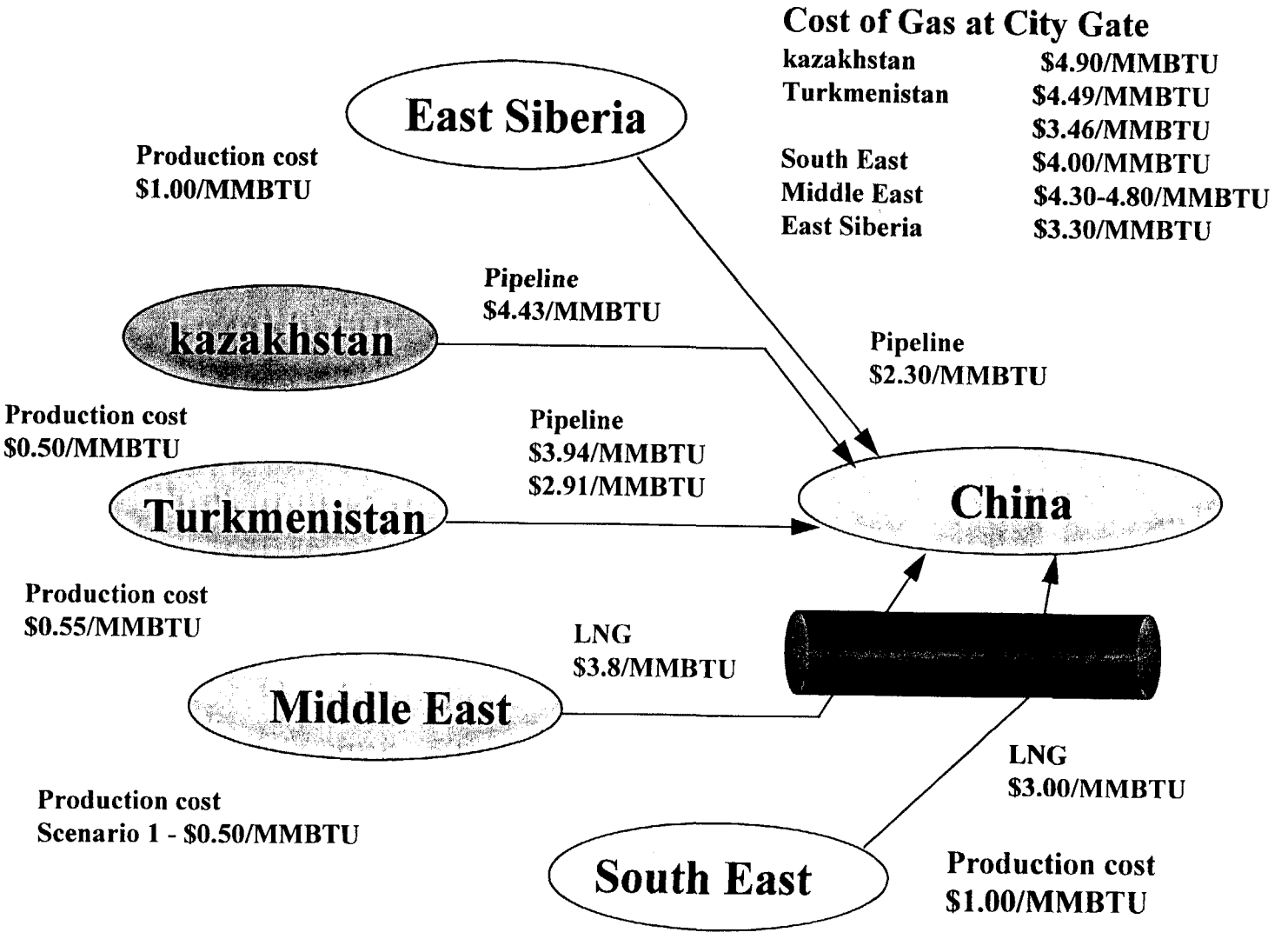


Cost of Gas at City Gate

kazakhstan - via Turkmenistan to Pakistan
$2.50/MMBTU

Turkmenistan to Pakistan		**$1.88/MMBTU**
Turkmenistan to India		**$2.58/MMBTU**
Middle East		
Pakistan -	**Pipeline**	**$2.50-3.00/MMBTU**
	LNG	**$3.10-3.60/MMBTU**
India-	**Pipeline**	**$4.00-4.50/MMBTU**
	LNG	**$3.40-3.90/MMBTU**

Indicative Gas Supply Cost from Selected Suppliers to China



8. Since China is a huge country, a more precise market analysis is essential to determine the cost of gas supply depending on the location of markets. Nevertheless, the above preliminary cost analysis indicate that East Siberian producers could be more cost-competitive than Kazakhstan.

Appendix 4.4

The Export Potential Offered by the UGSS

Introduction

1. Within the entire UGSS system, it is widely recognized that the pipelines in Ukraine is most critical without a sufficient design redundancy and more recently without proper maintenance. The gas transit system in Ukraine has been gradually formed since 1950s. In Ukraine's territory the following nine transit run, out of which major suppliers are Soyuz, Urengoi-Uzhgorod and Progress pipelines. (See Figure 1, "Pipeline Network in Ukraine".) Gas compressor stations on the former two pipelines were designed and installed using western technologies.

Table-1: Summary of Gas Supply Pipelines

Pipeline Corridor	Transit Pipeline in Ukraine	Design Capacity (BCMY)	Major Gas Supply Source
a) **Central** (From Yerets, Russia to central Ukraine)	1) Yerets-Kremenchoug-Krivoy Rog 2) Urengoi-Uzhgorod 3) Progress 4) Yerets-Koursk-Dikanka/ Koursk-Kiev	30 28 28(now 20) 22 -------- 108 (now 100)	Western Siberia
b) **North** (From Belarus to western border)	1) Ivatsevitchy-Dorina 2) Ivatsevitchy-Dorina (Dashaba-Minsk)	28.9 12 -------- 40.9	Western Siberia
c) **South** (From Eastern Ukraine to western border)	1) Soyuz 2) Ostogozhsk-Shebelinka 3) Novoroskov-Shebelinka	26 22.5 14 -------- 62.5	Central Russia (Orenburg) & Central Asia (Turkmeni-stan)
Total		211.4[1]	

[1] Excluded currently unused Moscow-Kiev pipeline (design flow rate: 5 BCMY).

Gas Supply System in Ukraine

2. The pipeline diameters range 520 to 1,420 mm and the design pressures are at two levels, 55 Bar and 75 Bar. There are 66 major gas compressor stations[2] with a total of 5.6 million KW installed capacity. Gas turbine sets constitute 77% of the driver capacity, totaling 440 gas turbines with a unit capacity of 2.6 to 25 MW , electric motors and electric motors account for 18.7% and 4.6% respectively. Most of the gas turbines (about 327 units) are old and energy-inefficient Russian models. However, all the gas turbines for the Soyuz pipeline are of GE model Frame 3, 10 MW units while the Urengoi-Uzhgorod pipelines utilize GE Frame 5, 25 MW units except two out of nine stations.

3. Except the current Ukraine's domestic gas production of about 28 BCMY (or 12% of the total supply), all gas is supplied from Russia and Turkmenistan. In 1991, 199 BCMY of natural gas was transmitted from Russia, out of which Ukraine consumed about 50% and the rest was exported to Central and Western Europe from the western and southern boarders of Ukraine.

4. Table 2 presents the original design capacity of each pipeline and the operating performance in 1991. Due to significant constraints of spare parts, the operating capacities have been decreasing. All the entire pipeline systems await major rehabilitation and modernization.

[2]53 compressor stations are serving for the gas export system.

Table 2:Ukraine - Gas Transit Pipelines

	Pipeline Name	Dia. (mm)	Year of Commi -ssion	Design Press. (Bar)	Design Capa. (BCMY)	1991 Capacity (BCMY)	Remarks
1	Yelets - Kremenchourg - Kirovoy Rog	1420	1986	75	30	28.2	
2	Urengoy - Uzhgorod	1420	1982	75	28		To Czchek/Slovakia
3	"Progress"	1420	1988	75	28	49	(for both)
4	Yelets - Koursk -Dikanka	1220	1984	55			
5	Koursk - Kiev	1220	1985	55	22	15.4	(for both)
6	Ostrogozhsk - Shebelinka	1020 1220	1961 1980	55 55	22.5	18.4	(for both)
7	Novopskov - Shebelinka	1220	1980	55	14	11.8	
8	"Soyuz"	1420	1978	75	26	26.5	To Czchek/Slovakia
9	Dikanka - Kiev	1220 1020 720	1973 1970 1961	55 55 55	14.8	9.9	(for all three lines)
10	Ivatsevitchy - Dorina	1220 1220	1976 1979	55 55	28.9	13.3	(for both)
11	Ivatsevitchy - Dorina (Dashaba - Minsk)	820	1960	55	12	2	(for domestic distribution)
12	Torzhak - Dorina	1420	(1993)	75	24		Under construction
13	Kremenchoug - Ananiev	1420	1986	75	30	23.5	
14	Ananiev - Borgorodtchany	1020		55	10	6.4	
15	Ananiev - Traspol - Izmail	1220	1987	75	20	16.6	To Romania
16	Kiev - West Ukraine	1020 1020 500	1970 1972	55 55	19.9	15.4	
17	Shebelinka - Dnepropetrovsk - Krivoy Rog -Izmail	1220 1020 820	1957	55	33.3	25.9	To Romania (for all lines)
18	Komarno - Drozdovichi	520 720	1965	55	5		To Poland (for both)
19	Dorina -Uzhgorodo	1420	1970	55	22	16	
20	Otovod - Vengriyu	1420	1982	75	13.2	8.6	To Hungary
21	Novopskov - Rostov	1220 1000 x 3		55	42	33	To Russia (Caucasia) (for all lines)
22	Moscow - Kiev	500	1960s	55			(at present, not used)

Source: Ukragazprom, 1995

5. Uncompleted Pipelines: In addition to the above gas supply design capacity, Ukrgazprom has the following uncompleted projects which may contribute for the export capacity expansion in the future:

(a) Three Gas Compressor Stations on the Progress Pipeline

Due to the recent economic turmoil and budgetary constraints, Ukrgazprom has not yet completed three gas compressor stations on the Progress pipeline at Grebenkovskaya, Stavische and Gujatin. The Bank and EBRD agreed to support Ukrgazprom in financing for the foreign currency portion of this project component, which is required to purchase valves, control units, cables, etc. Upon completion of these stations, the gas supply design capacity to Ukraine will increase by 8 BCMY or about 4%.

(b) Torzhak-Dorina Pipeline

Although Ukrgazprom laid pipe for major portion of the pipeline, three gas compressor stations inside Ukraine have not yet been completed. These compressor stations are located near Chernovili and in the nuclear contaminated area. Therefore, Ukrgazprom intends to design and install the stations on an unattended basis. When this project component has been realized together with the uncompleted portion in Beralus, an additional gas supply capacity of 24 BCMY or about 11% of the present gas supply design capacity would be attained.

Gas Transit to Eastern and Western Europe

6.. At present, Ukraine transits natural gas to Eastern and Western Europe from the following border locations:

Table 3: Summary of Gas Transit to Europe

Location	Total Design Capacity (BCMY)	To:
a) Izmail	53	Romania, Bulgaria
b) Drozdovichi	5	Poland
c) Uzhgorod	104	Slovakia, Czech, W. Europe
d) Beregovo	13.2[3]	Hungary
Total	175.2	

[3] The pipeline to Beregovo is a branch from the Progress and the Urengoi-Uzhgorod pipelines.

7. Exports of natural gas from the CIS countries via Ukraine amounted to 101.9 BCMY in 1989, 104.2 BCMY in 1990, and 99.7 BCMY in 1991. In 1996, the FSU exported natural gas to East and West Europe as follows:

Table 4: Natural Gas Delivery from FSU to East and West Europe in 1995

Delivery Point in Ukraine	Receiving Countries	Gas Delivery Volume (BCM)
a) Izmail	Romania	**6.1**
	Bulgaria	**5.8**
	Turkey	**5.7**
		(17.6)
b) Drozdovichi	Poland	**7.2**
		(7.2)
c) Uzhgorod	Austria	**6.1**
	Czech R. & Slovakia	**14.9**
	France	**13**
	Germany	**32.1**
	Italy	**14.2**
	Switzerland	**0.4**
	Former Yugoslav Republics	**2.0**
		(82.7)
d) Beregovo	Hungary	**6.3**
		(6.3)
Total		**113.8**

Source: BP Statistical Review of World Energy, 1996

7. From the tables 3 and 4 above, the capacity utilization of the export pipelines toward East and West Europe are summarized as follows:

Table-5: Capacity Utilization of the Present Gas Export Pipelines to Europe

	Receiving Countries	Design Capacity (BCM)	1995 Delivery (BCM)	Surplus Capacity (BCM)
Izmail	Romania, Bulgaria, Turkey	53	17.6	**35.4**
Drozdovichi	Poland	5	5	**0**
Uzhgorod	Czech, Slovakia, Former Yugoslav Republics, W. Europe (a part of Poland)	104	84.9	**19.1**
Beregovo	Hungary	13.2	6.3	**6.9**
Total		**175.2**	**113.8**	**61.4**

The above table indicates that a fairly large surplus transport capacity remains with the UGSS for gas delivery to Eastern European and Turkey. Even to western European markets, the UGSS is not fully operational.

8. Provided that the present gas supply pipelines are fully utilized up to the design capacity and sufficient gas is supplied from Russia and other central Asian countries (mainly Turkmenistan), there is a large possibility to increase gas export capacity with marginal investments for gas delivery points at the western and southern national borders. Excluding the project components given in Para. 5 above, the gas export capacity (exports to Caucasia excluded) would increase from the present 100 BCMY to 175 BCMY. If the project components in the paragraph 5 above are realized, the export capacity could further increased up to 186 BCMY.[4]

[4] If the Torzhak-Dorina pipeline is extended to the western border, the total exportable design capacity would be 209 BCMY.

Appendix 5.1
GAS REGULATORY FRAMEWORK

A. INTRODUCTION

1. The establishment of a modern regulatory framework is necessary to promote efficient, environmentally sound and safe operation of the gas industry. This will take two forms:

- technical regulation that sets standards in relation to health and safety matters and environmental issues
- economic regulation that provides the framework and incentives for efficient transmission, distribution and consumption of gas.

2. Conceptually there are four distinct levels of regulation, although in practice the distinctions are often blurred.

1st level:	Comprehensive gas legislation (Gas Law)
2nd level:	Rules and regulations promulgated under such legislation
3rd level:	Specific conditions in the licenses for companies operating in the downstream gas industry (transmission and distribution operations)
4th level:	Gas sales contracts, tariff systems, technical regulations, codes and standards, etc.

It is assumed that the upstream (production) operations continue to be regulated directly by a "competent body" such as the Ministry of Energy and Natural Resources.

3. *Economic Regulation:* The purpose of economic regulation is to control the monopoly power of the transmission, distribution and trading companies in an open and transparent way. This needs to strike a balance between:

- avoiding the abuse of monopoly power that arises out of the existence of natural (and artificial) monopoly in the gas industry,
- preserving incentives for regulated companies and ensuring that gas transmission, distribution and marketing companies recover the full economic costs of supply and a reasonable but not excess profit,
- allowing participants in the gas industry to behave in a commercial way without unwarranted interference in management decisions

4. *Technical Regulation:* Technical regulation seeks to:

- ensure that gas consumers are assured of a reliable quality of service in return for paying prices that fully reflect economic costs,

- avoid adverse impacts on health and environment, resulting from the transmission, distribution and usage of gas,
- minimise risks for public safety and property damage, resulting from unwanted gas escapes.

5. It is also necessary to achieve an effective balance between the Regulatory Authority and the regulated companies: too much regulatory power or intervention can weaken incentives for companies to behave efficiently or to continue to invest, and too little could cause loss of wealth for the country in the long term. The guiding principles are to achieve clarity, transparency, autonomy, stability, and certainty for participants in the industry and for consumers.

B. CHARACTERISTICS OF KAZAKHSTAN'S GAS INDUSTRY

6. The development of a modern gas regulatory system is a challenge because of the rapidly evolving structure of the Kazak gas industry, its history, the legal framework and the degree of institutional strengthening required for regulatory oversight.

Supply

- Two thirds or so of gas used is imported, from Russia and Turkmenistan.
- Imports of gas are often arranged at inter-governmental level and many of the deals are paid for by barter arrangements to avoid paying in hard currency.
- Virtually all indigenous sources of gas at present are state owned and controlled, although western technology and resources are being harnessed for some major fields like Karachaganak.

Transmission

- The infrastructure was designed as part of a wider Soviet network and is not optimised for Kazakhstan's use.
- There is no competition in transmission and regional gas markets are not integrated by pipelines.
- Several major pipeline development schemes are planned, although their economics and financeability are far from certain.
- Many of the pipeline systems are in urgent need of rehabilitation and/ or expensive reinforcement. Modern (often even basic) SCADA (Supervisory Control And Data Acquisition), control and metering systems are lacking.
- "Backhauling" of gas and gas swaps are common.
- Market demand for gas is strong but the gas industry as a whole is supply constrained.
- Gas transmission is often paid for in terms of gas.
- The southern transmission system (which supplies important markets, including Almaty) crosses the territory of Kirghizstan, for which there are arrangements to draw off gas rather than charge a transit fee.

- The recently announced transmission pipeline concession to western company confirms the separation of ownership of gas production and transmission, although that company is also a major end user in Almaty and may in the course of time wish to take on other roles in the gas supply chain.

Distribution

- The Local Distribution Companies ("Oblgases") are mainly owned and controlled by the municipalities hence the ownership and control of distribution is largely separated from transmission and supply.

LPG

- Alaugaz has a monopoly over transportation. There are no LPG transportation pipelines.
- At present the LPG distribution business is assigned to each oblgas company.
- LPG is sold at close to international prices.

Gas Pricing, Non-Payment Etc.

- There is widespread non-payment for gas. Gas contract terms differ widely (where contracts exist) and attempts to introduce standardisation of supply and commercial terms have been haphazard and largely unsuccessful.
- The Government has said it is committed to progressive increases in gas and electricity prices but this has political implications.
- The state gas transmission and distribution companies do not prepare accounts to internationally recognised standards[1]. Reliable information on costs, profits (or losses) or asset values is not readily accessible to any Regulator.
- Gas supply contracts from neighbouring countries are in general not on a Take-or-Pay basis.
- The magnitude of the liabilities of the state gas transmission and distribution companies and production associations for ecological damage and social infrastructure costs are not known, although their ongoing responsibility is clearly set out in the Law on the Protection of the Natural Environment (June 1991).
- Forecasts for gas market demand and the entire structure of the market are uncertain, at a time of severe economic transition. The pace of recovery of existing industry and the introduction of new industry that will use gas is uncertain.
- New supplies of indigenous gas are expected over the next decade and there is already some competition in gas supply. However domestic demand is currently declining so for some time the new demand that entrants into the gas industry can supply will be small.
- Holders of oil production concessions are generally allowed to flare gas only for a limited number of years. After this they will be subject to gas flaring penalties.

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[1] The GOK has decided to introduce the IAS system by the end of 1997. Implementation will of course take time to achieve.

Technical, Environmental and Safety

- In addition to the sector oriented regulations and standards, a system of issuing permits and executing inspections exists. The technical integrity and the construction and operation of the gas systems with regard to safety, health and environment are governed by standards adopted from the former soviet Union rather than those recognised by the international oil and gas industry.

7. *Existing Regulatory System:*

Gas transmission tariffs are currently regulated on what amounts to an averaged "cost plus" basis by the State Pricing and Anti-Monopoly Commission. Gas prices for residential customers and some classes of end-users are also regulated. The State Pricing and Anti-Monopoly Commission has branches at Oblast level throughout Kazakhstan.

The current and proposed Kazak regulations for natural gas are largely at Level 2 and Level 3, although it is understood that there is a regulation entitled "Procedures for Gas Utilisation in the Republic of Kazakhstan" (effective from January 1994), which covers the whole cycle of gas supply - from authorisations through determination of the type of fuel, to gas supply and regulations about gas consuming equipment.

Most regulations and draft regulations provided by the Government of Kazakhstan (GOK) apply mainly to the marketing of gas to end users by the State gas companies and also to the maintenance of gas burning equipment. They do not address the questions of licences, access to pipelines, regulation of tolls or end user prices, or the control of monopoly players in the systematic manner required. The regulations apply to both natural gas and LPG, which are regulated separately in most other countries.

C. POLICY GOALS

8. *Desired Industry Structure:* Although the general policy objectives which the Government is following are clear, there is no single view of the desired structure of the gas industry shared between Ministries or of the optimum development path to achieve this outcome. This should be rectified before major changes in direction are initiated.

9. Many aspects of the structure and ownership patterns within the industry will be set for the next 15 to 25 years by way the more attractive assets are being packaged for privatisation. The overriding concern must be to maximise efficiency and long term value rather than to achieve short term gains.

10. The tenderers for privatisation or management concessions must be told at the earliest possible moment that it is the government's intention to introduce a modern Gas Regulatory System, as regulation may affect their future freedom of action, investment strategy and profitability.

11. *Policy Objectives:* The principal *policy objectives* of the Government are:

1. Ensuring government control of national and local energy policy matters, including environmental protection issues;
2. Securing supply of energy at lowest costs from reliable and diversified sources;
3. Encouraging private sector participation and capital in the development of the gas industry on fair terms, again consistent with the first objective;
4. Protecting the interests of gas consumers in respect of price, quality of service, and availability of gas;
5. Ensuring that due regard is paid to health, environmental and safety concerns.

There is a strong political and social wish to ensure that the allocation of gas is spread geographically.

The original request from the Prime Minister to the World Bank referred to the aim of introducing market principles within the gas industry. This requires a comprehensive regulatory system that will ensure a "fair" balance of interests where adequate competition cannot be introduced, either *within* the market or *for* the market.

D. NEW PRIMARY LEGISLATION (THE "GAS LAW")

12. *General:* The new Gas Law should establish an independent Regulatory Authority, whose duty it would be to channel market forces most efficiently by promoting competition where competitive markets do not presently exist, and to regulate those areas which are natural or artificial monopolies

13. *Institutional Aspects - Relationship With Government and Governmental Agencies:* Various institutional solutions have been tried in other countries, including:

- Direct determination within the Government (as in France or the Netherlands), or by a semi-autonomous Division within an existing Ministry (as in Poland or Mexico),
- Regulation by a body which includes representatives from, say, manufacturing industry and the trade unions, as well as from the government (e.g. the Supervisory Committee for Electricity and Gas in Belgium)
- An independent specialised authority (as in the US or the UK)
- Regulation by the competition authorities in accordance with anti-monopoly legislation, rather than by a sector specific body (e.g. Germany).

14. In order to suit the particular needs of Kazakhstan, it is suggested that it would be preferable for the Regulatory Authority to be a totally separate and independent body accountable to central government. This would allow it to operate at a remove from the directly political arena.

The main factors required for independence are set out in Figure 1.

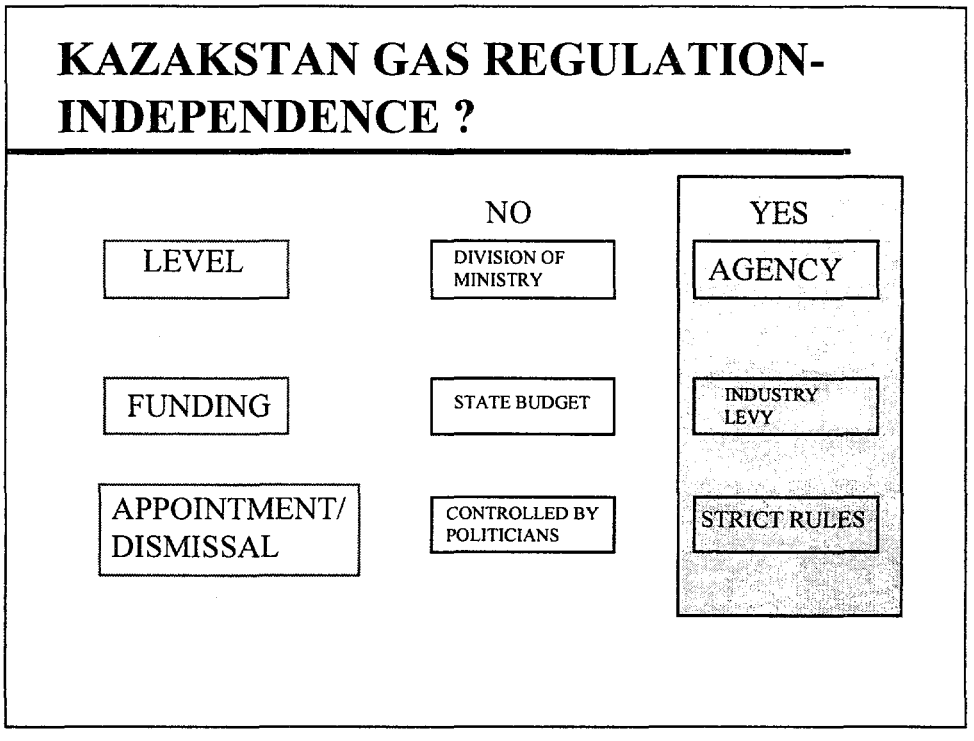

Figure 1: How to Achieve Independence for the Regulator

15. Where the dividing line is drawn between the Gas Regulatory Authority and other Ministerial level Agencies is for the authorities to decide: for example, the demarcation between the roles of the Anti-Monopoly Policy Committee (now incorporated into the Ministry of Economy and Trade) and the Regulatory Authority on competition policy matters within the gas industry. It is suggested that the Regulatory Authority progressively takes over the primary responsibility in this area. Dual responsibility is not recommended and a Regulatory Authority without or with shared responsibilities in the pricing area will not work efficiently. In the future only few prices such as transmission and distribution of gas would be regulated while the markets would determine other prices. However the development and policing of general fair trading and competition policy ought to vest in a body such as the State Pricing and Anti-Monopoly Committee, which will presumably continue to have a much wider role to play in other industrial and commercial sectors.

16. Another important consideration is how the Gas Regulatory Authority would operate alongside the Electricity Regulatory Authority, to be set up under the Decree on Electric Power Engineering adopted on 23rd December 1995, which covers generation, transmission ands distribution, the creation of a regulated market and the promotion of measures on reliability, safety and environmental protection. The Electricity Regulatory

Authority is further charged with the duty of a creating mechanisms to introduce a "competitive environment" and "equal access" to the market (Article 7).

17. The discussions below focus on gas. However, regulatory approaches and policies should be harmonised across the energy sector and the possibility of cross-sectoral regulatory frameworks should be seriously considered. Some issues are unique to a particular industry, such as technical and safety standards, market structure and detailed methods of applying regulation. However, many issues are essentially common across sectors and there can be advantages in combining common institutions and rules. Such advantages include economies of scale, common interpretations, avoidance of the rule making processes being "captured" by industry-specific interest groups and the sending of clear signals to potential investors that the government authorities are committed to promoting private sector participation in utilities. There is a further advantage that multi-sectoral agencies generally report in to Central Government or a Head of State, which tends to enhance their importance.

A potential disadvantage is that the political resistance to the establishment of a multi-sectoral agency can sometimes be greater than for a single utility. It is also more complicated to set up.

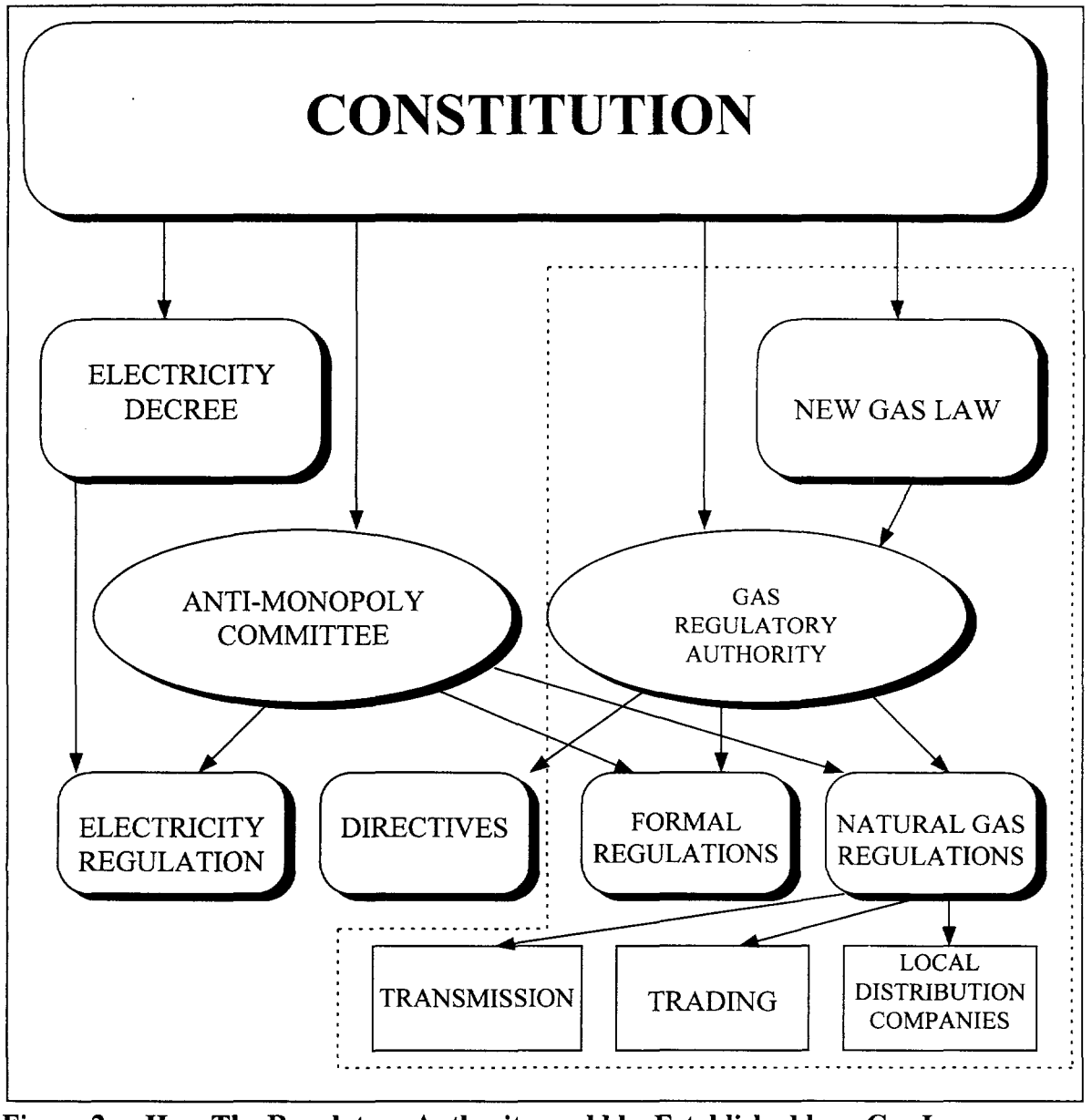

Figure 2: How The Regulatory Authority could be Established by a Gas Law.

18. *Allocation of Oversight Functions:*

Depending on the differentiation required between policy determination and industry regulation, the GOK needs to consider which functions would remain with the Government and which would be delegated to the new Gas Regulatory Authority.

One of the indirect benefits of establishing a Regulatory Authority is to be able to centralise various functions that are presently dispersed amongst other Governmental Ministries and Agencies.

19. The following general allocation of functions is envisaged (Figure 3):

KAZAKSTAN GAS INDUSTRY
Recommended Allocation of Functions

Policy Implementation/ Regulatory Agencies

Upstream	
Ministry of Energy and Natural Resources	Award of blocks
	PSC terms and conditions
	Evaluation and approval of development proposals
	Overall safety/ technical policy
	Depletion/ flaring policy
Ministry of Finance	Fiscal terms in PSCs/ state finance
Ministry of Ecology and Bioresources, Ministry of Energy and Natural Resources and others (Public Health/Labour Bureaux, etc)	Safety/ technical/ environmental regulation
Downstream (including transmission)	
Ministry of Energy and Natural Resources	General policy direction/ oversight
Ministry of Finance	Taxation regime
Ministry of Labour, Health	Safety, occupational health etc
Ministry of Ecology and Bioresources	Safety and Environmental standards
Gas Regulatory Authority (In association with several Government departments)	Pipeline authorisation/ terms of access
	Authorisation of gas supply/ licensing

Figure 3: General Allocation of Oversight Functions

20. In considering the structure of the industry, it is first necessary to aim for separate levels of authority and management responsibility in the public sector. The Government and Ministerial Agencies should retain responsibility for certain key policy functions. The Regulatory Authority on the other hand should have exclusive powers on more day-to-day and detailed matters, so as to be able to set and control the procedures under which the gas companies compete and perform their commercial and operational functions.

Below the Regulatory Authority, there can be a number of government owned institutions who would be undertaking commercial functions in the oil and gas industry unless or until such functions are transferred to the private sector.

This would enable the Kazak gas companies to concentrate on running the gas industry and their commercial relationships with the foreign gas producing companies and with gas consumers.

The same institutions should not have responsibilities spread over more than one of the layers indicated.

21. It is proposed that the *Government of Kazakhstan (GOK)* should have sole responsibility for decisions on the following matters:

a) Planning of gas utilisation in the overall energy sector in the country;
b) Development of gas industry policy, for example in respect of commercialisation, privatisation and development of industry structure;
c) All matters relating to exploration and production;
d) Taxation and any Government-funded subsidy payments in respect of gas;
e) General technical, safety and environmental policy issues and legislation.

22. The *Regulatory Authority* should have powers in the following areas (more details are provided in Appendix 5.3):

a) The issuing of authorisations or licenses to gas industry enterprises within the policy framework established by Government, including decisions on conditions to be included in authorisations and how the process for applying for licenses is run. Monitoring and enforcement of authorisation conditions generally; issuing permits authorising construction and operation of pipelines and conducting inspections of their facilities;

b) Monitoring and regulating the tariffs and other conditions of service for pipeline franchises including access to open-access pipelines;

c) Setting and enforcement of other supply conditions and quality standards;

d) Specific technical, environmental and safety regulation for gas supply based on safety and environmental standards in the legislation;

e) Enacting or recommending legislation on matters relating to billings, interruption and reconnection of gas supply;

f) Enforcement of the regulations including determination and application of penalties;

g) Preventing anti-competitive and discriminatory behaviour;

h) Monitoring and collecting data on the companies' performances including financial performance;

i) Authorising applications for rights of way, and determining the compensation payable;

j) Settling cases of dispute through arbitration or other means of dispute resolution.

23. It is recommended that the new Regulatory Authority should initially concentrate on issues directly related to foreign investments such as the ones mentioned in Executive Summary and shown in Figure 2 (pipeline authorisation/ terms of access/ licensing/ authorisation of supply).

Many foreign investors are likely to be interested in the following priority aspects of the regulatory framework:

a) repatriation of profits (under for example the Law of Foreign Investments of 27th December 1994, or special arrangements agreed with the GOK in Production Sharing Contracts - not the Gas Law).
b) time period for and exclusivity of the licence
c) non-discriminatory access to pipelines and markets
d) transmission tariffs and their regulation
e) technical and environmental standards
f) dispute resolution procedures, and
g) the gas supply.

However, given the background of the Kazak gas industry, with very significant elements of central government control of activity and prices and a relative lack of commerciality, together with a great reliance on regional markets and infrastructure, it is believed that leaving full control of the industry's activities to the Government could inhibit investor confidence among private sector participants. As a result it is important to establish a comprehensive regulatory regime that can command the confidence of all parties in the industry, particularly where there is a desire to attract private sector participation.

24. *Form of Regulatory Authority:* The Gas Law should set out in detail the statutory basis for the composition of the Regulatory Authority, the method of appointment and tenure of Commissioners, how it is funded, its jurisdiction, the nature of the licences it is empowered to administer and its powers of enforcement and rights of appeal against its decisions.

25. *Suggested Institutional Design*

What is suggested is as follows:
Composition:
One of the most successful arrangements, which is strongly recommended, is a small Commission of between three and five people (an uneven number is preferable due to voting procedures). In addition there needs to be a permanent support staff, which should be built up gradually as the role of the Regulatory Authority develops. (Figure 4).

Available skills and resources should be used to greatest effect given the number and complexity of the issues facing Kazakhstan's oil and gas industry. There will inevitably be a shortage of officials who have the relevant expertise and priority should be given to professional development. (See Paragraphs 47 and 48).

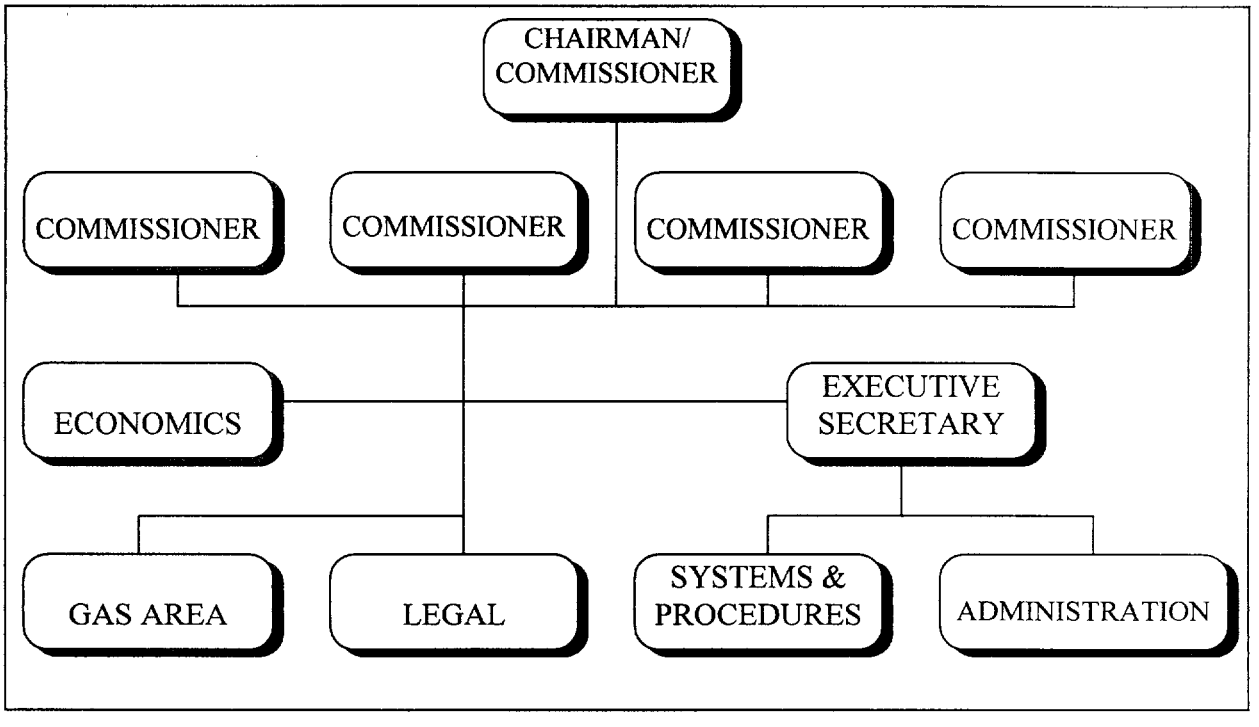

Figure 4: Organisational Structure of the Regulatory Authority

Method of Appointment and Tenure of Commissioners:
To maintain investor confidence, there must be a pre-specified, transparent and impartial procedure for appointments. It is therefore suggested that the power to recommend appointments to the Commission vest in a small panel of experts drawn from both the regions and nationally.

Appointments to the Commission should be for quite lengthy periods, say five or six years, with early termination being possible only in very limited and clearly defined

circumstances such as gross or systematic misconduct, verified serious health problems, loss of citizenship or voluntary requests for resignation by individual members of the Commission. (These latter points correspond to parallel conditions proposed for the State Regulatory Commission in the Electric Power Industry).

The appointment of the Head of the Regulatory Authority should in the first instance probably be a Presidential decision. The nomination/ appointment should be confirmed in the Gas Law itself.

26. *Functions and Powers:* The Regulatory Authority should have jurisdiction over the entire downstream gas industry, both state and private (Figure 5). The principal duties that should be included in the Gas Law are set out in Paragraph 22. This is amplified in Annexe V-3.

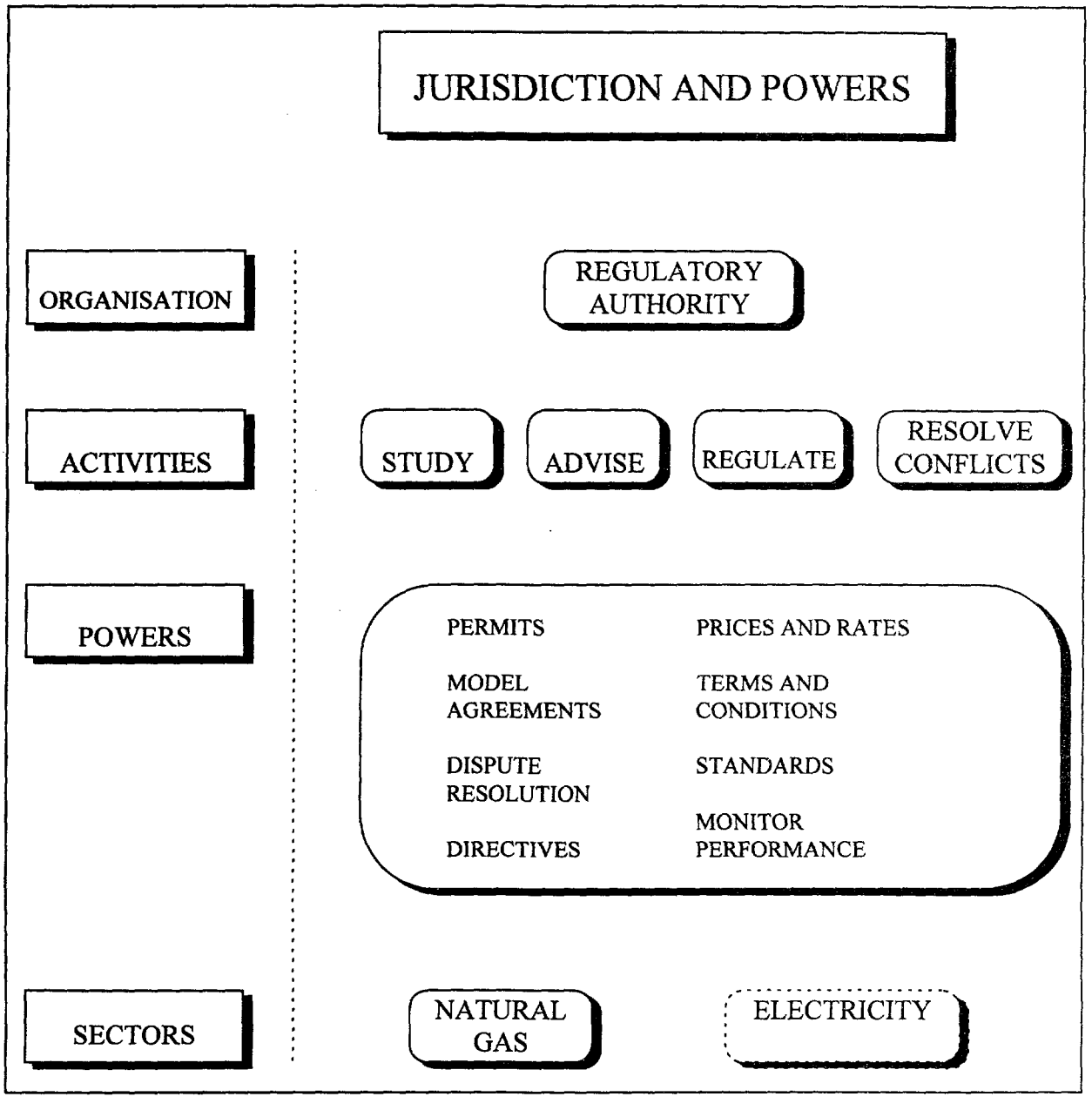

Figure 5: Jurisdiction and Powers

Licences

One of the most important powers of the Regulatory Authority is to set and police the system for awarding licences for commercial operators. This is considered in Paragraph 32 below.

The Gas Law should set out the powers of the Regulatory Authority to promulgate secondary regulation and to vary the form of licenses issued. The extent to which this

ought to be codified needs further investigation and discussion. Detailed directives and "Level 2" regulations will be necessary to develop the principles in the Gas Law and give them full force for implementation.

Prices/ Pipeline Tariffs

The Regulatory Authority's role should include determining the various regulatory methodologies and also the actual price setting for retail gas and transmission tariffs.

Supply Conditions

The Regulatory Authority should have the powers to ensure that commercial, contractual and technical supply conditions for gas are appropriate and are also non-discriminatory.

Safety, Technical and Environment

The Regulatory Authority has an important role to play in respect of first line responsibility for setting and policing these standards.

Enforcement

Effective and timely enforcement is an essential part of effective regulation. This will require two distinct types of provisions:

- powers to monitor compliance;
- effective penalties in the event of non compliance.

27. Regulated companies have been known to weigh up the costs of complying with regulation and the expectation or otherwise of sanctions. Enforcement will be a particularly important aspect to consider in Kazakhstan. The Gas Law should lay down the level of penalties by way of fines (expressed for example in terms of a (large) multiple of the average wage for various infringements, or some other method based on real costs, so that the penalties will be automatically adjusted for inflation); and also the circumstances under which licences may be suspended or revoked.

28. A typical list of information required by a Regulatory Authority to ensure compliance is contained in Appendix 5.2.

Regulatory safeguards

The regulated parties should have an opportunity to appeal to a higher authority if they feel they have been unfairly treated. Such provisions are particularly important if enterprises and their investors are to have the confidence to develop and expand their businesses. These appeal procedures need to be "open" and "transparent". However there needs to be strict limits to the extent to which appeals can be used as a means of frustrating the objectives of the regulatory system.

It is recommended that in the first instance the right of appeal be to the Minister of Energy and Natural Resources or to the competition authorities, rather than the Supreme

Court, as is being suggested for the Electric Power Industry, due to the specialised nature of the gas industry.

Regulatory Changes

The Regulatory Authority should have the obligation and power to make recommendations at any time concerning any changes that it finds are necessary to the regulatory regime, for example further legislation. In general, regulated parties should be given time to adjust to regulatory changes, which should not be sudden.

29. *Funding:* In most countries independence of funding has been found to be a prerequisite of independence of operation. It is recommended that money to cover at least part of the costs should be raised by fees imposed on the regulated participants in the gas industry.

30. *Suggested Regulatory Regime:* The design of the regulatory regime must take full account of the present situation of the gas industry and act as a catalyst to move the industry along the desired development path towards the optimum long term competitive structure of the industry. In view of what will be an increasingly complex relationship between the gas industry and the Electric Power Industry, care will be needed to ensure that privatisation and regulatory initiatives in one industry do not prejudice the development of the other industry

It is suggested that the following regulatory principles be included in the Gas Law.

Industry Structure

- The progressive "unbundling" of trading and transmission of gas is a key recommendation. Vertical unbundling is required, to separate production, trading, transmission and distribution of gas, where competition is possible. If unbundling is not carried out, for whatever reason (for example through agreements reached with foreign gas companies during the privatisation process), then it will almost certainly lead to inefficiency, hidden cross-subsidy and inhibit competition, which will damage the country's economy and ability to compete in the long run. This implies that the Regulatory Authority should have the power to require transmission and distribution companies to divest their trading functions, whenever it judges to be appropriate. (Having said this, the Regulatory Authority needs to recognise that there are occasional exceptions where vertical integration can result in benefits in efficiency and ability to perform services).

- If a transmission company is allowed to trade gas as well as transporting gas for others on an open access basis (hybrid option), the following should be required:

  - the trading and the transport function of the pipeline company must be run at arm's length in separate subsidiaries and with separate financial accounts;

– the pipeline company should ideally not own any of the transported gas.

- There should be immediate non-discriminatory access for potential field developers and others to excess capacity in the pipeline systems. In the event of any dispute, the onus should be placed firmly on the transmission (or distribution) companies to establish why they could not reach agreement to transport the gas in question. There should also be a right of appeal to the Regulator in the event of a dispute.

- The concession terms for transmission pipelines should contain the following provisions for Third Party Access:

  1. Terms for access by third parties
  2. Firm or interruptible capacity
  3. Proportion of capacity available
  4. Minimum service conditions
  5. Tariff basis.

  The concessionary agreement should create the flexibility to allow other transit activities to occur in future when sources of supply may change. It should specify who can have access to the pipeline, for what purposes (e.g. transport of own gas), what proportion of the capacity may be available for third parties (e.g. X% of capacity; the rest being firmly committed to the concessionaire), and the tariff basis. The tariffs will be subject to independent regulatory oversight.

- Permits should not in general grant exclusive[2] transmission rights to put competitive pressure on the franchise holder to expand capacity. This implies that the entry to the industry is not prohibited by regulation and that other pipelines could be build if it can be demonstrated that the public would be better served and if investors find them commercial viable.

- The Local Distribution Companies (LDCs) should be able to purchase gas from any source when trading and transmission have been unbundled. This implies that the transmission companies must run an open access regime on their pipelines, with non-discriminatory terms and transparent tariffs. Assuming that full gas to gas competition is desired at some point by the authorities, the authorisations for LDCs should include a provision for limited exclusivity: possibly five to ten years. Such competition at LDC level would of course require access to the local pipelines and reticulation networks. Access is most effectively introduced for larger customers first.

- The Local Distribution Companies' exclusivity over an area (whether or not it is limited as described in the footnote) should not include a monopoly for selling gas to large consumers above a certain threshold of consumption. This threshold could be

[2] Exclusivity can be limited if the franchise grants less than monopoly rights; or if there is a monopoly, for how long; or restrictions in terms of geography; or in terms of categories of service, etc.

gradually lowered to increase competition in a larger share of the market. Potential investors should know the GOK intentions for this threshold up front. Bypass (by using open access to existing pipelines or physical bypass) of distribution companies should be allowed for customers taking more than this threshold.

- Even in an unbundled industry structure, separated parts of the industry could exercise influence on other parts through ownership, such as producers having a share of the pipeline company. As a result no producer in Kazakhstan or from potential exporting countries or customers/ distribution companies should be allowed a controlling share in a transmission company, and producers and transmission companies should not be able to control the distribution function.

- One reason that full unbundling and open access are not suggested as an immediate step is because it could weaken the bargaining position of existing gas companies/ newly privatised companies in negotiations with the powerful importers of gas and for gas transit; and in negotiations with exporters in neighbouring countries. With open access available, a supplier (perhaps in another country) might be able to sell gas to a Kazak gas company at one price and use open access to sell gas to that company's large customers at a lower price. Whether the Kazak gas company is owned by GOK, or newly privatised, it could have serious financial consequences.

LPG

- The Regulatory Authority should have full powers to see that the LPG business is run with an adequate degree of competition at each point in the supply chain. The LPG business should on no account be dominated by monopoly players, whether State controlled or private. Each of the future market players must be able to freely purchase and or import LPG; and any joint venture LPG production with a state owned company like Alaugaz (which presently has a monopoly over LPG transportation) should be fairly and competitively sold amongst the future competing LPG marketing companies. In this respect transparency is most important.

- Natural gas and LPG activities should be disaggregated (with separate accounts, management and locations, with no cross-subsidy between businesses).

- The Regulatory Authority should have the power to order the divestment of the liquids activities at a point when it sees that it is in the country's best interests.

Price and Pipeline Tariff Controls

- There is a high degree of uncertainty over overall asset valuation, opportunity costs of capital, depreciation rules, capital expenditure plans and operating costs for the gas

and gas transmission companies. This means that further urgent work is necessary to understand what effect various different regulatory rules that have been applied successfully in other countries might have in Kazakhstan. The Government therefore ought to conduct a full review in conjunction with the pipeline operators of the marginal costs on each part of the network in order to establish the kind of prices that accord with economic principles. This would allow any future Gas Regulatory Authority to put in place a regulatory regime that encourages the pipeline owners to move part way or all the way towards this goal.

- Pipeline tariffs are currently not set on a basis that relates in any obvious way to the fixed and variable costs of providing the service. This means that pricing signals for new investment decisions are highly distorted. Also, predatory behaviour could easily occur when the market is opened up to competition. The pipeline tariff methodology should be defined in detail in any pipeline concessions. There are various different options for tariff structures, for example fixed participation fees or "declining block" tariffs, where the objective is to encourage consumption at the margin.

- In a country as large as Kazakhstan, gas prices and transmission tariffs are likely to differ significantly between regions. Tariffs should in general be cost reflective and no attempt should be made artificially to introduce "postalised tariffs" across the country

- It is recommended initially that the transmission tariffs should be subject to a form of Rate-of-Return regulation[3] with incentives for cost-saving measures, for example by sharing cost savings and revenue from increased pipeline utilisation. The rate of return allowed should take account of major rehabilitation, upgrading investments and market development that have to be made.

- Gas purchase prices (including those for imports) should be monitored by the Regulatory Authority and not be regulated. Unavoidable costs like this can be passed through to the customer, on a basis to be determined by the Gas Regulatory Authority.

- In general the Regulatory Authority should try to adopt a "hands off" policy with respect to the larger, freely negotiated gas contracts. Prices for consumers taking gas above whatever threshold is decided should not be regulated.

- Distribution tariffs should ideally be regulated on a hybrid of price cap and rate-of-return. The Regulator may consider setting implicit operating cost targets (through

[3] Increasingly, modern practice is to consider the possibility of Revenue Caps for regulated gas companies. This can be a very good regulatory formula if an industry is privatised at a discount to its true asset value (as may well happen in Kazakhstan) so that the marginal cost of meeting new demand exceeds the average revenue constraint. However Revenue Caps can encourage a firm to discourage rather than encourage consumption of services.

price control regulation) rather than allow all costs to be passed on to the consumer. If this proves difficult to implement, it should be possible to use "yardstick" competition (e.g. where each firm would be required to match the achievements of the rest of the industry or other comparable businesses).

- End user prices for residential customers, district heating plants and medium size commercial and industrial customers should be regulated on a hybrid of price cap and rate of return regulation. As a first step, the tariff schedule should be published and made widely available.

Non-Payment

- Non-payment by users of infrastructure services (stemming from refusal to pay bills or from fraudulent connections) is a major problem. This is especially true where the services have been heavily subsidised for long periods of time, leading to a perception that such services are effectively a free resource.

  This situation is considered as an opportunity by many private service providers who see a possibility of raising collection rates. However, the opportunity exists only to the extent that the service providers are free to adopt a series of measures designed to deal effectively with the issue.

- Appendix 3.11 proposes an extensive set of countermeasures and sets out clearly the potential benefits of pre-payment meters. In a regulatory context, these measures can be summarised as

  With respect to **private customers:**

  - *Disconnection in case of non-payment.*
    This is clearly the most important tool to obtain payment.
  - *Installing hard-to-tamper-with and pre-payment meters.*
    This increases the cost of service provision but it might be justified in many circumstances.
  - *Promoting self-policing among the user community.*
    One such solution recently adopted in the electricity sector in Argentina, involves disconnecting neighbourhoods where consumption levels indicate large-scale thefts.
  - *Public awareness campaigns.*
    In several instances, such campaigns have proven effective in reducing wasteful consumption and in increasing willingness to pay.

With respect to **public users:**

- *Disconnection of non-essential services.*
  This should ideally be combined with progressively narrower definitions of essential services.
- *Insisting on separate accounts for different government departments and parastatals.*
  The objective is to make disconnection of individual non-payers easier.
- *Requiring payment from central budget authorities.*
  Such authorities are usually in a better position to require and obtain payment from other public users.
- *Insisting that funding be specifically ear-marked for utility bills, with prohibition of disbursement for any other purpose.*

Miscellaneous

- In general the Regulatory Authority should operate by goal-setting rather than prescriptive regulation (except for some technical regulations such as emission limits). This means a switch to consideration of techniques, procedures and practices which generate the desired results rather than restrictive numerical approaches. Having established targeted standards, the monitoring and policing of controls can be readily achieved, while institutional capacity is being strengthened. A key advantage of this approach is that the regulator can establish early success, building credibility in the system. Standards can be incrementally tightened as more financial resources become available, as institutional capacity grows, and as improved technology becomes available.

- Any moves to introduce a new regulatory system must avoid temporarily weakening the bargaining power of the Kazak gas companies vis-à-vis the monopolistic sellers in neighbouring countries.

- Although it is strictly a matter for the upstream authorities, it is recommended that the practice of flaring of associated gas should be rigorously policed. The level of penalty payments should be increased so as to provide appropriate incentives to avoid wasting valuable hydrocarbon resources.

Transitional Arrangements

- The responsibility to monitor and regulate gas prices and pipeline tolls, which presently vests in the State Pricing and Anti-Monopoly Committee, should progressively shift to the new Regulatory Authority on an agreed timetable. This will doubtless involve the secondment or transfer of skilled support staff.

- Potential investors should know up-front the planned regulatory changes, for instance in the form of a Gas Policy Paper issued by the GOK.

- When the new regulatory System is put in place, those players carrying out commercial transmission and distribution functions should be granted provisional permits allowing them to continue in those roles for a defined period, say 5 to 10 years. After this, all companies would need formally to re-apply for permits from the Regulatory Authority or to have any binding agreements with or licences issued by Ministerial Agencies endorsed by the Regulatory Authority.

E. IMPLEMENTING REGULATIONS - LEVEL 2

31. Many detailed rules and regulations will need to be issued from time to time by the Regulatory authority to amplify the outline principles in the Gas Law, such as the details of third party access, directives on supply and price methodologies, what costs are allowable for pass-through and so forth.

F. LICENCES AND PERMITS - LEVEL 3 REGULATIONS

32. The Regulatory Authority should have the power under the Gas Law to require that all participants (except consumers) in the natural gas and LPG industries do so only by means of licences issued by the Regulatory Authority. The Gas Law should define the general process of applying for such licences, how submissions will be evaluated and the principal terms and conditions such as duration and the degree of exclusivity, as discussed above. In general this should be an open procedure and not a closed bidding system as has been adopted for the privatisation of the gas industry.

33. The Regulatory Authority should be given the discretion to vary the details of the licenses as best suits the circumstances; for example there may be specific economic regulation rules that have to be relaxed for the Central Asian Pipeline because of regional trade agreements.

34. The Regulatory Authority should have the power to grant development consents for all construction works associated with the downstream gas industry, including all pipelines (except perhaps the small low pressure pipes in towns). This is without prejudice to the planning rules in Kazakhstan, for example the need to consult widely at Akim level, consultation with the State Architecture Construction Inspection authorities, review by Gas Expertise etc.. Centralising authority in this way should help streamline the approval process.

35. The basic law governing the licensing of activities in Kazakhstan is the Law on Licences adopted on 17th April 1995 and the two amendments dated July 20th 1995 and December 23rd 1995. Government Resolution No 1894 was adopted on November 29th 1995 for the purpose of implementing this Law on Licensing. The December 23rd 1995 amendment removed the requirement for "prospecting, extracting, producing and processing" from licensing under the Licensing Law. The Gas Law will need to clarify that the Regulatory Authority has full delegated authority to issue licences as a "competent body"; and the Gas Law will need to be compatible in other respects with the Law on Licensing. Licences must not be transferable or assignable without the written consent of the Regulatory Authority.

G. LEVEL 4 REGULATIONS

36. The fourth level of regulations (including standardised gas contracts etc.) are important as they will be very widely disseminated. Some proposals are contained in Annex VI-1. The Regulatory Authority should have the power and duty to approve model contracts.

H. SAFETY, TECHNICAL AND ENVIRONMENTAL REGULATIONS

37. *Management of Safety, Health and Environment:* It is suggested that the gas industry adopts a policy and system of self-control based on the principle of quality assurance. The gas industry should exercise full responsibility for initial and ongoing integrity of their operations and facilities and compliance with ongoing (evolving) Health, Safety and Environmental (HSE) standards. This should replace the existing system of fragmented responsibilities over various parties like governmental agencies, manufacturers, contractors and system owners/ operators. This does not deny the responsibility of the individual parties for approvals and inspections in their area, but it would be the responsibility of the owner/ operator to run the overall management system that assures the quality of their own activities and of third parties.

The operating practice should incorporate systematic monitoring and audits of technical HSE conditions relative to targeted goals. If necessary it is the responsibility of the owner/ operator to take corrective action.

38. *Technical Regulations:* The availability of Russian system of regulations and standards provides some comfort in the technical area, although the poor quality assurance during construction, lack of maintenance and spare parts and inadequate facilities highlight safety and environmental concerns.

The rather prescriptive "GOST" system of codes and standards adopted from Russia cover quality of production, labour safety, documentation etc.. Other codes, which

originated with the "Gosstroy", cover civil work, including planning and implementation. There are State level regulations, standards and codes (GOST), construction codes and regulations (SNiP), Industrial Standards (OST), specifications (TU) and other codes (SN). (See Figure V-6). Most gas pipelines are designed to Russian design standards such as ONTP-51-1-85 "Main Gas Pipelines", coupled with construction standards and procedures such as SNiP 2.05.06.85.

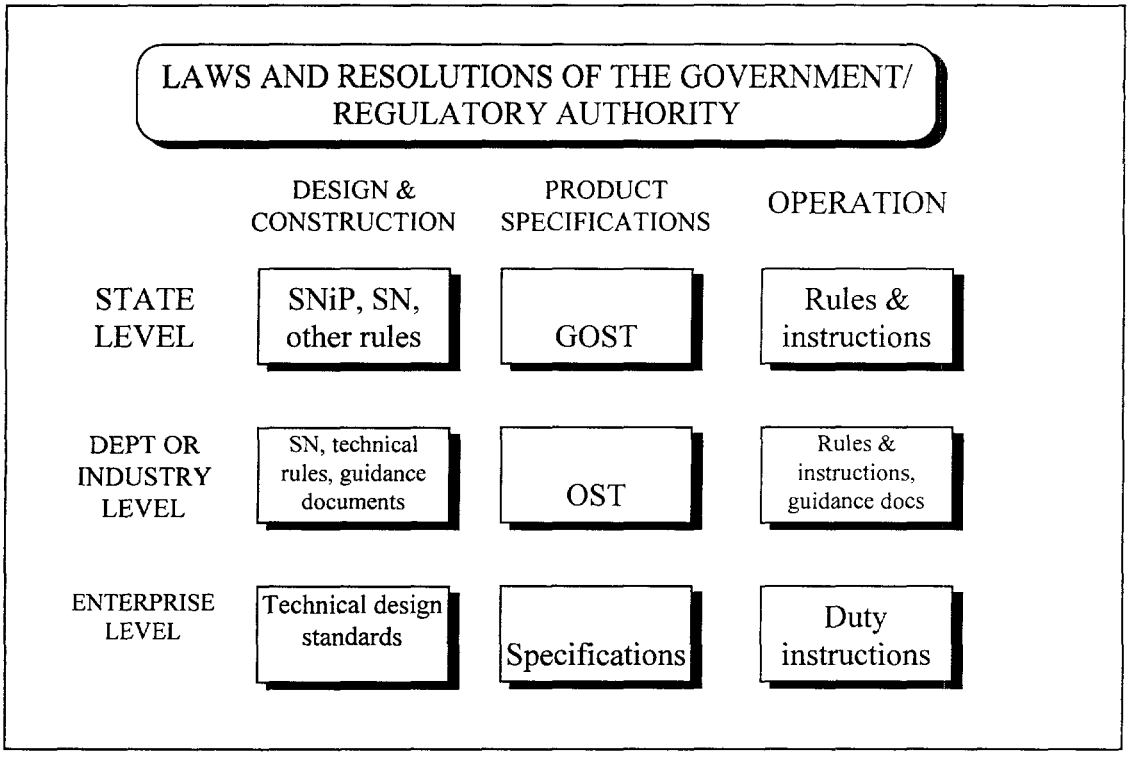

Figure 6: System of Soviet Technical Standards

39. The authorities should develop a schedule to move to an international system of technical regulation, codes of practice and standards for new facilities. Internationally recognised design codes and standards and the procurement of international equipment, materials and services will thereby be promoted and levels of risk reduced. A typical international system is described in Appendix 5.4.

40. *Safety:* Apart from the improved quality assurance of design, construction and operation inherent in moving to an international system of codes and standards, specific safety approaches need to be adopted to ensure that pipelines and facilities, including burners, are fit for purpose. Many different systems exist in other countries. Pending a detailed review of the Kazak Safety Code, what is suggested is that a system be introduced in which the gas industry is largely self-policing (and therefore meets most of the costs). Proposals for all new major construction works should include a "HAZOP" analysis and a conceptual safety review that predicts the level of risk associated with the

installation and operation of the facilities, confirming that the risks are in line with local and national guidelines.

41. It is understood that safety rules for the oil and gas industry were approved by "Gosgortekhnadzor" (the State Technical Supervision unit) on November 17th, 1994. There is a pressing need for the additional draft safety regulations presently under consideration for oil and gas operations to be issued. It is not clear whether these will also cover downstream gas.

42. *Environment:* The attitude that environmental protection was a lower priority than achieving planned production targets has unfortunately left a difficult heritage for the gas industry and a potential time-bomb for foreign investors.

43. Kazakhstan has made considerable progress in recent years regarding environmental legislation, with the enactment of the Law on the Protection of the Natural Environment (June 1991), and the incorporation of environmental protection provisions in the Petroleum Law (8 June 1995) and the Mining Law (Decree 2828, 27 January 1996). However many of the implementing regulations, guidelines, procedures and instructions are not yet in place to provide clear direction. What is needed is top level, co-ordinated support for the introduction of systems and resources to carry out environmental assessment, monitoring, contingency planning, environmental audits and the introduction of the concept of Best Practicable Environmental Option, i.e. cost effective enforcement. Regulations to achieve this should be developed without delay, with international assistance as necessary.

I. STEPS TO BE TAKEN

44. The most crucial step at this point is to agree the agenda for the primary Gas Law, which will provide the basic framework for economic, technical, safety and environmental regulation of the gas industry. Other actions can then fall into place in an orderly way.

This will establish a template for redefining the Government functions (policy, taxation and regulation) and enterprise (operational).

46. *Immediate Priorities*

The following priority items need to be addressed by the Government **before finalizing the contractual (concession) agreements of the successful bidders**:

- Authorisation of gas companies' right to curtail gas supply to non-payers except those who are protected under a social security net or who are included in certain protected categories.

- Promotion of international safety and environmental standards.

- Promotion of business competition by separation of the LPG and the natural gas businesses.

- Promotion of distance based/ cost reflective tariffs for gas transportation. The tariff structures and rules should be unambiguously defined in detail in the pipeline concession agreements.

- Access terms for Third Party Access to pipelines should also be clearly defined in the pipeline concessions. If necessary, additional protocols to the concession agreements should be negotiated to clarify these aspects.

  - Terms for access by third parties
  - Firm or interruptible capacity
  - Proportion of capacity available
  - Minimum service conditions.

- Proposals for installation of gas meters, with gas companies owning the meters in the case of residential and smaller commercial customers.

- Enforcement of consistent payment standards throughout the gas supply chain.

47. There a number of deeper questions concerning the optimal structure and development path of the gas industry that ought to be addressed as soon as possible, both to clarify regulatory design and also to maximise long-term value from the current concession/ privatisation projects.

These include:

- The degree of vertical integration that should be permitted in the sub-sector: for example, whether gas producers should be permitted to operate gas distribution networks.
- The appropriate market structure for each sub-sector. This implies consideration of issues such as the extent to which producers should have a monopoly franchise to supply, whether transmission companies should be allowed to trade in gas and the freedom of consumers to choose from alternative suppliers. Some views have been expressed in Paragraph 30 above.
- Optimal size of enterprises, with due consideration to minimum efficient scale of operation, financial resilience and sub-sector market structure.
- Ownership and control of the sector, interface with the Government, management incentives and role of private capital.

- Potential contractual and trading relationships between entities.
- Implications for financial structuring of individual enterprises and the sector as a whole, particularly with respect to the potential for attracting foreign investors/partners.
- Implications for associated sectors, for example, the fabrication/ construction and oil sectors.

47. There should be an assessment of the overall sector management and administrative context in which the gas companies operate, including reform options and constraints. This will determine prioritisation and sequencing of actions under any Gas Law.

48. Further work needs to be done on identifying the optimal regulatory formulae for the various components of the gas industry.

49. It is recommended that a task force be set up under the authority of the Minister of Energy and Natural Resources to progress the establishment of a modern regulatory system. This will need to have input from several interest groups and be allocated sufficient resources to carry out the extensive multi-disciplinary studies and drafting work required. It is further recommended that this be carried out with international assistance.

50. There are a number of key actions that need to be taken in the setting up of the Regulatory Authority. These include further work on the institutional design - including the powers, responsibilities and structure of the Regulatory Authority and defining its role relative to other official bodies.

51. A thorough review is required of all existing and pending legislation in the gas area:

a) to determine the changes to legislation needed to establish and empower Regulatory Authority and ensure no overlaps and gaps with other principal legislation in the energy sector, mineral extraction industries and commercial law generally; and
b) to decide how best to implement any legislative changes (e.g. by Presidential Decree with detailed legislation to follow).

The GOK should consider whether it might be advisable to introduce a series of interim decrees aimed at introducing aspects of the new regulatory system, as it will inevitably take some time to agree the more sensitive aspects of an entire Gas Law.

All the principal laws that regulate the attraction of investment and the activities of investors need careful review. A preliminary listing is as follows.

- Civil Code of the Republic of Kazakhstan 27.12. 1994
- Law on Foreign Investments 27.12. 1994
- Decree on Licensing 17.4. 1994

- Decree on Taxes and Other Compulsory Payments to the Budget 24.4. 1995
- Decree on Economic Partnerships 2.5. 1995
- Decree on Customs Activities in the Republic of Kazakhstan 20.7. 1995
- Decree on Mineral Resources and Their Utilisation 20.7. 1995
- Petroleum Law 28.6. 1995
- (Decree on Government Regulation of Precious Metals and Precious Stones 20.7. 1995, which also covers some aspects of mineral extraction and licensing).

52. On the manpower planning side, urgent consideration needs to be given to staffing, recruitment policies and training for the future Regulatory Authority commissioners and permanent staff. Remuneration policies need to be defined and agreed (these need not be limited to public sector pay scales), as does the source and method of funding. A needs analysis should be undertaken immediately to establish the human resource priorities.

53. The Human Resources plan should

- ensure that local personnel have the capability to absorb and utilise the technology to be imported for project implementation,
- support institutional strengthening, and
- provide the basis for the continuing development of manpower skills.

Appendix 5.2

GAS SALES REGULATORY PRINCIPLES

1. The aim is to achieve a fair balance between consumers and the gas companies in the marketplace, with prices and terms of service defined clearly and simply. Many different approaches have been tried in different countries. Given the particular needs of Kazakhstan at the moment - especially the lack of metering and the widespread non-payment - it is suggested that the authorities give careful consideration to the following somewhat unusual solution devised by a leading gas company for ESMAP.

2. In essence, it is suggested that there be two "standardised" contractual arrangements available for small and large consumers. Individually negotiated contracts are to be encouraged, especially for the larger end users who have the bargaining power and the skills necessary to do this, but in the first instance the orderly marketing of gas is enhanced by easily understood and simple paperwork to govern the relationship between the gas companies and their customers.

3. Both types of contract would comprise a short from containing agreed quantities, price etc. (in the case of smaller customers this only needs to be a single sheet) plus a separate document explaining the general terms and conditions such as how payments are to be made, meter readings taken, the conditions of service, adjustments for varying calorific value, emergency contact telephone numbers etc., as well as setting out the rights of the consumers. In the case of the smaller customers, this could be a user-friendly booklet.

The suggested general terms and conditions are as follows:

Small Customers -

4. Residential, Commercial and Light Industrial (Up to 0.1 million m^3 per year):

- The gas company is not entitled to terminate the contract (i.e. it has to supply gas within its license area on request to any customer who wants a supply. However, the gas company can interrupt deliveries if the customer fails to fulfil the contract (e.g. by defaulting on payment or tampering with meters).
- As a temporary expedient, there should be a minimum monthly payment corresponding to, say, 50 m^3 per month[1]. The figure should be agreed with the Regulatory Authority.

[1] This provision recognises that it costs a gas company a disproportionate amount to service and chase non-payments for this class of customer. However an approach like this effectively discriminates against these customers and should be phased out within a year or two.

- The general terms and conditions should include a code of practice for interruptions for elderly, disabled and other social groups who find difficulty with payments.
- The gas company should also have a right to demand a cash deposit (or possibly a bank guarantee) as security for future payments.
- A system of pre-payment should be introduced.
- Gas companies should have the right to inspect installations[2]. There should be large fines for tampering with facilities that could (or does) cause explosions or serious accidents.

Medium Sized Customers (Between 0.1 and 1 million m3 per year)

5. These customers would be on a different tariff to smaller customers and their form of contract would be closer to that for larger customers.

Large Customers (Over 1 million m^3 per year).

6. There will be more items to address in the contracts with larger customers, although the principle of separating general terms and conditions from the specifics would also be helpful. There is no reason why the contractual format should be any different to modern gas contracts for similar customers in other parts of the world.

- Quantities. The individual contracts should specify the maximum hourly quantities which the gas company is obliged to supply. If the gas company fails to deliver then the quantities not delivered should be deducted from the customer's payment obligations.
- For the larger customers there should be a simple form of "take-or-pay". If gas is not taken up to this limit (which might be say 50% of the agreed annual quantity) then it should nonetheless by paid for (at half the prevailing price of gas, for example). (Note: it is not standard practice in all countries to have such "take-or-pay" arrangements, especially ones which protect profit. Hence this is considered to be an interim arrangement while the gas industry gets onto a sounder footing).
- The above two provisions give strong commercial incentives to both sides to take and supply gas in an even way.
- The contract period should be fairly short - perhaps three to five years (or longer for new connections).
- There should be nothing to stop prices being individually negotiated but a standard tariff should be available. It is suggested that this be on a sliding basis, i.e. a reduced price for gas in excess of certain quantities.
- There should be penalties for late payments and no right to withhold payments in the event of a counter-claim.

[2] The control on technical safety is also understood to vest in the State Committee for Emergencies and its local agencies.

- Contracts should generally be backed up with financial guarantees that allow gas companies the right to access customer's bank accounts and possibly to seize assets if there is a prolonged history of non-payment.
- Customers should have the right to refuse gas that is off specification.
- Gas companies should have the right to inspect installations. There should be large fines for tampering with facilities or inadequate maintenance that could (or does) cause explosions or serious accidents. This also applies to the gas companies.

Appendix 5.3

INFORMATION REQUIRED BY THE REGULATORY AUTHORITY

It is recommended that the Regulatory Authority develops a standard form to collect financial and operational information from the transport or distribution companies under their jurisdiction. The forms would reflect a uniform system of accounts and measures, as specified by the regulatory agencies, that all companies would be required to use. The forms would be filed on an annual basis and would reflect each company's financial and operational information for the preceding calendar year.

This information of course would be supplemented by that required under the licence application and other procedures, for example on company structure (including interest in any related gas activities, so that the Regulatory Authority and the anti-monopoly authorities are made aware for example of any move towards vertical integration in the industry, financial securities to be provided under standard conditions of the licences, etc.)

An example of the type of information that should be reported on the standard form follows. The information falls under five broad categories general corporate information and financial statements; balance sheet supporting schedules (assets); balance sheet supporting schedules (liabilities); income account supporting schedules; and gas plant statistical data.

The information referred to is based on the Federal Energy Regulatory Commission's information requirements (Form 2) in the United States but is typical of that required in many other countries and is recommended for Kazakhstan. A limited subset of this information would be required for consideration of main export pipelines.

1. GENERAL CORPORATE INFORMATION

General Information
Control Over Respondent
Corporations Controlled by Respondent
Officers
Directors
Security Holders and Voting Powers
Important Changes During the Year
Which International Accounting Standards are used.

2. BALANCE SHEET SUPPORTING SCHEDULES (ASSETS AND OTHER DEBTS)

Summary of Utility Plant and Accumulated Provisions for Depreciation, Amortisation, and Depletion
Gas Plant in Service
Gas Plant Leased to Others
Production Properties Held for Future Use
Construction Work in Progress
Accumulated Provision for Depreciation of Gas Utility Plant
Gas Stored
Non-utility Property
Accumulated Provision for Depreciation and Amortisation of Non-utility Property
Investments in Subsidiary Companies
Gas Prepayments Under Purchase Agreements
Advances for Gas Prior to Initial Deliveries
Prepayments
Extraordinary Property Losses
Unrecovered Plant and Regulatory Study Costs
Preliminary Survey and Investigation Charges

3. BALANCE SHEET SUPPORTING SCHEDULES (LIABILITIES AND OTHER CREDITS)

Capital Stock
Other Paid-in Capital
Capital Stock Expense
Securities Issued or Assumed and Securities Refunded or Retired During the Year
Long-Term Debt
Taxes Accrued, Prepaid and Charged During Year
Miscellaneous Current and Accrued Liabilities
Undelivered Gas Obligations Under Sales Agreements

4. INCOME ACCOUNT SUPPORTING SCHEDULES

Gas Operating Revenues
Distribution Type Sales
Residential and Commercial Space Heating Customers
Interruptible, Off Peak. and Firm Sales to Distribution System Industrial Customers
Field and Main Line Industrial Sales of Natural Gas
Sales for Resale
Revenue from Transportation of Gas of Others
Sales of Products Extracted from Natural Gas

Revenues from Natural Gas Processed by Others
Gas Operation and Maintenance Expenses
Number of Gas Department Employees
Exploration and Development Expenses
Abandoned Leases
Gas Purchases
Exchange Gas Transactions
Gas Used in Utility Operations -- Credit
Transmission and Compression of Gas by Others
Other Gas Supply Expenses
Miscellaneous General Expenses -- Gas
Depreciation, Depletion, and Amortisation of Gas Plant
Income from Utility Plant Leased to Others

5. COMMON SECTION

Regulatory Commission Expenses
Research, Development and Demonstration Activities
Distribution of Salaries and Wages
Charges for Outside Professional and Other Consultative Services

6. GAS PLANT STATISTICAL DATA

Natural Gas Reserves and Land Acreage
Changes in Estimated Natural Gas Reserves
Changes in Est. Hydrocarbon Reserves and Costs, and Not Realisable Value
Natural Gas Production and Gathering Statistics
Products Extraction Operations -- Natural Gas
Compressor Stations
Gas and Oil Wells
Field and Storage Lines
Gas Storage Projects
Transmission Lines
Liquefied Petroleum Gas Operations (unless separated from the LDCs)
Transmission System Peak Deliveries
Auxiliary Peaking Facilities
Gas Account -- Natural Gas
System Map

Appendix 5.4

MAIN DUTIES AND POWERS OF THE REGULATOR

This Annex lists some of the principal duties and powers recommended to be assigned to the gas Regulatory Authority.

Any such list is bound to be incomplete and is only offered as a guide to the future regulators of the Kazak gas industry. A comprehensive and formal list of regulatory duties and powers will necessarily be much more extensive.

DUTIES AND POWERS

1. **Assure Security of Supply**:

   Ensure that licensed gas suppliers provide a reliable gas supply except where it would be uneconomical to do so.

2. **Assure Financial Viability of Licensees**:

   Ensure a regulatory framework and pricing provisions that enable the licensees to achieve financial viability through prudent operation of their gas transmission and distribution business.
   Also ensure that potential licensees are financially capable of carrying out their obligations.

3. **Protect Consumers**:

   Generally protect the interests of consumers as they are affected by price, terms of supply, and quality of supply. This duty may be strengthened by an additional requirement to consider the special circumstances of, for example, elderly or handicapped customers.

4. **Promote Efficiency**:

   Generally promote efficiency in the supply of gas.

5. **Promote Competition**:

   Enable would-be gas production licensees to compete existing suppliers, particularly for the supply of industrial markets, in the medium term.

6. **Promote Health, Safety and Environment**:

Ensure that danger to the public does not arise out of the transport and distribution of gas, and establish penalties for safety violations.
Promote the prevention or mitigation of adverse effects to the environment by production, transmission, distribution and use of natural gas.

7. **Promote Non-Discriminatory Transportation**:

Oversee the provision of non-discriminatory transportation of gas for non-pipeline-owned suppliers and to intervene when appropriate.

8. **Direct the Construction of Pipelines: Storage, and Major Compressor Stations**:

Consider and decide upon applications to construct new major pipeline segments and compressor stations.

9. **Investigate Complaints**:

Consider and act upon legitimate complaints submitted by consumers. This might entail the establishment of local customer service committees, both to filter complaints and to represent local customer opinion on general issues.

10. **Collect and Publish Information**:

Collect and publish information concerning the regulated business, particularly orders made to licensees in respect of the Regulatory Authority's duties and powers. Includes right to require detailed information from regulated companies.

11. **Set Service Standards**:

Set and monitor service standards (e.g. pressure, reliability).

12. **Promote Resale of Gas**:

Publish prices or guidelines for the determination of prices concerning the resale of gas by customers of licensees, where such customers are permitted to do so.

13. **Reporting to Government**:

Report its activities to the government in a predetermined form, e.g. by production of an annual report.

14. Assure General Licence Enforcement:

Enforce licensees' compliance with the terms of their licenses.

15. Control Prices:

Apply and revise price control formulae to licensees in with the conditions in those licenses, and to monitor compliance.

16. Protect Against Unjust Cross-Subsidisation:

Protect consumers against undue discrimination and undue preference on the part of licensees, either respect to their published tariffs, or with respect to prices charged on a customer by customer basis. Also ensure that customers in the regulated business are not required to cross-subsidise unregulated activities.

17. Promote Environmental Considerations:

Take into consideration the environmental impact of the activities of licensees, although specific responsibility of Environmental Impact Assessments may vest in other government agencies.

18. Arbitrate:

Arbitrate on matters of dispute between licensees and other organisations where requested to do so, particularly in the setting of supply tariffs.

19. Enforce Regulatory Rules and Restrictions:

Enforce directions given to licensees either by application to a government Minister, or by reference to the competition authorities, or by reference to a court of law.

20. Revise Licenses:

Change the terms of a license, either by mutual agreement with the licensee, or by referring the matter to a court of law, or to a competition authority.

21. Enforce Codes of Practice:

Impose upon licensees codes of practice covering areas such as customer service, disconnection policy, disruption caused by construction, etc.

22. Enforce The Development and Use of HSE Management Systems:

Impose on owners/ operators the requirement to set up and follow Health, Safety and Environmental (HSE) management systems and require yearly reporting on compliance.

Appendix 5.5

REGULATIONS, STANDARDS AND CODES FOR GAS TRANSMISSION AND DISTRIBUTION

	REGS	STANDARDS	CODES
A TRANSMISSION OF GAS			
Pipeline design specifications		S	C
Material		S	C
System safety	R	S	C
Pipeline components		S	
Valves, controls, fittings		S	
Pipeline construction	R	S	C
Safety procedures (construction)	R	S	
Pipeline operation & maintenance			C
Pipeline surveillance	R		C
Compressor station design		S	C
Compressor design specifications		S	C
Compressor maintenance/operations			C
Terminals	R	S	C
Other equipment		S	C
Safety device	R	S	C
Inspection/ Testing procedure	R	S	
Commissioning			C
Safety Procedures (Operations)	R		
System Design	R	S	
Right of Way	R	S	
B DISTRIBUTION OF GAS			
Design of distribution network		S	C
Material for mains service		S	
Valves		S	
City Gate station	R	S	C
Trunk mains	R	S	C
Distribution mains	R	S	C
Pressure regulators		S	C
Pipeline laying, construction	R	S	C
Inspection/ Testing/ Commissioning	R	S	C
Maintenance & operation of pipelines	R	S	C
Service lines/ meters		S	C
Safety devices	R	S	C
Gas detection methods/instruments	R	S	

Gas odourisation	R	S	C
Health, Safety and Environmental procedures	R		

C GAS MEASUREMENTS

Methods of measurement		S	C
Construction and installation	R	S	C
Telemetry/ telesupervisory control		S	C
Health, Safety and Environmental procedures	R		

D STORAGE OF GAS

Low pressure holder	R	S	
High pressure holder	R	S	
Underground storage	R	S	
Health, Safety and Environmental procedures	R		

E OPERATION & MAINTENANCE

Pipelines			C
Compressor Stations			C
Coating and Wrapping		S	C
Cathodic protection		S	C
Terminals			C
Telecom & SCADA		S	C

F GAS APPLIANCE AND EQUIPMENT INSTALLATION

DOMESTIC

Piping in buildings		S	C
Venting and air supply		S	C
Appliance control and accessories		S	C
Cooking, heating and other appliances		S	C
Gas burners		S	C
Metering		S	C
Health, Safety and Environmental procedures	R	S	C

INDUSTRIAL			
Industrial combustion systems	R	S	C
Other commercial appliances		S	C
Gas turbines/ engines	R	S	C
Furnaces/ boilers	R	S	C
Metering		S	C
Combustion systems		S	C
- Appliances/ equipment installations			
- Venting and air supply			
- Appliances control and accessories			
Health, Safety and Environmental procedures	R		

NOTE: The list is only indicative of the major areas of activities. An exhaustive list needs to be prepared. Operating companies should be encouraged to develop their own detailed internal procedures to cover critical design, construction and operations based on international practices.

Appendix 5.6
Suggested Framework and Sample Regulations for a Kazak Gas Law

1. INTRODUCTION

This note provides a framework for a Gas Law and some concrete examples of regulations from other countries, for the consideration of the Kazak authorities. It is intended to be read in conjunction with Appendix 5.1, "Gas Regulatory Framework", as general background material. As explained in that paper, sophisticated but different regulatory systems are found all over the world and policies need to be set in place for the development of a system that is suitable for Kazakhstan's particular needs.

The note concentrates on economic regulation rather than the equally important changes to the technical regulatory system required in Kazakhstan.

In view of the variety of different approaches and styles that are possible, this note only attempts to present general guidelines on priority issues like licensing and Third Party Access to pipelines. Many other aspects, for example on the regulation of Local Distribution Companies, need to be developed further, as does the detailed drafting of the Gas Law. Proposals on other important issues like non-payment have been addressed separately in Appendix 3.11, "Non-payment Issues and Proposed Countermeasures".

The essential has to be how to set up an independent Regulatory Authority, to specify its main duties and powers and to concentrate on the regulation of the main structural aspects of the industry, particularly gas transportation.

2. GENERAL

Whether or not a requirement to prepare a Gas Law is invoked by Presidential Decree, the Gas Law itself will have to be developed in its entirety by the authorities to be passed through the legislative system. There is much to be said for the approach of using a Presidential Decree because it would convey the right signals to international investors at an early stage. The format of a Presidential Decree would be straightforward and many models already exist within the Kazak legal framework.

This note concentrates on material from other countries that could be drawn on for the Gas Law itself.

As in all legislation, the introductory preamble is critical as it sets the agenda. The final wording will undoubtedly require considerable debate between interested Ministries.

Headings foreseen to be required in the Gas Law include:

- **GENERAL**

  - Definitions
  - Scope Of Regulation (explaining the purpose of the law, outlining
  - The need for rational use of gas, counteracting the consequences of natural monopoly situations, general aims concerning diversity and security of supply)
  - Relationship/ Precedence With Respect To Other Regulations

- **ESTABLISHMENT OF A REGULATORY AUTHORITY**

  - Establishment of A Regulatory Authority
  - Appointment of President of The Regulatory Authority, Other Commissioners, Rules For Withdrawing/ Termination From Office
  - Reporting Relationships
  - Form and Composition of Regulatory Authority
  - Funding
  - Jurisdiction
  - Rights and Responsibilities of Government and Regulatory Authority
  - Appeals Procedure

- **LICENSING SYSTEM**

  - Regime - What is covered and what is not
  - Restrictions (including limitations on Connected Companies, Vertical Integration etc.)
  - Procedure for Competing for Licences
  - Requirements for Companies wishing to apply for Licences
  - Obligations of Licensees
  - Rights and Obligations with respect to Land
  - Geographical Territory
  - Length of Exclusivity
  - Licence Applications/ Review/ Bidding/ Evaluation/ Granting of Licences
  - Transfer of Licences, Early Termination, etc.

- **SERVICE CONDITIONS**

  - Definition of Services
  - General Conditions to be Approved by the Regulatory Authority (e.g. Rates, Terms, Detailed Conditions For Access, Dispute Resolution)
  - Non-Discriminatory Access/ Open Access
  - Extensions to Networks and Service
  - Unbundling and need for Arm's Length separation of management and Accounts
  - Health Safety And Environment - Systems, Reporting, Training, Emergencies
  - Interruptibility and Consequences
  - Physical Conditions of Service
  - Claims and Complaints

- **COMPETITION/ PRICES**

  - Procedures for Rate Setting for Elements of Service
  - Powers of Regulatory Authority to Regulate Tariffs
  - Abuse of Dominant Market Position
  - Prohibition of Cross Subsidies
  - Power of Regulatory Authority to require publication of Price Schedules
  - Rights to Verify Information

- **ENFORCEMENT**

  - Information Required by Regulatory Authority
  - List of Possible Infringements and Schedule of Penalties.

Detailed comments on possible contents in a Kazak Gas Law and samples of comparable regulations in other countries are set out below.

3. INTRODUCTORY SECTION

3.1 Definitions

The Gas Law will need to contain definitions of relevant specialist terms.

3.2 Scope of Regulation

This section would explain the purpose of the Gas Law, outline the need to create conditions suitable for the rational use of gas, to counteract the consequences of natural monopoly situations, protect consumers, promote safety and non-discriminatory access to pipelines. Several countries also include a statement of the general aim concerning that achievement of greater diversity and security of gas supply.

3.3 Relationship/ precedence with respect to other regulation

The Gas Law needs to clarify that it does not cover exploration or production (which is dealt with under the Petroleum Law / the Mineral Law), and that in the event of conflict these laws would take precedence.

4. ESTABLISHMENT OF A REGULATORY AUTHORITY

4.1 Establishment of a Regulatory Authority

There is no single set of regulations from other parts of the world that can be pointed to as an example that would be suitable for immediate use in Kazakhstan.

However parts of the draft Polish Energy Law may be helpful, although this Law also covers the supply of electricity and heat. This draft Law has recently been passed by the Lower House in Poland and will shortly have legal force.

"Art. 23

1. *The ERA, hereinafter referred to as the "Energy Regulatory Authority", is hereby established as the central state administration body with respect to matters concerning fuels and energy management regulation, the promotion of competition, and reporting to the Chairman of the Council of Ministers.*

2. *The organisation and working procedures of the Energy Regulatory Authority are specified in the by-laws determined by the Chairman of the Council of Ministers by way of an ordinance.*

3. *The Energy Regulatory Authority is managed by a President, appointed for a term of office of five years and recalled by the Chairman of the Council of Ministers.*

4. *The Vice President of the Energy Regulatory Authority is appointed and recalled by the Chairman of the Council of Ministers upon the motion of the President of the Energy Regulatory Authority.*

5. *The President of the Energy Regulatory Authority may be recalled from office before the end of his term, in the event of illness which renders the performance of his duties permanently impossible, a flagrant violation of his responsibilities, resignation, or if he is found guilty of a crime by a final court judgement.*

Art. 24

1. *The President of the Energy Regulatory Authority may establish regional branches of the Energy Regulatory Authority and determine their seats and territorial and subject matter jurisdiction.*

2. *Directors of the regional branches are appointed and recalled by the President of the Energy Regulatory Authority.*

3. *Vice directors of the regional branches are appointed and recalled by the President of the Energy Regulatory Authority upon the motion of directors of those branches."*

4.2 Appointment of President of the Regulatory Authority, other Commissioners, rules for withdrawing/ termination from office

As explained in the "Gas Regulatory Framework", the central point is to retain independence of the regulatory organ rather than to integrate it within the central administration. It is hoped that this will remove regulation from day to day interference from policy making levels of government and ensure a degree of stability. The detailed proposals in the "Gas Regulatory Framework" would need to be drafted specially as they have been adapted from a number of diverse sources.

A transparent appointment system and adequate safeguards against the dismissal of the President of the Regulatory Authority or other Commissioners for overtly political reasons are crucial to the success of the Regulatory Authority. (For example, the newly appointed Electricity Regulator in Pakistan is facing dismissal for adverse comments on the tariffs on the first Independent Power Project that his commission is reviewing, bringing the entire regulatory system into question).

In the Polish example quoted in the previous section, the appointment of the President of the Regulatory Authority is for five years. This is recommended for Kazakhstan.

4.3 Reporting Relationships

The Gas Law should specify the reporting arrangements for the Regulatory Authority to whatever level and part of government is decided is appropriate. This may for example be

to the Minister of Energy and Natural Resources or to the central Government Office. The reporting relationship can even be direct to Parliament, as in the UK.

The normal solution is that the Regulator reports to the Chairman of the Council of Ministers, as in Poland, and this is recommended for Kazakhstan.

4.4 Form of Regulatory Authority

The composition and form of the Regulatory Authority need to be specified in the Gas Law. See Appendix 5.1, "Gas Regulatory Framework".

4.5 Funding

Independence of funding is crucial. This could be initiated by a one-off contribution from central government and then continued by a system of levies on licence holders/ applicants. If this latter course is adopted, as is recommended, a short statement ought to go in the Law about the principles of how this will be done. (E.g. See Article 33 of the draft Polish Energy Law, quoted in Section 5 below on Licensing). The intention is not to devise a system to raise major revenues but to cover the costs of a new administrative body.

4.6 Jurisdiction

Jurisdiction must cover both the state and the private sector. It is not clear whether this would be the case in Kazakhstan if the Gas Law were silent.

4.7 Rights and responsibilities of government and Regulatory Authority

The "Gas Regulatory Framework" (Appendix 5.1) explains which powers should be retained by the government. The Gas Law need say very little more than this.

The rights and responsibilities of the Regulatory Authority on the other hand ought to be spelt out in detail, to avoid any doubt. Appendix 5.4, "Main Duties and Powers of the Regulator" explains in detail what these should be:

- Assure Security of Supply
- Assure Financial Viability of Potential Licensees
- Protect Consumers
- Promote Efficiency
- Promote Safety

- Promote Competition
- Promote Non-discriminatory Transportation
- Direct the Construction of Pipelines, Storage and Major Compressor Stations
- Investigate Complaints
- Collect and Publish Information (as further set out in Appendix 5.3, Information Required by the Regulatory Authority)
- Set Service Standards (e.g. pressure and reliability)
- Promote the Resale of Gas
- Reporting to Government
- Assure General Licence Enforcement
- Control Prices (for small consumers)
- Protect Against Unjust Cross-Subsidisation
- Promote Environmental Considerations
- Arbitrate
- Enforce Regulatory Rules and Restrictions
- Revise Licence Conditions
- Enforce Codes of Practice (e.g. disconnection policy, disruptions, customer service)

The Argentinean Law on Gas Regulation (Law No 24076) provides a good example of how the main duties could be drafted in a new Kazak Gas Law:

*"**Duties and Powers of the Regulatory Authority:***

(a) *to protect consumers' rights adequately;*

(b) *to promote competition in the supply of and demand for natural gas and to stimulate investments to ensure long-term supplies;*

(c) *to promote the better operation, reliability, equality, free access, non-discrimination and widespread use of natural gas transportation and distribution services and installations;*

(d) *to regulate transportation and distribution activities by ensuring that the tariffs charged for services are fair and reasonable according to the provisions of this Law;*

(e) *to encourage efficiency in the transportation, storage, distribution and use of natural gas;*

(f) *to encourage the rational utilisation of natural gas, ensuring that the environment is adequately protected;*

(g) *to make the prices of natural gas to industry equivalent to those prevailing in countries with similar resource endowments and conditions. "*

A less specific example can be found in Article 25 of the draft Polish Energy Law:

"Art. 25

1. The Energy Regulatory Authority, subject to[various articles], regulates the activities of energy enterprises according to the Act and national energy policy guidelines, aimed at balancing the interests of energy enterprises and fuel and energy customers.

2. The Energy Regulatory Authority's rights and responsibilities include.

1) issuing, refusing to issue, amending and withdrawing licenses,

2) approving and controlling tariffs for electric energy and gaseous fuels, with respect to their compliance with the principles determined in [article ...].

3) agreement on draft plans mentioned in [article ...],

4) control of quality of customer service standards with respect to gaseous fuels and electric energy,

5) resolving disputes within the scope determined in the Act,

6) determining the conditions of the use of the grid, in the event that the parties concerned are unable to reach an agreement,

7) imposing fines according to rules set forth in the Act,

8) co-operating with the relevant bodies in counteracting abuses by energy enterprises of a monopolistic or dominant position,

9) publishing information promoting energy and fuel efficiency,

10) gathering and processing information relating to the energy economy,

11) checking the qualifications of persons, mentioned in [article ...].

Art. 26

1. By the end of the first quarter of each year, the President of the Energy Regulatory Authority shall submit to the Chairman of the Council of Ministers a report on its activities.

2. *The President of the Energy Regulatory Authority shall submit to the Minister of Industry and Trade, upon his request, information on his activities."*

4.8 Appeals procedure

The "Gas Regulatory Framework" suggests a particular appeals procedure that it is felt would satisfy the needs to give confidence to foreign investors without being so onerous as to frustrate the objectives of the Regulatory Authority. Transparency and certainty are paramount. Other solutions are possible.

5. LICENSING SYSTEM

5.1 General

Provided the licensing system gives clear, fair and transparent guidelines it can be engineered to suit the commercial needs and practices of Kazakhstan. The drafting of these proposals needs to be compatible with the Law on Licensing and other legislation.

ESMAP has already provided the Kazak authorities an example of a complete and internally consistent licensing procedure for Mexico in July 1996, the "CRE Regulatory Law". This is contained in Articles 14 to 58 (Article 18 is not appropriate for Kazakhstan because it refers to a specific provision of Mexican Competition Law).

An alternative, simpler licensing system is described in Articles 33 to 47 of the draft Polish Energy Law. This wording is designed to be amplified by secondary legislation and directives to cover the gaps.

"Licenses and Tariffs

Art. 33

1. *Economic activity covering production, transformation, storage, transmission, distribution and the trade of fuels and energy requires that a license be obtained from regulatory bodies, subject to section 2 and section 3.*

2. *The particular types of economic activity referred to in section 1 which do not require licensing shall be determined, by way of an ordinance, by the Minister of Industry and Trade and the Minister of Spatial Planning and Construction.*

3. *The foreign trade in fuels or electric energy requires that a licence and permit be obtained from the Minister of Foreign Economic Co-operation in co-ordination with the Minister of Industry and Trade.*

4. *The provisions of [various other laws and regulations] shall apply to the proceedings concerning licenses referred to in section 3.*

Art. 34

1. *The Energy Regulatory Authority shall grant licenses if the applicant:*

1) *has its registered office or place of residence in the Republic of Poland,*

2) *is in possession of the relevant funds or is capable of documenting its ability to acquire funds, in an amount which guarantees the proper performance of the activity,*

3) *is in possession of a technical capability which will ensure the proper performance of the activity,*

4) *proves that personnel employed have the relevant qualifications referred to in [Article ...],*

5) *has obtained a decision on the Terms of Development of the Area.*

2. *The obtaining of the license referred to in section 1 does not exempt the applicant from the requirement to obtain other licenses or permits according to any other provisions of law.*

3. *A license may not be awarded to an applicant:*

1) *who is the subject of bankruptcy or liquidation proceedings,*

2) *who was deprived of a license for the activity covered by the Act within the last 10 years,*

3) *who was subject to a final conviction for an offence whose consequences are related to the economic activity covered by the Act.*

4. *The following factors are taken into consideration when making a decision on licensing: social interest and national energy policy guidelines.*

Art. 35

The transfer of title to, and the creation of a pledge on, shares of energy enterprises for which a license referred to in Art 33 section 1 has been granted, requires the approval of the Energy Regulatory Authority, unless specific provisions of law provide otherwise.

Art. 36

1. *Energy enterprises which have been granted licenses shall pay annual fees to the state budget, and charge them to their operational costs.*

2. *The Council of Ministers shall set, by way of an ordinance, the amount and the procedure for collecting, by the regulatory body, the fees referred to in section l.*

Art. 37

1. *An application for a license should contain, in particular:*

1) *the name of the applicant, its seat or place of residence and the first and last names of the attorneys authorised to perform legal acts on behalf of the economic entity, if appointed,*

2) *a specification of the subject and scope of the activity to be licensed, and the plans referred to in [Article ...],*

3) *information concerning the operations of the applicant to date, including, if the entity has previously conducted economic activity, financial reports for the last 3 years,*

4) *a specification of the time period for which the license is to be awarded including the date of commencement of operations,*

5) *a specification of the resources at the disposal of the applying entity needed to ensure the appropriate conduct of operations covered by the application, and*

6) *the statistical identification number in the domestic register of the entities conducting economic activity.*

2. *The Energy Regulatory Authority may request additional information and documents to ascertain the applicant shall meet the requirements pursuant to the regulations.*

3. *The Energy Regulatory Authority shall refuse to issue a license, if the applicant does not meet the requirements imposed by law.*

Art. 38.

Licenses shall be issued for a defined period of time, not less than 10 years and not more than 50 years.

Art. 39

1. *A license should determine:*

1) *the name of the entity as well as its registered office or place of residence,*

2) *the objective and scope of activities covered by the license,*

3) *the date of commencing the operations covered by the license and the conditions of performing the activity,*

4) *the period for which the license is valid,*

5) *the particular terms for performing the activity covered by the license, aimed at ensuring proper service to customers,*

6) *environmental protection measures during the licensed operations and after their termination, and*

7) *the statistical identification number in the domestic register of the entities conducting economic activity.*

2. *The license should also determine the conditions of termination of the energy enterprise's activity after the expiration of the licence or its withdrawal.*

3. *The Energy Regulatory Authority shall send a copy of issued licenses to the appropriate voivodship statistic office.*

Art. 40

1. *The granting of a license may be made subject to the creation of collateral by the applicant in order to satisfy the claims of third parties which may arise due to the improper performance of the activity covered by the license, including damage to the environment.*

2. *With respect to the type and amount and form of collateral referred to in section l, the provisions of the law referred to in [Article ...] shall be applied where appropriate.*

Art. 41

An energy enterprise may apply for the extension of its license no later than 18 months before its expiration.

Art. 42

1. *The Energy Regulatory Authority may order that the energy enterprise, despite the expiration of its license, conducts further activity for a period not longer than 24 months, if social interest so requires.*

2. *If, because of the activity conducted upon the terms specified in section 1, the energy enterprise incurs a loss, the State Treasury shall cover the losses in an amount limited to the justified costs of the licensed activity, provided it has been conducted with due diligence.*

3. *The costs referred to in section 2 are subject to the approval of the appropriate regulatory body.*

Art. 43

1. *The Energy Regulatory Authority may amend the terms of the issued license ex officio or upon the motion of the energy enterprise.*

2. *The Energy Regulatory Authority may amend the terms of the license ex officio or withdraw the license:*

1) *due to defence state security requirements, or*
2) *in the event of a division of the energy enterprise or its merger with other entities.*

3. *The Energy Regulatory Authority should withdraw a license:*

1) *in the event the economic activity covered by the license is terminated,*

2) *in the event of a final court decision by which the conduct of the economic activity covered by the license is prohibited, or*

3) *if the activity conducted by the entity grossly violates the terms of the license, and the licensed enterprise has failed to remedy the infraction discovered by the regulatory body within the prescribed time.*

4. *The Energy Regulatory Authority notifies the appropriate voivodship statistic office of the withdrawal of the license.*

Art. 44

The license issued on the basis of the Act to the energy enterprise shall expire upon the end of the period which it was issued or on the day on which the licensed enterprise is deleted from the appropriate register or books.

Art. 45

1. *Whoever intends to conduct economic activity consisting of the production transformation, storage, transmission, distribution and trade in fuels or energy subject to licensing, may apply for a pre-license promise.*

2. *The pre-license promise shall be issued by the Energy Regulatory Authority by way of an administrative decision.*

3. *In the pre-license promise, the period of its validity shall be specified, but it may not be less than 6 months.*

4. *During the period for which the pre-license promise is valid, the license to conduct activity specified in the pre-license promise may not be refused, unless the legal or factual conditions described in the application for the pre-license promise have changed.*

5. *The provisions of Art. 37 of the Act shall apply respectively to the application for the issuance of the pre-license promise.*

Art. 46

Energy enterprises are obliged, within enterprise accounts plans, to keep accounts in such a manner as to enable a calculation of their fixed costs, variable costs and revenues, separately for production, transmission and distribution, for each kind of fuels or energy, and also with respect to particular tariffs.

Art. 47

1. *Tariffs for gaseous fuels, electric energy and heat and gaseous fuels, as referred to in [Articles ...], should ensure:*

1) *covering justified costs of energy enterprises' operation in the field of production, transformation. storage, transmission, distribution or trade of fuels and energy and the costs of modernisation, development and environmental protection, and*

2) *protecting customers from an unjustified level of prices.*

2. *The tariffs for gaseous fuels electric energy and heat referred to in section 1 may include the costs of co-financing projects and services by energy enterprises whose purpose is to reduce energy and fuel consumption by customers and which provide an economically justified alternative for the construction of new sources of energy and the grid.*

3. *The tariffs for gaseous fuels, electric energy and heat referred to in section 1 may include the cost to energy enterprises of co-financing undertakings related to the development of a non-conventional energy sector.*

4. *Energy enterprises shall set different tariffs for gaseous fuels, electric energy and heat referred to in section 1 for different groups of customers, exclusively on the basis of the justified costs of providing the services, unless regulations provide otherwise."*

Parameters such as the length of licences and the limits of exclusivity must of course be negotiated in a Kazak context and these sample regulations are only offered for guidance.

5.2 Licensing Regime

To aid clarity and in view of the very complicated permitting system that exists at present in Kazakhstan this section (it is understood that western oil companies need to deal with over forty separate bodies as a project develops), the Gas Law should specify what activities need a licence and which and which do not.

5.3 Restrictions on Potential Players in the Industry

There may be special commercial or financial conditions or restrictions that the government wishes to impose on those applying for licences, under general commercial or competition laws or the Foreign Investment Law, for example to ensure the financial viability of licensees, e.g. bankers' guarantees for performance or solvency, or restrictions on percentage of capital stock to be held in Kazakhstan.

The draft Polish Energy Law contains some specific conditions on the need for collateral.

5.4 Connected Company Restrictions

A possible regulatory constraint is to impose restrictions on connected companies competing for licences in different parts of the gas supply chain. In the "Gas Regulatory Framework", the clear aim is set out to achieve unbundling of transportation and trading over the course of time and immediate separation of day-to-day management activities

and financial reporting is proposed. It is also noted that very occasional exceptions can be made on the question of efficiency gains through vertical integration.

Articles 16 and 17 of the CRE Regulatory Law are a helpful model, although this does not cover the issue of producers having a controlling share in the transmission and distribution networks because the state oil and gas company has an upstream monopoly. However, the potential influence of producers on transmission services through vertical integration or shares is relevant for Kazakhstan.

"Article 17 - Vertical Integration

For service in a geographic zone transportation and distribution permits shall not be granted or transferred to the same person or persons who directly or indirectly hold such permits or who are related to such permittees except as provided in [article ...].

The Commission may authorise exceptions to the prohibition established in the previous paragraph when, in its judgement;

I It will result in improved efficiency gains and returns on investment with respect to the provision of service provided that in no event may there be controlling interests between the transporter and the distributor; or

II. It is strictly necessary because there is an absence of transportation infrastructure to develop a particular geographic zone and there are no other parties interested in such transportation or distribution projects; this exception shall only be authorised for a twelve year period. The procedure for the transfer of either the distribution or the transportation permit after the twelve-year period shall be established in a directive issued by the Commission."

This in turn refers to another article, which says:

*"**Article 31.-** Transportation Within Geographic Zones*

When a geographic zone is determined, and a transportation system delivery point is already in such zone, the transporter may obtain the exclusive distribution permit for such zone pursuant to the bidding procedure of Section Six of this chapter.

If the transporter obtains the distribution permit, such transporter may hold both transportation and distribution permits for the period of exclusivity. If the transporter does not obtain the distribution permit, it may not extend or expand its system, and it may only provide service within the geographic zone as and until its contracts, executed prior to the determination of the relevant geographic zone, with final users expire."

This Article 31 would need to be modified before it could be used in Kazakhstan because the implication is that there would be exclusive licences for distribution and transmission, which is not what is recommended in the "Gas Regulatory Framework".

5.5 Procedure for competing for licences

There must be a clear procedure for registering interest in competing for a licence. The authorities will recognise that introduction of competition in the gas supply chain relies on either actual competition *within* a market (which the Gas Law seeks progressively to introduce) or competition *for* a market. Licence concessions are generally granted for many years and the opportunity should be taken to ensure that every step along the way to the granting of such a licence is transparent and introduces the necessary degree of competition.

Article 20 of the Mexican CRE Regulatory Law sets out a useful checklist which it is recommended be adopted. The regulation is not quoted in full here:

- name and address of applicant
- purpose of permit
- programmes and investment proposed
- deadline to commence service
- proposed general conditions for providing the service
- general description of safety methods and procedures
- insurance
- route, capacities, locations, receipt and delivery points
- in the case of local distribution, boundaries, exclusivity period
- minimum programme of coverage in the geographic zone.
- other information.

This information will be refined and updated as the bidding procedure moves through the various stages of shortlisting, tendering and final granting of licences.

At the outset there should be a system of public notices that keeps the industry informed as to what applications have been received, asking for further bids if appropriate and also seeking objections and comments from interested parties (E.g. See Article 34 of the CRE Regulatory Law):

*"**Article 34.**- Public Notice*

When an application satisfies the relevant requirements, the Commission shall evaluate the application pursuant to the following article and shall publish within ten days a notice in the Official Gazette of the Federation that shall summarise the proposed project

shall provide a two-month period to receive other applications, objections. or comments related to such projects.

This notice shall not delay processing of the initial application."

Key aspects in the detailed bidding and licence award procedure should include the following:

- Obligations of licensees
- Rights and obligations with respect to land
- Geographical territory
- Length of Exclusivity and any restrictions
- Applications/ review/ bidding/ evaluation/ granting of licences
- Transfer of licences, early termination etc.
- Bidding for licences once exclusivity periods have expired

6. SERVICE CONDITIONS

6.1 Definition of services

There have to be proper definitions of the main services to be provided.

There are many examples of definitions of terms such as transportation or trading. For example, one can refer to the CRE Regulatory Law or the draft Polish Energy Law:

CRE:

*"**Article 59.**- Nature of Transportation Service*

Transportation service includes the receipt of gas by the transporter at a point on the transportation system and the delivery of a similar amount at a different point of the system."

or Article 4 of the Polish Energy Law:

***"transmission** - the transport of fuels and energy by means of a grid;*
***grid** - interconnected and co-operating installations used to transmit or distribute energy or fuels, constituting the property of the energy enterprises"* .

At a more detailed level, the Gas Law should make reference to the physical conditions of service including reliability, pressure etc..

Finally, the regulations or future detailed conditions of service need to be referenced in the Gas Law. For example, codes of practice for dealing with metering, disabled or elderly people, illegally taken supplies, restoration of supplies without consent, failure of notify disconnection of meters, alteration of burners, improper use of gas, gas escapes, powers of entry to premises. A suggestion is made on how some of these could be incorporated in a simple way into lower level regulations in Annex 1 of the "Gas Regulatory Framework".

6.2 General Conditions

Certain general conditions for the licences must be approved by Regulatory Authority (e.g. rates, terms, detailed conditions for access, dispute resolution).

These vary widely from country to country. Probably the most helpful example comes from Poland, although this of course covers heat and electricity as well as gas and there is also a different institutional structure within the government:

"Art. 46

Energy enterprises are obliged, within enterprise accounts plans, to keep accounts in such a manner as to enable a calculation of their fixed costs, variable costs and revenues, separately for production, transmission and distribution, for each kind of fuels or energy, and also with respect to particular tariffs.

Art. 47

1. Tariffs for gaseous fuels, electric energy and heat and gaseous fuels, as referred to in [Articles ... and ....] [which says that Energy enterprises generating electric energy or heat are obliged to maintain reserves of fuel in an amount sufficient to ensure the continuity of electric energy or heat supply to customers], should ensure:

1) covering justified costs of energy enterprises' operation in the field of production, transformation. storage, transmission, distribution or trade of fuels and energy and the costs of modernisation, development and environmental protection, and

2) protecting customers from an unjustified level of prices.

2. The tariffs for gaseous fuels electric energy and heat referred to in section 1 may include the costs of co-financing projects and services by energy enterprises whose purpose is to reduce energy and fuel consumption by customers and which

provide an economically justified alternative for the construction of new sources of energy and the grid.

3. *The tariffs for gaseous fuels, electric energy and heat referred to in section 1 may include the cost to energy enterprises of co-financing undertakings related to the development of a non-conventional energy sector.*

4. *Energy enterprises shall set different tariffs for gaseous fuels, electric energy and heat referred to in section 1 for different groups of customers, exclusively on the basis of the justified costs of providing the services, unless regulations provide otherwise.*

Art. 48

The Minister of Industry and Trade, with respect to gaseous fuels and electric energy and the Minister of Physical Planning and Construction, with respect to heat, in co-ordination with the Minister of Finance, after having consulted with the relevant regulatory bodies, shall specify, by way of an ordinance, detailed terms for the formulation and calculation of tariffs and shall specify their terms of payment in the trade of gaseous fuels, electric energy and heat.

Art. 49

1. *Energy enterprises possessing a license, shall determine tariffs for gaseous fuels and electric energy and heat, which are subject to the approval of Version the Energy Regulatory Authority.*

2. *The Energy Regulatory Authority shall approve the tariff or refuse to approve it within 30 days, if it is found to be inconsistent with the principles and provisions referred to in Arts. 47 and 48.*

3. *Energy enterprises are obliged to publish at their own expense the tariffs of gaseous fuels and electric energy and heat in the Energy Regulatory Authority Bulletin.*

4. *The tariff may not be in force earlier than 14 days after its publication.*

Art. 50

The Energy Regulatory Authority may exempt an energy enterprise from the obligation to submit tariffs for approval if it decides that the enterprise operates on a competitive market, or it may withdraw the exemption in the event that conditions justifying the exemption no longer exist.

Art. 51

In those matters not regulated by this Chapter, the provisions of the Act referred to in Art. 33 sec. 4 shall apply where appropriate. [This states that the foreign trade in fuels or electric energy requires that a licence and permit be obtained from the Minister of Foreign Economic Co-operation in co-ordination with the Minister of Industry and Trade]".

6.3 Non-discriminatory/ Open access/ Third Party Access to Pipelines

A key economic issue is how to draw up suitable legislation to regulate the pipelines in Kazakhstan, which are natural monopolies. Although it is felt that very simple rules will need to be written, in order for the Kazak authorities to gain a better feel for possible solutions.

Third Party Access (TPA) is a problematic issue for many governments, who are naturally concerned about the degree to which there may (or may not be) reciprocity with neighbouring countries. Although not recommended, the compromise solution adopted in Poland is typical, where only companies operating and licensed in Poland are to enjoy a form of TPA.

Article 63 of the CRE Regulatory Law is a better starting point:

*"**Article 63.**- Open Access Obligation*

Permittees shall provide open access, not unduly discriminatory service on their systems in accordance with the following:

I *Not unduly discriminatory open access shall be limited to the permittees available capacity*

II *Available capacity. referenced in the preceding paragraph shall mean capacity not being used; and*

III *Not unduly discriminatory open access service shall only be available to users by contract with permittees, except as provided in Article 69.*

If a permittee with available capacity refuses service to a user or offers service unduly discriminatorily, the affected party may request the Commission's intervention. With respect to available capacity, the permittee shall file proof that capacity was not available when service was denied".

A definition of "non-discriminatory" will probably be required either in the Definitions of the Gas Law.

Aggrieved parties not offered what they believe to be spare capacity or who are offered unduly discriminatory terms should have the right to appeal to the Regulatory Authority. In turn the Regulatory Authority must have the authority to settle any such disputes and to impose and enforce appropriate penalties.

In this vein, an approach which may interest the Kazak authorities is the "UK Infrastructure Code", which was introduced in the UK in January 1996. The UK Gas Acts of 1986 and 1995 only cover the UK mainland, so the Regulatory Authority (Ofgas) has no jurisdiction over the major offshore gas pipelines. The government was concerned that the oil and gas companies who owned the infrastructure could form cartels that might hinder the development of new fields, and as a result developed the Infrastructure Code, which is also popularly known as the Offshore Code. The Infrastructure Code does not have the full force of law but as the Secretary of State for Energy already had the power to direct any company owning a pipeline in the UK including offshore to (a) accept a third party user onto that system under commercial terms that he can specify and/ or (b) to alter the capacity of that pipeline, the Infrastructure Code only needs to invoke those latent powers to be effective. The Infrastructure Code is not written in legal language nor does it contain all the statutory cross-references required for a full law or Statutory Instrument. It also has no dispute resolution provision. Nevertheless it is simple and generally regarded as effective.

The provisions relating to negotiated access are suggested as a possible model for Kazakhstan. The powers for a Government to be able to direct that commercial entities install additional capacity are unusual: the CRE type model is more common (see the paragraph on "Extensions to networks and service" which follows this section).

The Infrastructure Code says:

"The principle of non-discriminatory negotiated access should apply to all offshore infrastructure and onshore terminals.

This means the following:

(a) Relevant infrastructure owners should be obliged to consider all bona fide requests for the use of capacity without favour of any particular company or client, including any company in which the owner has an interest, and should negotiate in good faith to endeavour to reach timely agreement with the party requesting capacity.

(b) However, owners may take account of the following factors in the course of the negotiations, which may ultimately need to be justified to the DTI in the event of a dispute:

(i) all existing contractual commitments must be honoured - an environment in which contracts which were freely entered into are respected is essential for business;

(ii) owners are entitled to make reasonable provision of future capacity for their own use. In Annex B to this Code (the definitions section) "reasonable" is defined by example.

(iii) sterilising capacity to provide other services within the system (in addition to the capacity actually requested) as a result of accepting the particular request for service.

Examples would be:

- *where taking in a small field could reduce the usage to the extent that a current negotiation with a large field could not be completed;*
- *in circumstances where a particular small field consumes all of the, say, de-propanising capacity at an oil treating facility thus preventing the use of upstream capacity which would otherwise be available;*
- *where a sour gas field would, by coming in, preclude the owners from a future opportunity to operate the system sweet.*

These considerations would be the subject of a thorough technical review by the owners which should be discussed with the prospective user and must not be used as an excuse for refusal to discuss doing business or of providing separate services.

(iv) The infrastructure owner, in deciding whether to and the extent of making capacity available, can take into account the effect on existing users. For instance, accommodating a new user may cause compression suction pressure to rise which would have a material detrimental impact on the deliverability of the existing fields.

(c) Where capacity is not available within the existing infrastructure and the owner does not wish to incur directly the additional investment costs involved, the owner is expected to provide the incremental capacity and it is the responsibility of the user to fund such investment including compensation for those costs and exposures (including an appropriate return on existing capital) agreed by the owner and user in line with normal industry practice, for example:

(i) costs required to leave the infrastructure capable of performing the same services (but not better) as it was prior to the addition of the incremental capacity; and

(ii) any additional decommissioning liabilities.

(iii) the cost of studies undertaken by the infrastructure owner in defining the scope of modifications required to make incremental capacity available.

(d) The requests of all potential users shall be considered on a non-discriminatory basis. This means that where potential users are competing for capacity (and neither wish to invest in expanding the capacity of the system) the owners should make the capacity available to those users which offer the best deal for the owners, taking due account of any risk and fiscal considerations, and the timing by which the prospective users can enter into a binding commitment."

The Infrastructure Code then goes on to lay down more detailed provisions for the special case of onshore gas terminals, for example:

"There are some particular requirements regarding non-discriminatory access to onshore gas terminals. The development of the onshore trading environment makes absolute the requirement that terminals provide a timely and non-discriminatory service to users of such facilities. Contractual arrangements at terminals should be transparent to buyers and sellers using such facilities providing such transparency does not breach confidentiality restrictions. This requires terminal operators making available on request to all potential bona fide users full details of allocation procedures in place. Infrastructure systems should operate on the principle of clearly specified priorities which are known to all users of the system. A system of "equal priority" where applied should also involve the principle of "equal misery" in the case of partial system constraints. It is recognised that existing contracts or capacity constraints may mean that a new user cannot be granted equal priority to existing users of such facilities".

6.4 Extensions to networks and service

There should be a general requirement on transporters and distributors in the national interest to extend their services provided this is economically, for the reasons explained in the "Gas Regulatory Framework". This topic has a degree of political sensitivity in Kazakhstan and regulatory provisions must not be relied on by the government to promote unrealistic schemes.

The following extract from the CRE Regulatory Law is a typical requirement for distributors (and a parallel article covers transporters) who have exclusive rights to provide services in a certain territory.

"CRE Regulatory Law Article 65.

Extensions and Expansions

Distributors shall extend and expand their systems within their geographic zones at the request of a non-permittee party, provided that such service is economically viable.

Transporters shall extend and expand their systems at the request of a parry, provided that:

I The service is economically viable; or,

II The cost of pipelines and other facilities incurred in such extension and expansion is resolved by agreement.

The term to perform the extension or expansion by the permittee shall be agreed upon by the parties."

6.5 Unbundling

There is a need for arm's length management and separation of accounts as part of the unbundling requirement explained in the "Gas Regulatory Framework". There should be separate accounting systems for gas trading, transportation and distribution activities in such a way as to identify all sources and uses of funds. The Regulatory Authority should have the power to issue directives on how these separate activities are to be managed.

E.g. see Articles 66 and 67 of the CRE Regulatory Law:

*"**Article 66.-** Unbundling of Services*

Permittees that offer more than one class of service under this Regulation, shall separate every service without conditioning one on the other or on the purchase of gas, separating in the relevant invoice the purchase price and - rates for each service offered pursuant to directives issued by the Commission

***Article 67.-** Prohibition of Cross Subsidies*

Permittees shall not, directly or indirectly, subsidise the provision of service with rates for other service or for the marketing of gas. or subsidise the marketing of gas with rates for other service

Permittees shall inform the Commission on the terms and conditions of their marketing operations pursuant to article 108 [information requirements]"

6.6 Health, Safety and Environment (HSE) - systems, reporting, training, emergencies

The Gas Law should make clear that licensees have a number of clear obligations to maintain a quality assurance system for HSE matters and emergency response procedures including reporting to the relevant authorities of any cases of emergency.

6.7 Interruption of Supply and Consequences

Although larger customers may have negotiated interruptible supply contracts with the gas companies, gas supply is a service and interruption to smaller customers can be dangerous. The Gas Law ought briefly to mention that the Regulatory Authority can impose penalties out with any contractual remedies for failure in this regard.

6.8 Claims and Complaints

One of the main reasons for introducing a Regulatory Authority is to protect the interests of consumers. However there must be certain rights for the gas companies to disconnect supplies in the event of non-payment or other non-compliance with the standards terms and conditions. The Regulator needs to be in a position to settle these types of dispute.

7. COMPETITION/ PRICES

7.1 Tariffs and Prices

The Regulatory Authority should be given the powers to determine the procedures for rate setting for elements of service.

For example, see Articles 81 to 83 of the CRE Regulatory Law. In fact Article 82 has been interpreted as implying adherence to price-capping mechanisms - which was not the original intention - whereas incentivised rate-of-return regulation is generally preferred for transmission (see "Regulatory Tools" below).

*"**Article 81.**- Methodology for the Calculation of Rates*

The Commission shall issue, by directives, the methodology for the calculation of initial rates and for their adjustment.

The methodology shall allow those permittees that use their resources rationally in the case of initial rates and those efficient permittees in the case of adjustments to rates, to obtain sufficient revenue to recover operation and maintenance costs, taxes, and depreciation applicable to the service, and a reasonable return on investment.

The application of this methodology shall nor guarantee the recovery of revenue, costs. or returns by the permittee.

Such methodology shall not be required when workably competitive conditions that according to the Federal Competition Commission. Permittees may request the Federal Competition Commission to declare that workably competitive conditions exist.

***Article 82.-** Maximum Rates*

Rates for the provision of transportation, storage, and distribution services shall be maximum rates.

Parties may freely agree upon a rate for a particular service different from the maximum rate, provided that the agreed upon rate is not lower than the variable cost of providing the service as established in conformance with the methodology referred to in the previous article. Permittees shall not condition the provision of service on the establishment of agreed upon rates.

The Commission shall assure that the rates facilitate reliable, safe, and quality service to all users.

***Article 83.-** Unduly Discriminatory Rates*

Rates shall not be unduly discriminatory or be conditioned on the provision of other services."

We would however not advocate splitting the rates up into commodity and capacity charges, as in Article 84, at this point.

There should be some wording on adjustments (as in the CRE Article 86) and reviews (CRE Article 87).

In view of present pricing policies in the country, the Kazak authorities also might like to consider the implications of including a provision like Article 89 (Government subsidies).

*"**Article 89.-** Government Subsidies*

Granting of government subsidies through rates shall only occur by provisions issued by the relevant authorities and shall be paid with resources allocated by such authorities for such purposes.

Such subsidies shall not have an impact on permittees' revenues or be a cost to them. Their application shall be transparent and fully disclosed in rates charged."

It is recommended that any such subsidy should be paid explicitly through the national budget to the entities concerned. In any event the amounts should be transparent and fully disclosed in rates submitted to the Regulatory Authority and subsequently charged.

Retail gas prices also need to be transparent and published on schedules. Articles 90, 91 of the CRE Regulatory Law provide a basis for discussion but the present system in Kazakhstan is more complicated than this. Articles 92 and 93 deal with publishing price information and verification of costs:

*"**Article 90.-** Price*

The price charged by distributors to the final user shall be composed of

I The acquisition price of gas;
II Transportation rate,
III Storage rate; and.
IV Distribution rate.

In accordance with the directives by issued by the Commission, the parties may freely agree upon a different price for the preceding components provided that it is not unduly discriminatory. Such price shall not be lower than the variable cost of providing the service as established in directives issued by the Commission.

In the charge to final user, distributors shall state separately the acquisition price of the gas at the point or points of receipt by the distributor and the distribution rate.

***Article 91.-** Price and Rate Changes*

Distributors may charge final users any changes in the acquisition price of gas and the transportation and storage rates, according the general conditions for the provision of distribution services.

The Commission shall issue directives on the methodology to be used by distributors when estimating acquisition prices of gas and on the procedures for charging final users.

Article 92.- *Price Verification*

The Commission. on its own initiative or at the request of a party. may verify acquisition prices of gas charged to final users during a six month period preceding the initiation of such verification.

This verification shall include at least a review of the acquisition prices of gas reported by the distributor. the cost and terms and conditions of viable supply alternatives to the distributor, and the acquisition prices of gas charged by other distributors to other final users.

If the Commission determines that the prices charged are excessive, the distributor shall credit to the final users an amount equal to that portion of the price determined to be excessive.

Article 93- *Price Information*

Distributors shall periodically report to the Commission their prices for and terms and conditions of the acquisition of gas and their prices charged to final users.

The Commission may publish the prices charged to final users."

7.2 Abuse of dominant market position

The Kazak authorities may like to note the provisions written into the Public Gas Suppliers' licences in the UK (1995):

"***Condition 13: Undue discrimination and undue preference***

(1) Subject to paragraphs (2), (7) and (9) below, if the licensee, together with any of its affiliated or related companies operating in the same market, is in a dominant position in a market for the supply of gas to customers at premises, then the licensee, in the terms on which it supplies or offers to supply gas to customers in that market

(a) shall not show undue preference to any person or class of persons, and
(b) shall not exercise any undue discrimination against any person or class of persons

and shall not set prices for the supply of gas to customers at premises

(c) in any market or markets in which it has a dominant position which are unduly onerous, or

(d) in any market or markets, which are predatory.

(2) Paragraph (1) shall not prevent the licensee from supplying or offering to supply gas to all of, or any class of, customers in an area on terms which are reasonably necessary to meet established competition in relation to such customers, provided that the licensee:

(a) does not set terms in respect of the customers in question which:
(i) are predatory, or
(ii) show undue preference or unduly discriminate as between any such customers, and

(b) does not set terms in respect of the supply of gas at premises to customers of any other class or in any other area in relation to which the licensee has a dominant position, which are unduly onerous.

(3) For the purposes of paragraphs (1) and (2),

(a) terms shall be taken to be predatory if but only

(i) charges in accordance with those terms do not cover such avoidable costs as, in the opinion of the Director [of the Regulatory Authority], they ought reasonably to cover, and
(ii) the terms are made available for the purposes of, or are likely to have the effect of, unfairly excluding or limiting competition between the licensee and one or more other gas suppliers.

(b) terms in respect of particular customers shall be taken to be unduly onerous if the revenue from supply on those terms

(i) significantly exceeds costs in respect of those customers, and
(ii) exceeds such costs by significantly more than in the case of the generality of customers supplied with gas at premises by the licensee save for those in any market which is by virtue of paragraph (8) considered to be a separate market,

but, unless the converse is manifestly the case, terms shall not be taken to be unduly onerous if other gas suppliers licensed to supply gas to customers at the premises in question are only willing to do so on more onerous terms, having regard to the costs of market entry they have incurred or would thereby incur.

(4) In determining which customers constitute a class for the purposes of paragraph (2), due regard shall be had to all the circumstances of supply (including, in particular, volumes, load factors, conditions of interruptibility, location of premises being supplied, date, duration and terms of agreement).

(5) Any question arising under this condition as to whether a particular supplier (whether alone or together with any of its affiliated or related companies operating in the same markets) is in a dominant position in a market shall be determined by the Director [of the Regulatory Authority], having regard to any representations made to him.

(6) In this condition

"area" means the whole of Great Britain or, in relation to the application of this condition to the supply of gas to domestic-customers, either the whole of Great Britain or an area forming a part of Great Britain and containing no less than 100,000 such customers;

"avoidable costs" means those costs which would not be incurred by the licensee if he did not supply the customers in question, including (but with due regard to the timing thereof) all relevant future outlays affected by the decision to supply;

"terms" means all the terms on which a supply of gas is provided or offered, whether as respects charges, methods of payment or otherwise.

(7) Nothing in this condition shall apply to the supply of gas on terms determined pursuant to any scheme made by the licensee pursuant to [paragraph 8 of Schedule 2B of the Gas Act].

(8) for the purpose of this condition, any market for the supply of gas to domestic customers shall be considered to be a separate market from any market for the supply of gas to non-domestic customers.

(9) This condition shall not apply to the pricing policy of the licensee if such policy is determined hereunder to be in the public interest.

(10) The pricing policy shall be deemed to be in the public interest if

(a) the licensee delivers to the Director [of the Regulatory Authority] a written request ("public interest request") made in accordance with paragraph (11) and the Director agrees in writing to the public interest request; or

(b) its public interest request has effect by notice given by the licensee in accordance with either paragraph (12) or paragraph (13).

(11) Any public interest request shall be in writing, addressed to the Director [of the Regulatory Authority] and shall contain a statement of the licensee's pricing policy and shall state the date ("disapplication date") from which the licensee wishes the Director to agree that this condition shall cease to have effect in relation to the pricing policy, but the disapplication date therein stated shall not be before whichever is the later of 1st April 1999 and any date which is less than 9 months after the date upon which the public interest request is delivered to the Director.

(12) If the Director [of the Regulatory Authority] has not made a reference to the Monopolies Commission under section 24(1) of the Act relating to the pricing policy specified in the public interest request before the beginning of the period of 6 months which will end with the disapplication date, the licensee may deliver written notice to the Director terminating the application of this condition to the pricing policy with effect from the disapplication date or a later date.

(13) If the Monopolies Commission makes a report on a reference made by the Director [of the Regulatory Authority] relating to the pricing policy specified in the public interest request after the request and such report does not include a conclusion that the licensee's pricing policy operates, or may be expected to operate, against the public interest the licensee may within 30 days after the receipt of the report by the Director deliver to him written notice terminating the application of this condition to the pricing policy with effect from the disapplication date or a later date.

(14) In this condition, the "pricing policy" means the principles governing terms of supply to all domestic customers in such an area as may be specified by the licensee in its public interest request."

7.3 Cross subsidies

The Gas Law should lay down that no other service should be allowed to subsidise gas marketing and vice versa (Article 67 of the CRE Regulatory Law provides a reasonable starting point):

*"**Article 67.-** Prohibition of Cross Subsidies*

Permittees shall not, directly or indirectly, subsidise the provision of service with rates for other service or for the marketing of gas. or subsidise the marketing of gas with rates for other service

Permittees shall inform the Commission on the terms and conditions of their marketing operations pursuant to article 108 [information requirements]."

7.4 Regulatory Tools

It is recommended that the Regulatory Authority be able to use whatever regulatory tools are considered appropriate at the time rather than be forced under the Gas Law only to use a particular type of regulation.

For example, rate of return regulation with some incentives for retaining profit from genuine savings (subject to maintaining quality of service) is normally considered to be

more effective than cost plus regulation for transportation but there are circumstances where other approaches have worked well.

This is an open issue and hotly debated in many countries. The problem is that situations change and what might be appropriate in a given country one year may turn out to be unrealistic the next year, or to have missed some important activity of the regulated companies or the evolving politics of the gas industry.

In this context, it may be helpful to quote from a 1993 ESMAP report, which explains some of the different approaches in a simple way:

> "The principle object of the regulator will be some form of price control. However, the regulator will not have enough information to know exactly what the price should be. Knowledge of the profit level will not be adequate because managers can conceal over-high prices by inflating their costs by, for example. paying themselves and their staff larger salaries, increasing staff benefits, and so on.
>
> One method of price control is through "cost of service" or "rate of return" regulation. This allows firms to set prices, which for their given costs yield a specified return on investment capital. The parties can determine together acceptable levels of costs, the value of capital assets, and the appropriate rate of return. This system ensures the financial viability of the regulated firm. The main disadvantage of this approach is that it offers little incentive to the firm to cut its costs because any such gains are retained by the firm only for a short period, depending on the length of the regulatory review. It also encourages overcapitalisation because i.e. is only by increasing the capital base that a greater total profit can be justified in the long run.
>
> The alternative method of regulation removes the dependence of prices on costs and the size of assets by imposing a "cap" on prices. This gives the firm every incentive to innovate and to improve efficiency because it can retain the profits. The difficulty with this method is to choose a price cap that will allow the firm to earn normal, but not excess, profits. Changing circumstances also need to be taken into account. This can be allowed for by permitting the price cap to change in line with the cost of certain pre-specified items. In the context of the transport and distribution companies price caps should be adjusted in line with the general level of retail prices and changes in the input cost of gas. It is also necessary to periodically review and adjust the price cap on the basis of identifiable costs, which will inevitably involve consideration of the rate of return. Hence the price cap has some of the elements or "rate of return" regulation with a longer (and pre-specified) regulatory lag, which might be every three or five years under normal circumstances.

In the case of distribution companies, once they have been established as separate private entities, it would be possible to use "yardstick" competition (i.e., each firm would be required to match the achievements of the rest of the industry).

It is important for the regulatory body also to preserve the quality of service. Firms subject to price cap regulation have a natural tendency to lower unit costs by lowering the quality of service (since they cannot benefit from improved services by raising prices to the levels that consumers would be willing to pay), to increase profits. The regulatory authority must be able to monitor various aspects of service (e.g., the speed of connection. the number of customer complaints) and must have the power to "punish" the firm through adjustments to the price cap if there is a marked deterioration in the quality of service."

8. ENFORCEMENT

As stated in the "Gas Regulatory Framework", "effective and timely enforcement is an essential part of effective regulation. This will require two distinct types of provisions:

- powers to monitor compliance;
- effective penalties in the event of non compliance".

8.1 Information required by Regulator

Annex VI-3 contains a list of information typically required by a Regulator. It is recommended that a list like this is included in the Gas Law. In addition, there is a variety of different types of information required at various stages during the procedure for application for licences.

An example is to be found in the CRE Regulatory Law:

*"**Article 108.**- Information Requirements*

The Commission may require that [The State Gas Company], gas importers and exporters, and permittees provide adequate and sufficient information established by directives with respect to:

I. First-hand sales;

II Prices and rates:

III *Volumes of sales other than first-hand sales:*

IV *Volumes of gas transmitted and stored;*

V *Corporate, accounting, and financial information:*

VI *Information on contracts executed by permittees with respect to the provision of services;*

VII *Circumstances that adversely affect or may adversely affect the provision of service;*

VIII *Capacity of systems and allocation of capacity;*

IX. *Maintenance and safety programs;*

X. *Other obligations established in this Regulation, official Mexican standards, and directives; and,*

XI. *Any other matters considered necessary by the Commission."*

8.2 Penalties

The second aspect is that the Regulatory Authority must be seen not only to be independent but also to have power. One obvious aspect of this is the statutory right to exact effective penalties without reference to the courts or a line Ministry for endorsement.

The Gas Law can easily list possible types of infringements and a schedule of penalties. Below are recent examples of how this could be done, taken from both the Mexican and Polish Energy regulations:

"CRE Article 105.- *Punishable Conduct*

Any violation of the provisions of this Regulation shall be punished administratively by the Commission, taking into consideration the severity of the failure, pursuant to the following:

I *Failure to submit information required by the Commission pursuant to article 108 and failure to comply with provisions of articles ... shall be punished with a fine from one thousand to twenty five times the minimum wage;*

II *Failure to comply with provisions of articles ... shall be punished with a fine from one thousand to fifty thousand times the minimum wage:*

III. Failure to comply with provisions of articles ... shall be punished with a fine from one thousand to one hundred thousand times the minimum wage; and.

IV Performance of gas transportation, storage, and distribution activities without a relevant permit previously granted by the Commission, as well as the Interruption of transportation, storage, and distribution services for causes different from those referred to in [the relevant] article, shall be punished with a fine from twenty five thousand to one hundred thousand times the minimum wage.

For purposes of this chapter, the minimum wage shall be the minimum daily wage in effect In the Federal District at the time a violation occurs.

***Article 106.-** Civil or Criminal Liability*

All penalties established in this chapter shall be applied without prejudice to any civil or criminal liability that may arise and, if applicable, to revocation of the permit."

or the Polish law:

"Fines

Art. 57

1. Whoever:

1) does not fulfil the requirements provided under regulations issued pursuant to [Article S] of the Act which arise from co-operation with the units authorised to dispatch electric energy and gaseous fuels,

2) does not fulfil the requirement to maintain reserves of fuel, provided for under [Article ...] of the Act,

3) does not comply with the limitations in the supply of fuels and energy, provided for under [Article ...] of the Act,

4) refuses to enter into a contract with a customer for unjustified reasons,

5) sets prices without observing the obligation to submit the tariff to the regulatory bodies and the obligation to publish the tariffs, referred to in [Articles ...],

6) charges fees higher than those formulated and approved in tariffs,

7) refuses to disclose information required according to this Act,

8) keeps accounts contrary to the principles set forth in [Article ...],

9) employs persons who do not possess the qualifications required by the Act,

10) does not maintain the facilities, installations, and equipment in a proper technical condition,

11) introduces onto the domestic market equipment which does not conform with the requirements set forth in [Article Y],

12) does not fulfil the requirements provided for in the license, or

13) implements actions with regard to heat supply contrary to the heat supply plan, referred to in [Article Z]

shall be subject to a fine.

2. The fine referred to in section 1 shall be implemented by the regulatory body.

3. The fine referred to in section 1 must not exceed 15% of the revenues of the fined economic entity obtained in the previous tax year.

4. Such fine shall be paid from income after taxation or from another form of surplus of income over expenses less taxes and shall be made to the relevant treasury office account.

5. Irrespective of the fine determined in sec. 3 and 4 the Energy Regulatory Authority may impose a fine on the manager of an economic entity, but such a fine may not exceed 300% of his monthly remuneration"

Appendix 5.7
Environmental and Safety Issues

Environmental and Safety Regulations in Kazakhstan

1. Kazakhstan has set regulations and standards governing environmental quality and protection of natural resources which are part of the Kazakhstan Law on Environmental Protection (1991). The gas sector is still regulated by many norms established under the former Soviet environmental regulation system. The process of obtaining environmental approval and licenses is set out in the Regulations on State Ecological Examination (1991). In effect, the procedure for ecological examination is contained in the Code of the Republic of Kazakhstan on Mineral Resources and Raw Materials Processing (1992). The state ecological examination follows from the previous law on Environmental Protection in Kazak SSR (1991). The relevant implementing regulations are still under development. The Kazak Supreme Soviet has recently adopted a Law on Ecological Expert Review which formalizes the Environmental Impact Assessment process in line with international standards.

2. The major applicable laws include:

Table 1: Major Environmental Laws

Laws	Remarks
Law on Environmental Protection Kazak SSR (1991);	This is the main environmental protection law and the law establishes state ownership of the natural resources. The law sets out a legislated environmental assessment process.
Law on Land Code in Kazakhstan SSR (1990)	The law regulates land use activities.
Law on protection, Reproduction and Utilization of Fauna (1993)	The law is to ensure efficient protection, reproduction and utilization of fauna (wildlife).
Law of Forest Code in Republic of Kazakhstan (1993)	The law is for regulation and management of forest land to protect and maintain forest productivity.
Law on Water Code of the Republic of Kazakhstan (1993)	The law is to regulate water for domestic industrial use, and environmental requirements.
Law on code of the Republic of Kazakhstan on Mineral Resources and Their Processing (1992)	The law is to ensure the efficient conservation of mineral resources, covering types of use, obligations of users, state administrative bodies, taxation, application procedures, processing and safety.

3. Many of the standards and norms established under the former Soviet environmental regulatory system are still applicable for the gas sector. The procedure for environmental and safety evaluation or state ecological examination of the gas industry is

legislated by the Code of Republic of Kazakhstan on Mineral Resources (1992). The state ecological examination follows the previous Law on Environmental protection in Kazakhstan SSR (1991). The state departments with control over the development of gas resources, environmental protection, safety, public health and administration are:

- Ministry of Ecology and Biological Resources;
- Ministry of Geology and Mineral Resources Preservation;
- State Committee for Supervision of Safety Execution of Work in Industry; and
- Ministry of Public Health.

Present Issues and Suggestions

4. As listed above, sector oriented regulations and standards are in place as well as a regime for the issue of permits and the execution of inspections and controls. In practice, however, the technical integrity and the operation of the gas infrastructure is at far from an internationally acceptable level.

5. The observation of internationally recognized safety, health and environmental guidelines and standards would be critical in attracting potential international investors/financiers. A real concern to investors would be the existing elusiveness of responsibilities for quality control and operating performance at various levels of the gas sector (e.g. material manufacturers, equipment manufacturers, construction contractors, etc.) and supervision/inspection responsibility by various government agencies, contractors and owners. Despite various decrees related to safety and environmental issues, enforcement capacity is very weak. Therefore, the future direction should be targeted at not only establishing a systematic regulatory framework but also at building enforcement capacity.

6. Natural gas is an environmentally friendly fuel as gas can significantly reduce environmental pollution and damage provided that gas is properly handled. Methane, a major component of natural gas is more harmful than carbon dioxide (CO_2). In fact, if the gas leakage is more than 5% of the total supply, it is hard to support the use of natural gas compared with coal firing. Therefore, it should be one of the major environmental targets for Kazakhstan to minimize gas leakage from gas transit and distribution systems and to capture flared or vented gas at oil/gas fields. In this connection, such protective measures as corrosion protection, leakage detection, etc. are important. Utilization of flared or vented gas should be enhanced for power generation, heating, etc. The Government should consider to provide fiscal incentives for such critical environmental protection projects.

7. The Karachaganak gas field and other western gas fields produce sour gas with a high percentage of hydrogen sulfur and/or sulfur compound (ex. mercaptan) yet there are suboptimal field gas processing facilities. Lack of proper gas processing facilities not only create environmental and safety issues but also economic/financial issues since the

life of the field facilities is shortened and the sales value of natural gas is substantially lowered. A high priority should be given to any projects which aim at installing appropriate treatment of sour gas.

8. Given financial constraints, safety consciousness in operations of the gas sector is low and compounded by the unsafe condition of deteriorated equipment and facilities. The provision of safety training and equipment has become sporadic and inadequate. One option for the Government and/or gas companies is to consider allocation of a certain percentage of capital investments in future gas-related projects for improvement of safety, health and environmental issues and earmark a portion of revenues for ongoing costs for monitoring and maintaining standards. Efforts of the Government should be directed toward emphasizing responsibility of the owners/operators in these areas, and monitoring the result.

9. Appropriate environmental and safety assessment would be mandatory for any gas-related projects from now on. Such assessment should address wide issues including: biological diversity; coastal and marine resources management (for those projects in the Caspian sea); cultural properties; hazardous and toxic materials; indigenous peoples; induced development and other socio-cultural aspects; industrial hazards; international treaties and agreements; inventory resettlement; land settlement; natural hazards; occupational health and safety; vegetation; and wild lands. Such assessment should include clear-cut recommendations on staff training and provision of environmental/safety equipment.

Coal to Gas Conversion

10. Switching to natural gas has the potential for reducing emissions of CO2, acid gas and particulate resulting from the use of poor quality coal. The difference in emission rates between a pulverized coal firing power station and a CCGT station is typically presented as follows:

Table 2: Emission Rates of Pulverized Coal Firing Power Station and CCGT Station
(Unit: gr/Kwh)

	Coal Firing Power Station	Gas Firing Station (CCGT)
Particulate	0.122	0
SO2	5.0 - 12.0[1]	0
Nox	3.12	1.0
CO2	850	400

11. The above implies that there is significant environmental benefits for the use of natural gas in place of coal and oil for power generation. This is especially true in the

[1] Depending on sulfur content of the coal.

case of Kazakhstan since Kazak coals contain a large parentage of ash and the reduction of particulate from power stations by switching from coal to natural gas would also be considerable. Therefore, planning of any new thermal power stations from now on should take such environmental benefits into account in a quantitative manner. Typical abatement costs in the US are presented below:

Table 3: Typical Abatement Costs

(US$ per ton)

Particulate	SO2	NOx	CO2
3000 -5000	4060	1640	13.6 (10 -20)

Source: Pace University

US abatement costs could be higher than those in Kazakhstan but provide conservative upper-bound estimates of pollution control costs.

Government Options for Dealing with Enterprise-related Environmental Problems in Privatization

12. As a rapid privatization process is ongoing in the gas sector, the Government would need to create a strategy on managing the environmental liability concerns of investors. In principle, there are four options:

a) liability for past pollution is passed on to the new private owner, but prices are adjusted accordingly;
b) liability for past pollution is passed on to the new private owner, but part of the purchase price is set aside to reimburse the owner for cleanups;
c) liability for past pollution is retained by the Government through the use of indemnification and releases; and
d) costs of cleaning up past pollution are shared between the government and the new private owner.

13. The environmental concerns raised by outside investors would require case-by-case negotiations. Therefore, the Government could benefit from using a variety of options, depending on the particular situation. Where past contamination poses significant hazards to human health, urgent clean-up action may be necessary. However, too much focus on rapid clean-up can tie up considerable legal, technical and administrative resources and could yield disappointing results. In order to avoid unnecessary waste, it might be advisable to take rapid clean-up out of privatization as far as possible and to use indemnification instead to address liability concerns in privatization. In the case of the gas sector, clean-up of the past might be best addressed steadily over a number of years, so that the Government can give sufficient attention to the economic and environment priorities of the present.

Appendix 5.8
Current Gas Pricing Procedures

Review of Current Tariffs

1. The State Anti-Monopoly Committee is moving ahead with revisions of the tariffs for gas transmission and distribution. Retail prices in 1996 have come closer to real costs, inter alia, because the previous discount of 35% on prices for heating has been abolished[1]. Apart from a few directly negotiated contracts with power companies, the tariff within an oblast is now equal for power, industry, households (both cooking and heating), commerce, schools, hospitals, etc. The current tariffs as given by the Committee are shown in Table-1.

Table 1 Purchasing, Transmission, Distribution and Selling Prices as of I. Quarter, 1997. Tenge/1000 CM.

OBLAST	PURCHASING PRICE	TRANSMISSION TARIFF	DISTRIBUTION TARIFF	SELLING PRICE
Almaty	2260	440	420	3120
Atyrau	1836	217	314	2367
Aktyubinsk	2083	217	220	2520
Zhambyl	2260	440	420	3120
Aktau	2238	217	58	2513
Mangystau	2225	217	311	2782
Kostanai	2083	217	311	2611
West-Kaz.	1591	105	239	1935
South-Kaz.	2260	440	395	3095

2. The difference in retail prices from 1935 Tenge in West-Kazakhstan to more than 3100 per 1000 CM in Almaty/Zhambyl/South-Kazakhstan is mainly explained by the difference of 700 Tenge/1000 CM between the stated purchasing prices in the South (which should be equal to the price for imported gas) and in the West/North (which is the price charged by the local production companies). While the purchasing price of local gas has been unchanged throughout 1996, the price for imported gas increased from 1300-1400 Tenge/1000 CM in Zhambyl and Almaty in the beginning of 1996 to a current 2260 Tenge/1000 CM. But nevertheless, the stated

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Until this year the gas for heating was sold at 65% of the price for cooking.

And gas for power stations and industry was sold at even higher prices than that for cooking.

price for imported gas is still below the real import price which is said to be USD 40/1000 CM (2800 Tenge). Thus, the real costs of import in the South is not reflected in the tariff. As it is now, it seems like the comparatively high transmission and distribution tariffs subsidize the loss on the import price. On the other hand, however, the purchasing price of local gas in West-Kazakhstan and Atyrau (about 1600 Tenge/1000 CM) is comfortably higher than the production costs per 1000 CM which is estimated at about 1000 Tenge/1000 CM in Karachaganak, Tengis and Zhanasol.

3. Retail prices for power in Almaty are the highest in the country, but are only about 60 % of comparable prices for electricity imported from Kyrgizstan. Gas based power for the southern area is much less expensive than coal fired power plants. Thus, if opportunity cost is used for pricing in the contract market, there would be room for price increases. The social implications of this need to be carefully considered.

4. As seen from the table the transmission and distribution tariffs are considerably higher in the South than in the rest of the country. The distribution tariffs in Almaty and Zhambyl have nearly doubled during the year, and considerable price increases have also taken place in Mangystau, Kostanai and Aktyubinsk. There has been no change in the transmission tariff this year.

Current Price Setting Procedure

5. The Committee sets prices for transmission and distribution of gas based on "cost-plus profit" tables submitted to it by the gas companies. Profit margins of 30 and 35% for transmission and distribution respectively are included in the tables. Such cost tables are shown in Appendix I. By comparing these tables with tariffs, it appears that the 1995 cost figures are used as the basis for 1996 tariffs. Alaugas submitted tables for expected transmission costs in 1996 which are 50% higher than the tariffs set by the Committee, but these figures have not been reflected in the tariffs. The distribution tariffs in Aktau, Atyrau and West-Kazakhstan are equal to the costs-plus profit figures presented, while the tariffs in Kostanai, Mangystau and Aktubink are about 80 Tenge above such figures.

6. The cost tables show some interesting numbers. It is not possible to establish whether the cost tables provided by the gas companies reflect real costs, for example real depreciation of assets and the financial costs of working capital (in particular accounts receivable). According to the tables submitted to the Committee in 1995 which have been used as basis for tariff setting in 1996, depreciation varies considerably among the companies, i.e. from 5% to 11% of total direct expenses. At this level it is unlikely that the depreciation is based on up-to-date values for the assets, and hence the value of the various businesses will be declining. It will be necessary to include depreciation based on the present day values of the assets. The item *repair fund* (assumed to be maintenance) constitute as much as 21 to 32% of direct transmission costs. Own use of gas in transmission including losses is very high and varies considerably, from 46% of total direct expenses for Kazakgas to 32% for Alaugas. These high figures are comparable to the

high amounts of gas used for transport and losses as given in Section B of Chapter III, "Domestic Gas Demand". It is clearly an indication of a major source of inefficiency. What is not clear is whether the own use is the fuel used in compressors or is an indication of losses and measurement errors. The accounts of the transmission companies (and hence the cost tables for pricing purposes) are unreliable, in part because of changes in accounting practice. The unreliability is evidenced by contradictory figures supplied at various times. The problem for price setting is exacerbated by the separate activities of Kazakgas (production, transit, transmission for the Kazak market) and Alaugas (transmission, LPG) which need to be fully separated for price setting purposes.

Suggested Transmission Tariff Setting Procedure

7. As mentioned, the transmission tariffs have not been changed in 1996 and the price is 440 Tenge per 1000 CM in the South, and 217 Tenge in all other oblasts. Apart from this difference, which is equal to their overall costs as given in the tables, there is no differentiation by distance, and it is only charged for volumes transported (not specifically for capacity reserved). *It is recommended to employ distance-based tariffs to reflect true economic costs.*

8. As observed from the underlying cost tables for each "transmission company", their transmission costs vary considerably, i.e. between 104 Tenge/1000 CM in three Kazak gas companies to 440 Tenge/1000 CM in Alaugas and 580 Tenge/1000 CM in Aktyubinsk. Possibly the high transmission costs in Aktyubinsk is due to the fact that the volume of gas transported through the oblast to Kostanai has not been included in the unit cost calculation. If corrected for this, the transmission costs are reduced to 350 Tenge/1000CM. However, the transmission charge for use of each pipeline needs to be separated so that each pipeline company can be financially viable. Transmission of gas that goes through several pipelines would then be charged for each pipeline used.

Gas Distribution Costs

9. The distribution volumes and costs for Kazakgas distribution companies for 1995 is shown in Table VII-2. Figures for the distribution costs in the three Southern oblasts have not been made available yet.

Table 2: Distribution volumes and costs in Kazakgas distribution companies. IV. Quarter 1995

Aktau	Aktau	Aktyubinsk	Atyrau	Kostanai	Mangystau	West Kazakhstan
Mln. CM	429	249	102	445	39	161
Tenge/ 1000 CM	58	142	315	174	265	239

10. As seen from the table there is some correlation between high volumes and low unit distribution prices. But the variation in prices can equally be explained by the type of consumers served. In Aktau 99% of the consumers are enterprises, and there is no distribution to the population for heating. In Aktyubinsk and Kostanai about 70% of the consumption is for power. However, the high unit cost in Mangystau can possibly only be explained by the small volumes distributed since 98% of consumption is by enterprises.

11. The main cost item for the distribution companies is maintenance which in total accounts for nearly 40% of direct costs. The maintenance costs also vary considerably among the companies, i.e. from 0 in Aktau (which should be questioned because it in addition practically has no depreciation, which again should imply that the system is very old and needs high maintenance) to as much as 86% in Atyrau which has the highest distribution unit cost. No real analysis of the cost tables can be carried out unless it is done in close co-operation with the companies. However, there are so many peculiarities in the figures that they should not be accepted off hand by the Committee as a basis for tariff setting.

12. The Committee only monitors the purchasing price of gas from production companies/imports while it regulates (sets) the transmission and distribution price. Since it could be argued that it is the retail price to the consumers that matters to the Committee (which is mainly consumer oriented), it could be argued that the Committee should rather focus on the monitoring of the retail prices than on the transmission and distribution prices only. Moreover, it is the retail price to small and medium consumers that should be the main area of regulation since big consumers would be powerful enough to negotiate their price.

Gas Pricing Principles

13. Principles of gas pricing are described in Appendix 5.9. Based on these principles which, inter alia, form the basis for gas pricing in Western countries, it is recommended that the tariffs for gas are revised in stages as follows:

a) The present "cost-plus" concept is further developed based on better costing which also distinguishes between costs for different consumer groups and locations. Tariffs can then be established based on realistic costs for production, transmission and distribution,

b) Simultaneously calculations should be carried out to establish the market value of gas based on what can be charged and still be competitive with the cheapest alternative fuel in each market and for each consumer group,

c) The market value acts as a ceiling price. If the cost-based tariff exceeds market value, then the supply is no longer attractive to customers.

14. It should be stressed that the market value concept only indicates what can be charged as a maximum. Normally the tariff will then be between this maximum and the cost of supply, and initially with due consideration of social implications of price increases. The market value concept will be used at the policy and planning level to try to encourage use of gas where it has the highest value.

15. It is recommended that the tariffs for small consumers be simple, public and reflect the amount consumed. A relatively high fixed charge plus a charge for actual consumption would be normal. The fixed charge would cover the "per customer" costs including most system costs, and the consumption charge would cover cost of gas from the producer, use of compressors and storage, and other costs varying by volume. The tariff for larger consumers would have a proportionally smaller fixed charge. It is further recommended that proper metering of consumption be introduced as the basis for charging, focusing particularly on those who use large volumes and who might modify usage to respond to cost and price

16. The following important aspects should be included in the retail tariff design:

- the tariff should be based on an analysis of costs by consumer group, location and other factors, it should be structured to reflect these costs, and should be at a level that permits financial viability;

- the tariff should be open and public, and the rationale for pricing and differences in prices should be known to all participants. There should be no undue discrimination;

- the tariff should be simple and understandable to all consumers;

- the tariff level should make the supply of gas economically attractive to customers and reflect the general tendency of decreasing per-unit cost of service as consumption increases;

- the tariff should induce consumers to use gas in an efficient way;

- the overall package for consumers should contain incentives to encourage rapid gas market penetration. Such incentives could include initial selected rate rebates and measures to mitigate the customers' costs of conversion to gas.

17. Gas transit rates should be designed to ensure a reasonable return on investment. There are several calculation methodologies as specified in Appendix 5.9. The rate can be "unbundled" and include

- a demand rate to reserve capacity;

- a commodity rate for actual amount of gas transported;

- a rate for gas storage.

Depending on location, this tariff designed may be simplified by only having one demand and one commodity rate, or having one commodity rate for capacity, transport and storage.

18. Below it is indicated how the tariffs can be established based on costs for the pipeline from Bukhara to Almaty. These prices are compared to actual tariffs of today. It should be noted however that the cost figures used have not been checked properly against real costs and market values, and therefore only indicate steps to be taken, order of magnitude and direction.

The example is based on the following assumptions:

Import border price: US$ 40/1000 CM = 2800 Tenge (USD 35-40 has been indicated)

Distance Bukhara - Shimkent:	250 km (estimated from map)
Distance Bukhara - Almaty:	550 km
Transmission costs:	USD 1.5/1000CM/100 km (which could be regarded as maximum cost)
Market value of gas:	5300 Tenge/1000 CM (based on imported hydropower or coal fired power station)

Table 3: Cost-based Pricing of Gas and Market Value in Almaty and Shimkent. Tenge/1000 CM

Price	Almaty		Shimkent	
	"Cost-based"	Present Tariff	"Cost-based"	Present Tariff
Import	2800	2237	2800	2237
Transmission	580	440	260	440
Distribution	420	420	395	395
Selling	3800	3097	3455	3072
Market value	5300		5300	

Comments on the table:

- both the import price and the transmission tariff to Almaty are considerably higher than the present tariff, while the transmission tariff to Shimkent is almost double the costs. The "purchasing" price used by the Committee and the transmission tariff set by the Committee should be changed accordingly,

- Due the lack of cost figures for distribution in the South, the table assumes that the distribution tariff equals the cost. This may not be true. As pointed out earlier the distribution tariff in the South is much higher than for the rest of the country, which could imply that it covers real costs plus a profit margin,

- The estimated "cost-based" retail price in Almaty is 23% higher than the current tariff, while in Shimkent the difference is only 13%,

- The market value is 40-50% higher than the "cost-based" retail prices in the two locations. Thus, there is still room for achieving financial viability through substantial real price increases, which should be gradually implemented with due consideration of the social implications.

19. Price of gas for the largest customers would be negotiated, and would recognise cost implications for the supplier (for example, interruption, special load profile) and the market value of the alternative fuel. It is a matter of Government policy and the extent of competition as to how the difference between cost and value is shared between supplies and customer.

Recommendation

20. The priority need in Kazakhstan is to ensure that the transmission and distribution companies have sufficient cash flow for them to maintain the system better, reduce physical losses and leakage, improve the quality of service. Additionally, there are several areas where it would be in Kazakhstan's interest to extend the supply system.

To achieve this cash flow it will be necessary to adjust upwards the transmission and distribution tariffs and to couple the increased cash flow with a suitable program of investment targets. As the accounting records of the gas companies are unreliable, it would be better to calculate the tariff based on the cash operating and maintenance costs (including gas purchase costs) and cash needs for investment, and based on the volume that is expected to be paid for. The upper economic limit on such tariffs is the market value of the gas by reference to competing fuels, and there are also practical intermediate limits based on hardship and affordability.

While this approach recognises and seeks to use the market value approach as a means of restoring financial viability, it remains fundamentally a cost-based approach and will consequently be better understood by customers.

Appendix 5.9

General Principles and Issues in Tariff and Non-tariff Pricing

1. Natural gas pricing is often based on one or both of the following two basic concepts: market value pricing or pricing according to the cost of service. These two pricing concepts will influence the market for natural gas in different ways and consequently the particular circumstances prevailing in a country tend to favor one pricing concept over the other, or combinations of the two.

2. *Market Value Concept:* The market value concept implies that natural gas is priced in accordance with the value of the alternative fuel, also referred to as the "opportunity cost." This concept is generally considered to be more efficient in a country characterized by a demand for natural gas exceeding the supply of natural gas because of small gas reserves and the lack of import possibilities. A key factor in translating this into practice is the cause and location of the gas shortage, as the high market-based prices would apply in the regions of shortage, e.g., where there are pipeline capacity constraints, and not in regions of gas plenty.

3. Under this situation, the market value will reflect the opportunity cost of "not" supplying some market sectors, and pricing gas according to the value of the fuel otherwise in use will give the incentive for the gas sector to seek out the best alternative use for the gas available.

4. When additional quantities are contracted, their price will also reflect market value. In this way the producers of natural gas will make available supplies of natural gas only to the extent that their costs of providing such volumes (i.e., their "marginal costs") are covered. In classical situations such as the United States, the difference between gas sales price and transmission/distribution costs flows back to the producer, and leads to more gas exploration and production. Kazakhstan has ample gas resurces, the need is to use this excess revenue to strengthen transmission capacity.

5. In this way, economic efficiency is obtained since natural gas is made available and used to the extent that the marginal costs of such quantity of natural gas is equal to the alternative sources of fuel.

6. According to the market value concept, natural gas prices reflect the price of the market in which natural gas is to compete, in most cases dominated by oil producers. Natural gas is priced according to a price tariff which is regularly adjusted according to the development of the competing fuels. This pricing concept implies that the natural gas consumer undertakes no price risk in connection with a change of use from the alternative fuel to natural gas.

7. The development of natural gas prices according to the market value concept, in theory, has no relation with the cost of the gas distribution. Consequently, the concept

implies that gas pipeline and distribution companies must undertake the risk of covering their costs because none of the distribution costs are directly passed on to the customers through the gas pricing. This causes gas pipeline and distribution companies to closely follow the economic viability of the supply of natural gas to the existing and new customers as the development of gas prices may result in some supplies becoming uneconomical. In reality, the tariff will ensure that the fixed costs are covered and to a large extent the volatibility in the end prices is normally passed through to the producer. Where profits on transmission/distribution are large, there may be some sharing of this volatibility at different stages in the supply chain. The contracts for purchasing gas from the producers will need to be flexible to ensure that the gas remains competitive at the burner tip.

8. A market value gas pricing concept is functionally in place throughout gas markets in continental Western Europe, where the retail price of natural gas is set according to the price of the competing petroleum product as appropriate to the market sectors, e.g., typically priced at high quality diesel fuel to residential and small commercial customers, and at mazut for major industrial and power plant users.

9. *Cost of Service Concept*: Under competitive conditions, prices of producers would —at least theoretically—equal their marginal costs because production will expand to the extent that additional revenues are higher, and competition would prevent any excess profit from constraining supplies to obtain higher prices. In this way production is expanded to its optimal level.

10. In order to apply this, each additional consumer will pay a price which is equal to the cost of producing, transporting, and distributing these additional quantities. The gas distributor will seek to minimize the purchase price of gas, and to avoid too close a link to the price of competing fuels. The pressure on the producer price may not be encouraging for further gas development. If the price is lower, this would affect the financial viability of gas supplies and it would have to be covered by other consumers paying a price which exceeds their cost of supply or other subsidies will be needed.

11. The cost of service concept in some applications is based on the average costs reflecting the view that the prices must generate sufficient revenue to cover the average costs in order to secure the financial viability of a company. However, if average cost is significantly below marginal cost, then, a situation could arise where the increase in sales by the gas company leads to lower profits or increased losses for the distributor. This would be an inappropriate situation and would need correction of the price structure.

12. The cost of service concept implies that gas prices will have—at least to some customer categories—a substantial fixed price element. The tariff - being cost based - would reflect the cost structure of gas supply which involves a substantial element of fixed costs.

13. The costs related to connecting and operating the individual customer should thus be covered through a standing charge. To small consumers this would be a big element of

the price paid for natural gas. To large consumers this element would tend to be insignificant. Exceptionally high connection costs could be covered through a separate fee.

14. Another part of the tariff under this concept would be the cost of providing peak capacity. This would have the form of a demand charge related to the peak consumption. In theory, this should be applied to all customers but for practical reasons it is normally introduced to large consumers only. The size and effect on the overall cost of using natural gas will depend on the specific capacity situation and the pattern of consumption of each consumer. But in relation to the price of alternative fuels it will in any given case be a fixed element.

15. Consequently, the overall gas price will vary only little, if at all, when the price of the alternative fuel changes. Some customers will consider the very stable gas price as an advantage. Other customers will be more concerned that the stable gas price implies a risk of reduced competitive power if the price of their alternative fuel declines.

16. For gas pipeline and distribution companies, the cost of supply concept implies minimal financial risks because it will respond to increased demand only to the extent the additional costs to meet such demand are covered.

17. A cost of supply concept emphasizes the importance of the customers' assessment of the price conditions - i.e., customers must remain alert to what their price of gas is, and whether or not gas will remain attractive in relation to the cost of the alternative fuels.

18. *Mixed Price Concept:* In most cases, the gas tariffs applied in other countries have elements of both the market value and cost of supply concepts as the tariffs are adopted to the specific local market conditions and traditions. Tariffs based on the market value concept will often include some cost related fees or capacity charges. Tariffs based on the cost of service concept in most cases will have to adopt the competitive situation and the prices of the alternative fuels. For example, gas prices in North and South America often reflect a mixed-price concept wherein the natural gas commodity itself is market-price based while gas distribution services are largely priced at the companies' costs of service. In North America, with competing gas pipeline companies serving similar market areas, the price of gas transmission services also reflects, to an extent, the market value concept.

19. *Non-tariff Pricing:* Larger customers will typically have dual-fixed installations and can shift from gas to oil or coal on fairly short notice. In competitive gas markets they can also shift from one gas supplier to another at the end of each contract period. Where there is gas to gas competition the lowest cost supplier should be able to pitch his prices marginally below that of other suppliers, and hence obtain the market. With interfuel competition, it should be possible to set the gas price slightly below the price of competing fuels, taking account of additional costs associated with the different fuels.

20. The difference between achievable price and cost can be substantial. In some jurisdictions this difference is retained by the gas supply chain and used to expand the supply and the transmission and distribution capacity, and in light of the transmission constraints this may be the solution for Kazakhstan. In some other jurisdictions the

difference between price and cost is taxed. In yet others, it would be Government policy to have a "cheap fuel" economy and so promote industry. This third option may be appropriate once energy efficiency measures have taken hold and capacity constraints have been eased.

21. The contracts usually have an agreed minimum annual take, an agreed maximum daily take, and may have other features such as interruptibility. A key issue will be the price adjustment clause, and the extent to which the contract deals with cost changes and fuel market changes. New contracts may also include incentives to assist the customer to change over to gas. These incentives may be in the form of financial support relating to the cost of conversion, or a discount on gas price for a limited period.

22. *Gas Transportation Rates:* Gas transport rates are designed to ensure the required reasonable return on investment, since there is likely in Kazakhstan to be an adequate margin between the gas acquisition cost and the sales price.

23. There are several calculation methodologies regarding transit rates for gas transportation services. These include the formulas shown in the table below.

24. Transit rates in Europe ans North America range from US$1.00 to $1.50 per 1000m^3/100 Km. In 1992, the estimated transit tariff in Czech and Slovakia was $1.41/100m^3/100 Km for transit of Russian gas to Western Europe[1]

[1] Source: World Bank Report No. 11934, "Changing Structure of East-West Gas Trade and the Role of the Gas Transit Countries", September 1993.

Gas Transit Tariff Calculation Methodologies

Calculation Methodology	*Rate Components*	*Rate Units*
1. "Unbundled" three-part rate design	a) Demand Rate, i.e., to reserve pipeline transportation capacity	($/month per unit of MDQ)
	b) Commodity Rate for gas transportation	($/1000 $m^3$100 Km)
	c) Rate for gas storage	($/1000 m^3 of active gas, plus injection and withdrawal fees)
2. Proportional "bundled" two-part rate design	a) Demand Rate	($/month per unit of MDQ)
	b) Commodity Rate	($/1000 m^3/100 Km)
3. Single-element "bundled" rate	a) Commodity Rate for capacity, transportation and storage	($/1000 m^3/100 Km)

25. System configuration is very different in different parts of the country. The west is characterized by proximity of field and market, the east by longer distances and use of storage. The economics are best paralletted by an unbumdled three part rate design.

Appendix 5.10
Fiscal Regime

1. In the gas sector, one of the Government's primary objectives is to maximize wealth from: its natural resources by encouraging an appropriate level of exploration and development; transition services of Turkmen and Uzbek gas and to a lesser degree, Russian gas; and delivering gas to various end consumers. To this end, a modern fiscal system should be designed to: realize full value for the state and provide a fair return to the industry; avoid undue speculation; minimize administrative burden; provide flexibility; develop expertise; retain sufficient Government control; and create healthy competition and market efficiency.

2. Gas projects differ from oil projects in a number of key aspects, all of which have a bearing on the perception of risk both from Government's and investors' perspective:

- Unlike oil prices, gas price varies depending on markets and categories of consumers, mainly according to the values of competing fuels;
- Unlike oil projects, much longer time is required to formulate new projects;
- Gas projects depend on longer term relationships along the gas supply chain; and
- gas transportation is much more expensive than oil on an energy equivalence basis.

The design of a fiscal system for gas is therefore a complicated issue and for Kazakhstan will be an evolving process as the industry develops and experience is gained.

Taxes applicable to Oil and Gas companies Operating as Kazak Legal Entities

3. A new Tax Code was signed into law by a decree of President on April 24, 1995 and became effective as of July 1, 1995. The Tax Code (Decree 2235) replaced all existing Kazak tax legislation and became effective on July 1, 1995. The Tax Code prohibits the inclusion of tax provisions in other legislation, which to date has been a very common practice. The Tax Code does not include certain non-budgetary payments such as customs duties and payroll funds. Thus, it is considered to be one of the most systematic and comprehensive tax laws in the CIS.

4. There are two levels of taxes in Kazakhstan, national and local. The national taxes include: (i) an income tax; (ii) a value-added tax; (iii) an excise tax; (iv) a tax on transaction with securities; and (v) special taxes and payments for "subsoil users" (e.g. mining and extractive industries). A brief summary of the national taxes is given below:

Table 1: Current National Tax Regime

Taxes	Rate	Remarks
(i) Corporate Profit Tax	A standard rate of **30%.**	The determination of taxable profits for enterprises is no longer based on financial (accounting) results. There are now different rules for computing taxable profits and the majority of business related expenses are deductible although some restrictions do exist. The accrual method of accounting may be used. Loss carry over are now allowed for up to 5 years but no provision exists for loss carry-backs. Entities are required to make advancement payments of tax.
(ii) Individual Income Tax	Highest **40%.** Lowest 5%.	Capital gains may be offset by inflation adjustments. Individuals enjoy a standard deduction equal to one minimum monthly wage for each month of residency during a tax year.
(iii) value-added Tax (VAT)	A standard rate of **20%.**	All goods and services sold on the territory of Kazakhstan are subject to VAT. Imported goods are also subject to VAT, except those imported from the CIS countries. In general, VAT paid on all items is offsettable against VAT received from customers in computing an entity's VAT liability. An exception exist for VAT paid on cars and buildings which must be capitalized into the cost of the asset. No tax to be paid on exports.
(iv) Excise Tax	5% on diesel oil.	Payable on certain categories of goods including gasoline and automobiles whether produced domestically or imported. The comprehensive list is given in Article 76 of the Code.
(v) Tax on Transactions with Securities	0.5% of the nominal cost of an issue.	In addition, 3 Tenge from every 1,000 Tenge in sales of non-government securities are to be charged for each transaction.
(vi) Special Taxes and Payments for Subsoil Users	*Bonuses* *Royalties* *Excess Profit Tax*	There are three types of bonuses: subscription, commercial discovery and extraction. The first two are fixed one time payments while the last one is a fixed payment made periodically. The subscription bonus is not deductible against income for profits tax and excess profits tax purposes whereas the other two are deductible. The amounts of bonuses are to be determined in the contract and must be paid in monetary form. The taxable base for royalties is the volume of minerals extracted or technological formations developed by the entity. The amounts of royalties and the procedure for payment are established in the contract and, unlike bonuses, royalties can be paid either in monetary form or in kind. Any income obtained as a result of what the government deems to be operations in relatively better market or natural conditions are subject to excess profits tax. The procedure and the amounts of excess profits tax are established in contracts and must be paid in monetary form.
(vii) Other Withholding Taxes	15% for: 20% for:	Kazak source income of a foreign legal entity which is not attributable to a permanent establishment of the entity in Kazakhstan is subject to withholding tax. The tax is applied to gross income and is withheld by the paying entity at the moment of remitting the amounts abroad. dividends and interest. royalties, lease payments, and management and consulting fees.

5. The basic depreciation rate of 10% is set for all assets except for automobiles and computers, which may be depreciated at a rate of 20%; trucks, heavy machinery, electrical and construction equipment and office furniture, which are subject to a 15% rate; transportation equipment and pipelines at 8% rate; and buildings at a rate of 7%. when the balance for a pool of assets is below a minimum level, the entire amount is written off.

6. Local taxes include: (i) a land tax; (ii) a tax on property; (iii) a tax on vehicles; (iv) registration fees for conduct of business activities; and (v) a fee on auction sales. A list of major tax items is summarized below:

Table 2: Local Taxes

Tax	Rate	Remarks
(i) Land Tax		the Tax Code (decree 2235 and Instruction 34 dated June 27, 1995 "Concerning the Calculation and Payment of Land Tax") establishes different land tax rates for various plots of land. The land tax applies to land owners. Most entities involved in the exploration, and extraction of oil and gas cannot actually own the land. In such a case, land rent is paid, which is governed by separate legislation.
(ii) Property Tax	**0.5%**	Property tax is levied on the book value of an entity's fixed assets.

Customs Duties

7. Although technically not a tax, customs duties can be significant on imports of goods. A new Customs Code (Edict 1124 of the Cabinet of Ministers, "Rates of Customs duties on Export Goods" dated August 15, 1995) has been adopted and temporary imports of goods are still allowed. Exports of gas are subject to customs duties unless an exemption is contained in the contract agreement. Currently 5 ECU is levied per 1,150 CM of gas (e.g. US$ 5.40 per 1,000 CM).

Issues and suggestions

8. Despite relatively clarified tax code, the application of customs duties remain uncertain. According to a limited interview by the ESMAP task force, some potential investors reported extra taxation and duties which were demanded by tax/custom duty officers. In fact, a large portion of the tax system needs to be determined at the time of contractual agreements. The procedures for taxation and duties would need to be streamlined and simplified.

9. The commercial aspects of the gas sector significantly differs from the oil sector. At present, all Kazak gas enterprises are financially critical. Thus, a special fiscal incentive system would need to be introduced to attract investors. For some special projects which are targeted at environmental improvement and do not create high project

rate of returns, such fiscal incentives would be imperative. Additionally, the environmental regulatory system would need a plan and timetable for dealing with the present problems.

Appendix 6.1
Financing and Resourcing

General Considerations

1 Potential investors will base their investment decisions on such factors as: (i) economic and financial viability of project; (ii) the "upside" potential for a major increase in profits; (iii) the size of the market and the "health" of the macro-economy; (iv) the ability to convert and repatriate profits; (v) the extent of the natural resource base; (vi) the availability of a suitable investment vehicle; (vii) taxes and other financial incentives; and (viii) the existence of sound regulations and laws. In the case of investments in the proposed gas transmission and distribution projects, international investors may apply such additional criteria as: (a) host government commitment and securities to investors; (b) returns on investment; (c) ownership structure of the project company; (d) existing and future contractual arrangements for gas supply and sales; (e) safety and environmental issues associated with the projects. In essence, international investors may seek comparative advantages in these projects among various investment options across the world. It is, therefore, vitally important to create an efficient and attractive business environment which reassures the potential investor.

2. International experience suggests that international investors may seek minimum post-tax returns of approximately 7 to 10% on relatively risk free investments (such as some transportation projects where the shippers agree to a ship-or-pay transportation agreement) and 15 to 25% or more on relatively risky investments such as gas production and processing (including unsuccessful and successful exploration costs), depending on location. These returns are for a North American context.

3. The rate of return required by international investors in a country such as Kazakhstan would probably be higher than the rate of return they would require for projects in Western Europe, North America or South East Asia because of very few examples, up to the present, of a record of successful domestic investment in Kazakhstan which would reassure them of its ability to get paid and to repatriate profits, etc. In exchange for this relatively high rate of return, such international investors would bring with them technologies and management skills which Kazakhstan may wish to absorb. The Government can protect Kazak interests through a suitable regulatory and fiscal framework, and by obliging potential investors to compete with each other in order to obtain new licenses for business opportunities in the gas sector.

4. Also the proposed projects must be economically and financially viable, achieving the above mentioned returns on investment. To do so, the least-cost approach is recommended for the project planning, prior to political decision making. In addition, where the proposed investment is in existing assets, environmental and safety soundness need to be tested to persuade international investors. In the case of domestic gas transmission and distribution business which does not generate foreign exchange earning,

special arrangements would need to be explored to attract international investors, including possible collaterized financing by use of revenues from oil and/or gas exports, or guarantees that may be available from third parties. Furthermore, reviewing tariffs of natural gas would be essential to design the proposed projects on a full-cost recovery basis and to make them financially viable.

Project Risks and Risk mitigation Measures

5. Successful financing largely relates to risk perception and availability of mitigation measures for the proposed project. Reducing the risk to a tolerable level is essential and usually cannot be offset by more generous fiscal or other measures. Many investors are unused to situations such as Kazakhstan, and lenders have recent experiences of sovereign risks. Therefore, governments have to create a stable and credible business framework, supplemented by third party support. It must be emphasized that the examples below are of the supplementary measures, and they cannot offset an investor's lack of confidence in the government's business framework. In general, two broad categories of risks (non-commercial and commercial) would be perceived by investors and lenders. Such risks and possible mitigation measures are listed in the following table. It should be noted that MIGA insurance is aimed at covering equity invested and IBRD guarantees are aimed at guaranteeing debt.

Table 1: Project Risks and Risk mitigation Measures

Risk item	*Examples of supplementary risk mitigation measures*
Non-commercial Risks	
War and civil disturbance	Insurance by international agencies such as MIGA.
Change of the regulatory framework	Insurance by international insurers or guarantees by international agencies such as IBRD.
Failure of the government to meet agreed contractual obligations	Same as above
Payment/repayment transfer risk	Same as above (but risks associated with payment itself often very difficult to apply guarantees.)
Commercial Risks	
Project completion risk	Use of a LSTK[1] contract for construction
Project cost over-run risk	Same as above
Design performance risk	Use of a LSTK contract and involvement of international design/construction firm(s)
Operation risk	Involvement of IOGCs[2] as investors and/or operational service contract with IOGCs
Geological risk	Either by a "depletion contract" (the buyer agrees to buy all of the gas in a particular field) or a "supply contract" (the seller agrees to deliver a specified volume of gas over a given number of years)
Gas supply price risk	A long-term agreement between the gas supplier and the large consumers (use of a "floor price", a minimum price for the gas)
Market risk (volume risk)	A high level (80 or 90 percent) of "take-or-pay" (to guarantee payment for a substantial proportion of the gas, regardless of whether there is a market for it on delivery)

Financing Options

6. A gas sector project requires a combination of equity provided by the sponsors and debt provided by commercial banks, international financial institutions and bilateral government lenders. The cost and availability of finance for a project would only be determined after drafting all critical agreements although a preliminary feeling on the finance can be obtained through an experienced merchant bank. Potential lenders will first determine the robustness of the project economics and the financial strength of the pipeline company. The financial structure of a project will vary according to capital

[1] Lump-Sum Turn-Key
[2] International Oil & Gas Companies

requirements and the availability of financing but to enhance financial leverage, equity will generally be in the range of 25 to 50% and debt in the order of 75 to 50% debt for the capital structure of the project. For the debt portion, different sources need to be identified for senior loans[3] and subordinate loans[4].

7. The ability to secure the required debt and equity primarily depends on the viability of the project. The availability of financial resources would largely differ depending on whether the project creates foreign exchange revenues; whether the project is implemented by a private agency or a public agency or a joint venture; the degree of risks and investment returns; etc. Of ultimate importance for obtaining funding would be the development of credible project cash flow projections which demonstrate an attractive rate-of- return, and strong contractual guarantees of cash flow, i.e., throughput contracts where the cash flow projections are acceptable even in a "worse-case" scenario in relation to both commercial and non-commercial risks..

8. Generally conceivable sources of equity and debt for gas sector projects are summarized below. For each specific project, more detailed investigation is mandatory.

[3] High ranked liability in order of priority for payment but with a relatively low interest rate.
[4] Low ranked liability in order of priority for payment but with a relatively high interest rate.

Table 2: Potential Equity and Debt Sources

Potential Equity Sources	Note
(i) International natural gas, oil, or energy companies	Energy companies may be interested in gas and power integrated projects.
(ii) Construction contractors	In particular, possible for BOT or BOOT type schemes.
(iii) Government	Government can use a back financing scheme[5],
(iv) Multilateral agencies (IFC, ADB, EBRD, etc.)	IBRD cannot provide equity directly.
(v) Independent third party investors (Equity Funds, etc.)	Currently the availability in Kazakhstan is very limited.
Potential Debt Sources	**Note**
(i) Government	Government may seek IBRD loans if environment efficiency aspects, etc.
(ii) Multilateral agencies (IFC, ADB, EBRD, EIB, Islamic Development Bank, etc.)	
(iii) Bilateral agencies/ Export credit agencies (US & Japan Exim banks, OECF, etc.)	A co-financing scheme with multi-lateral agencies would be likely.
(iv) Commercial banks	Possible to form a syndicated loan but may need IBRD guarantees, given the current macroeconomic situation.
(v) Equipment suppliers	In particular, for BOT or BOOT type projects.

Except for countries with a good credit rating in the international markets, bond financing would be difficult.

9. Basic Financing Structure: Typically conceivable financing structures include: (i) sovereign loans; (ii) project finance loans; and (iii) collaterized financing. A *sovereign loan* is an unsecured loan made to a central government. The Government can then disburse the funds for the gas sector project which would be carried out by public entities. Repayment is made out of the general revenues of the Government. *Project finance* is a term applied if the form of security for investment is based on the project assets and future profit streams. If it is a limited recourse loan, lenders would look to the ability of the project cash flows alone and not Government or investor's other revenues, to repay the debt. *Collateralized financing* is security given by other cash flows or assets of including revenues from exports of oil and gas, gas transit services, oil and gas reserves,

[5] For example, IBRD provides a loan to a government and the government uses the loan as a equity required for a project. IBRD may disburse the loan to cover called-in capital.

etc. The collateral is usually held by the lender or a third party in an escrow[6] account for the benefit of lenders and borrowers. Collateralized finance may need lender and Paris Club approval if there are "negative pledge" clauses in other loan agreements.

10. Given the current macroeconomic situation, there is a substantial limitation for the use of sovereign loans in terms of the total loan amount per year. In the case of project finance, a major bottleneck would be a significant mismatch for any domestic gas (and power) projects. While a project creates only domestic currency (Tenge), the capital investment requires substantial foreign exchange. At present, the availability of the collateral sources is limited as the foreign exchange revenue is limited to a marginal volume of oil and gas exports and there is not much surplus to be allocated for large gas sector projects. IBRD guarantees may be necessary to give the necessary assurances on convertibility.

11. Guarantees: Another important consideration is the use of guarantee schemes which essentially enhance borrowing capacities by providing substantial comfort to lenders. Typical example of such guarantees are IBRD's Partial Risk Guarantees and Partial Credit Guarantees. IBRD's guarantees are applicable for a project implemented by a joint venture agency comprising both private sector and public sector entities. A partial risk guarantee covers risks arising from non-performance of sovereign contractual obligations or from *force majeure* aspects in a project. The partial risk guarantees are particularly relevant in the context of current worldwide interest in private financing of infrastructure. Such guarantees cover government obligations spelled out in agreements with the project entity. They are most appropriate for "limited recourse financing", as in build-own-operate-transfer (BOOT), build-own-operate (BOO), and similar projects. Partial credit guarantees cover all events of nonpayment for a designated part of the financing. These guarantees encourage the transformation of shorter-term to longer-term financing by covering a part of the commercial financing, usually the latter maturities. In recent operations, IBRD covered late payments, stretching the normal lending terms offered by the market. (See Figures 1 and 2 for basic schemes of World Bank guarantees.)

12. The Multilateral Investment Guarantee Agency (MIGA) also provides guarantees against political risks associated with investments in project finance and other operations, covering: currency transfer (inconvertibility); expropriation; war and civil disturbance; and breach of contract. Although the maximum coverage (US$ 50 million per project) is not significant for the project sizes expected in Kazakhstan, its involvement would significantly provide comfort to investors and lenders. IFC also provides guarantees to lenders. This activity, however, represents a relatively small part of its investment portfolio.

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[6] An escrow is a document of agreement held by a third party until one or both of the other two parties has fulfilled certain conditions. Thus funds on an escrow account will be released by a bank when agreed conditions are met.

13. Grant Funds: In the case that a gas sector project is specifically linked with environmental mitigation, some grant facilities may be available. A typical example is the Global Environmental Facility (GEF)[7] which assists developing countries to protect the global environment. Arrest of the release of methane to the atmosphere by minimizing flaring/venting gas and gas leakage and decreasing CO_2 emissions by increasing the efficiency of gas use fall into the eligibility of the GEF grant fund. A project comprising gas distribution and energy efficiency was formulated in Russia using the GEF. The use of such grant funds would facilitate project formulation and implementation by alleviating financial burdens.

Host Government Role

14. The most critical element for a successful project would be the host government's strong commitment to support the project and the provision of commercially preferential terms. As noted above, unless the host government provides a stable and supportive business environment, the project will not go ahead. In the case of projects focused on the Kazak market, such environment includes pricing, payment, right to disconnect, and Government/Oblast non-involvement in most business issues. From a private sponsor perception, the host government is requested to provide: (i) guarantees for non-commercial risks; (ii) acceptance of opening an offshore escrow account; (iii) endorsement of the right of repatriation of profits; (iv) relaxation of corporate tax; and (v) application of preferential duties.

Securities to Lenders

15. Equity providers are usually risk takers within perceived risks. For infrastructure projects, the challenge is securing the debt portion with reasonable financial terms. Therefore, the project company or owner needs to make sure that the project design provides adequate security to the various lenders. Important elements in this design consist of: (i) involvement of international reputable management within the owner's organizational structure; (ii) strong commitment to the equity investment by the owner, as a proof of risk-taking; (iii) economic importance of the project; (iv) commercial viability of the project; (v) sound legal framework which substantially alleviates non-commercial risks and supports commercial viability of the project; (vi) appropriate contractual arrangements, which underpin the robustness of the project; (vii) completion and performance guarantees for the construction; (viii) competence of the operator; (ix) throughput guarantees that assure commercial viability; (x) convertibility of revenues; and (xi) assurance of repayment. Furthermore, lenders would derive significant comfort with the participation of multilateral agencies which could enhance dialogue with host and transit countries further and lead to risk mitigation.
Lenders are also likely to require an offshore escrow account for repayment of the loan to them. In addition, lenders may seek, from the project company, the provision of

[7] The GEF is jointly implemented by the United Nations Development Programme, the United Nations Environmental Programme, and the World Bank.

collateral and a clear order of seniority within their financial agreements with the project company.

Financial Techniques

16. The fundamental elements for a successful project are: (i) a combination of sponsors which include the Government and sponsors with expertise in finance, planning, marketing and operations; (ii) private sector participants with a strong financial base; and (iii) firm commitment by the Government. Private sector participation could be a tool for promoting business efficiency and enhancing a project. From private sector investors' view point, there are four options as below:

- business co-operation contract with a Kazak gas enterprise;
- a joint venture;
- a wholly foreign-owned company; and
- a BOT or BOOT contract.

17. Business Cooperation: A management service contract would represent this type of business cooperation. The contract is usually based on cost plus fee, thus it is not possible to induce essential capital investments. However, in the initial phase of privatization, a management contract could be effective to promote corporatization.

5.45 Joint Ventures: In case a rapid privatization is not feasible, a joint venture (JV) between a Government enterprise and international private sector firms would be a realistic way to formulate a project. There is no legal limit on equity from foreign investors although there is a commercial limit. The Foreign Investment Law defines that JV profits and losses will be distributed according to capital contributions. For the foreign party, this would be in the form of foreign exchange, plant, technology or intellectual property rights. For the local party, this would also be local currency, the right to use land, natural resources, etc. The respective values of capital contribution are ultimately established by negotiation. Both parties to the JV may have equal representation on the board or proportional representation per the share of the stake. A foreign investor with a majority stake may or may not assume effective control. There is a possibility for the Government to induce loans from the World Bank and other multi- and bi-lateral agencies and the Government utilize the loans to cover the public sector's share of equity, provided that the project is attractive to those international agencies.

18. Wholly Foreign-Owned Company: Given the current macroeconomic situation, risks associated with gas sector operations in Kazakhstan and Kazak gas companies' financial positions, a full and immediate auction process would not be practical for any single Kazak gas company. However, as Kazcommerzbank/Paribas Bank pointed out, a concession agreement is a feasible scheme for the Central-Asia-Center (CAC) pipeline which potentially create foreign exchange revenues. If an appropriate regulatory framework is established, which recognizes both Kazak and investor needs, the Government may wish to pursue this scheme for the CAC pipeline.

19. BOT or BOOT: This technique is often used for a large scale power and feedstock project. A private project company with equity investments of 10 to 30% of the total project cost, will build the project, operate it for a period of time sufficient to pay back the project debt and equity investment, and then transfer it to the Government or sell it to private investors, (the disposition of the assets and rights to the proceeds would be built in to the original concession agreements). Debt financing (typically 70 to 90% of the total project cost) is raised by the project company from commercial sources, usually backed by export credit guarantee agencies, and from bilateral and multilateral lenders. Senior lenders to the project company typically are not covered by direct "full faith and credit" sovereign guarantees, but substantial support from the Government is required, including guarantees of the performance of government entities involved in the project and guarantees of foreign exchange risks. In some cases, government has to provide subordinated loans to the project company when necessary to cover senior debt service. The debt needs to be project finance often with complex contractual and guarantee structures. (See Figure 3 for a typical BOT project structure.)

Figure 1: World Bank Partial Risk Guarantee

IBRD "Partial Risk" Guarantee

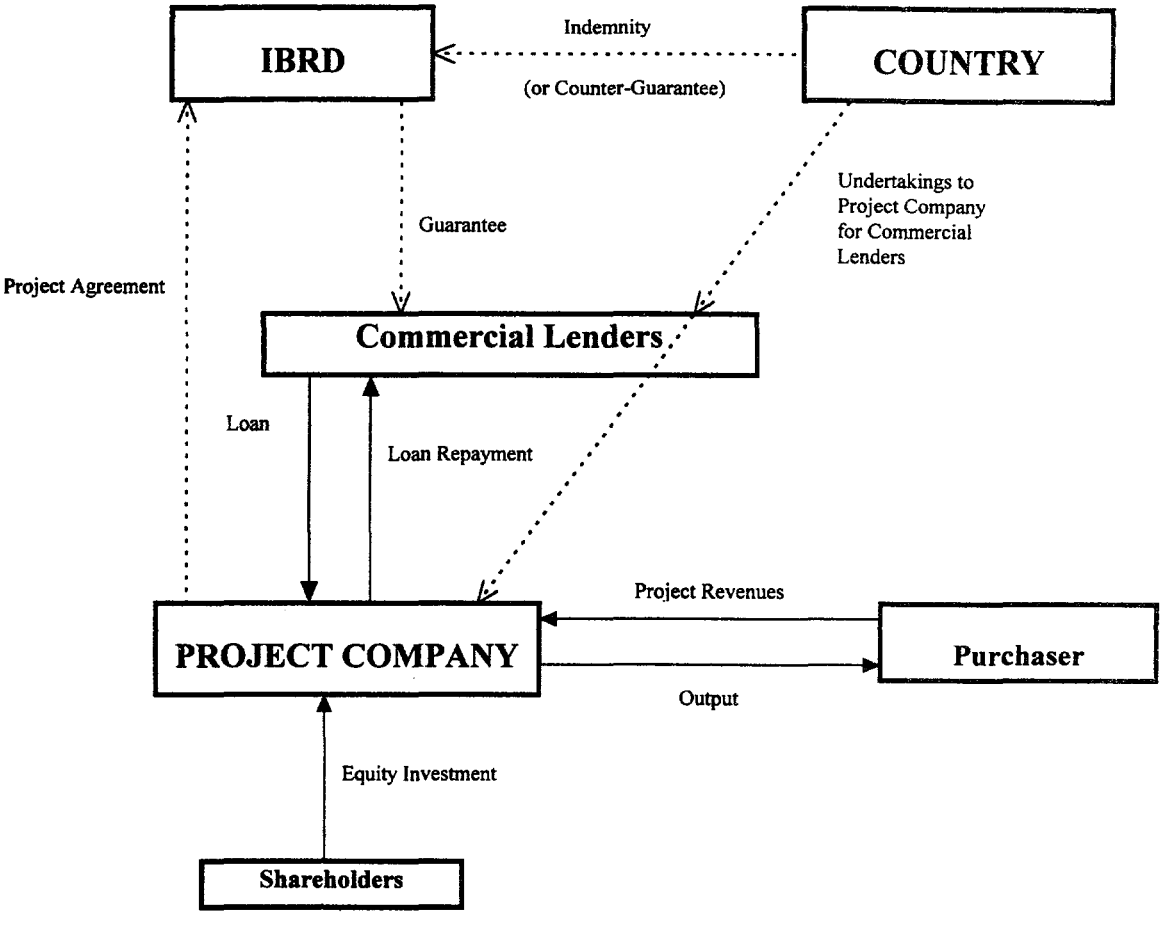


Figure 2: World Bank Partial Risk Guarantee

IBRD "Partial Credit" Guarantee

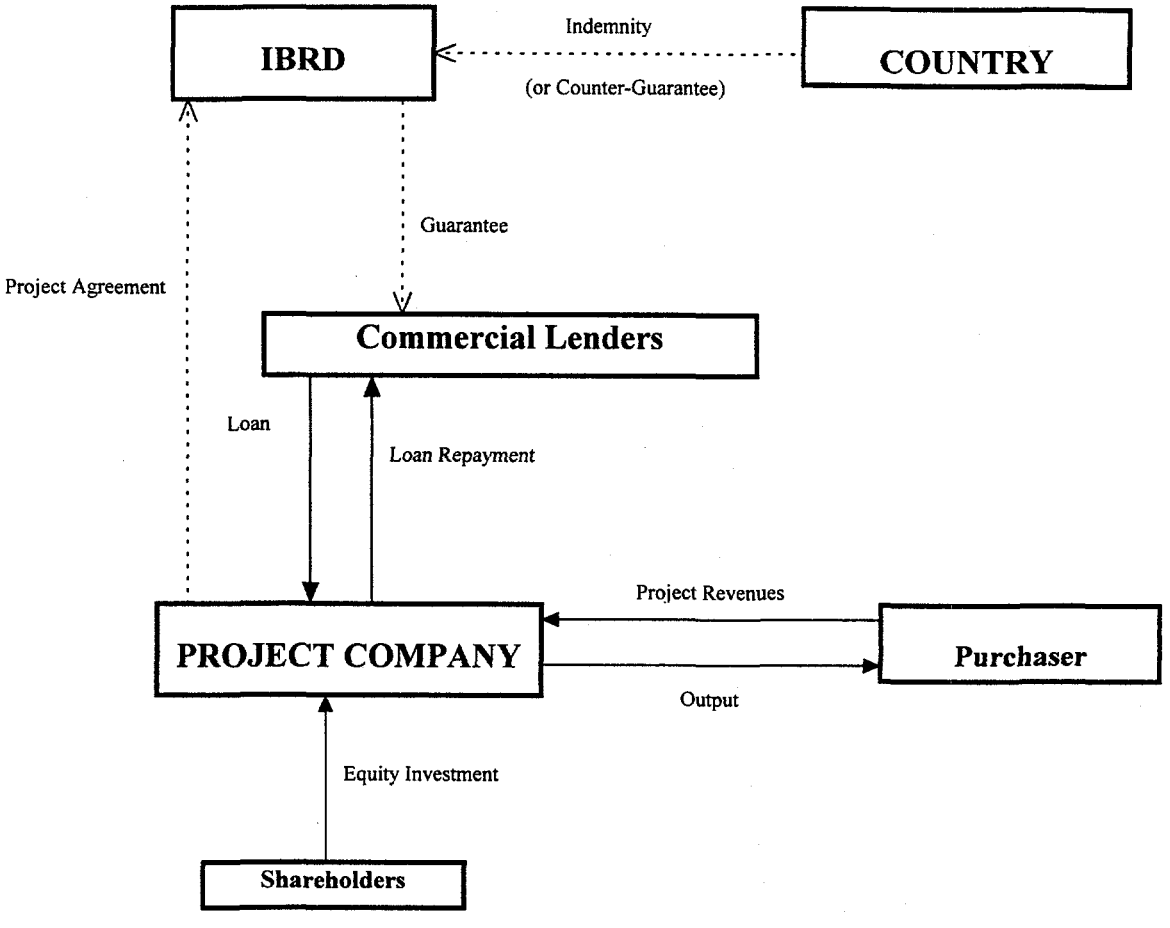
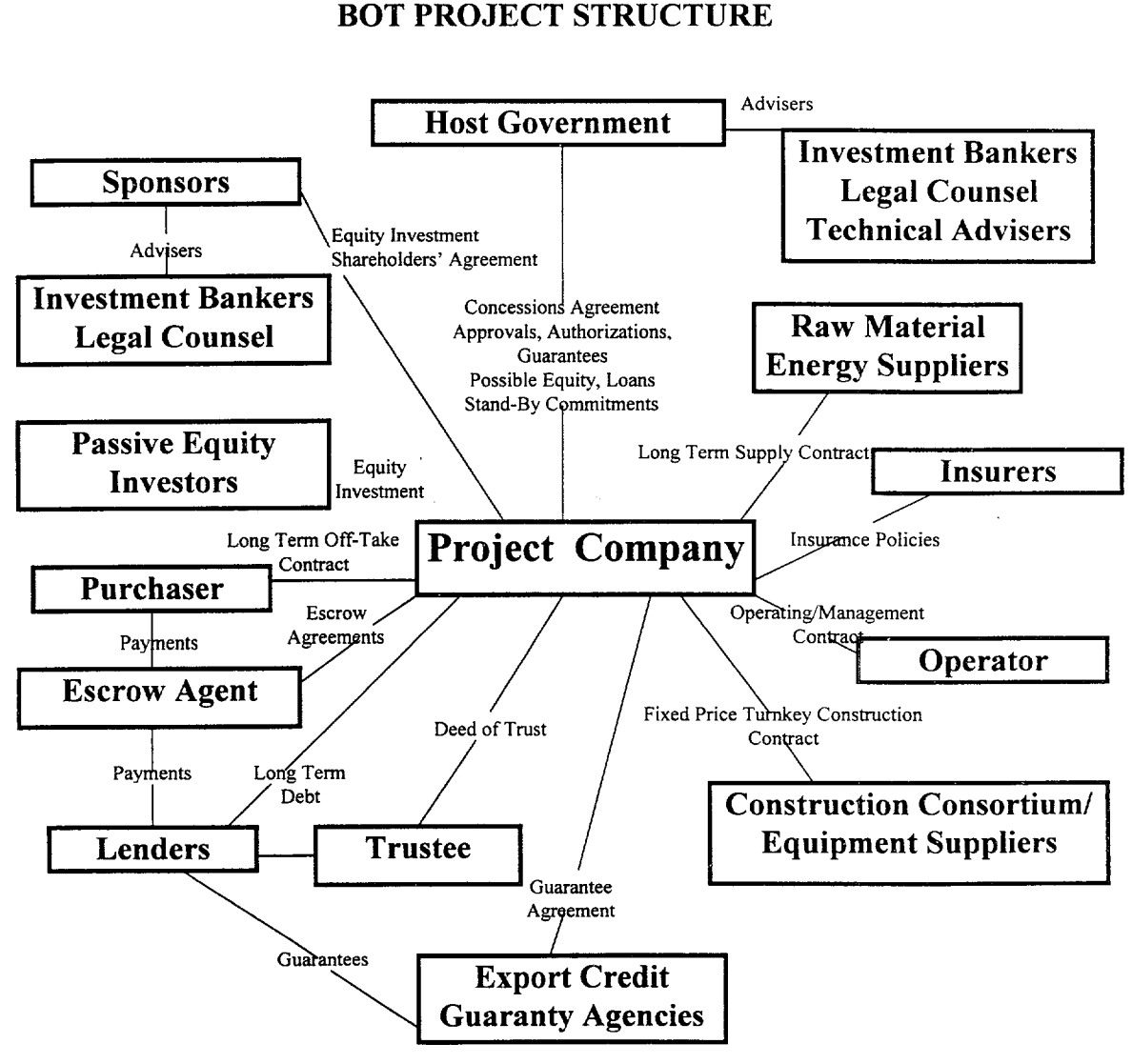


Figure 3: BOT Project Structure



Joint UNDP/World Bank

ENERGY SECTOR MANAGEMENT ASSISTANCE PROGRAMME (ESMAP)

LIST OF REPORTS ON COMPLETED ACTIVITIES

Region/Country	*Activity/Report Title*	*Date*	*Number*
	SUB-SAHARAN AFRICA (AFR)		
Africa Regional	Anglophone Africa Household Energy Workshop (English)	07/88	085/88
	Regional Power Seminar on Reducing Electric Power System Losses in Africa (English)	08/88	087/88
	Institutional Evaluation of EGL (English)	02/89	098/89
	Biomass Mapping Regional Workshops (English)	05/89	--
	Francophone Household Energy Workshop (French)	08/89	--
	Interafrican Electrical Engineering College: Proposals for Short- and Long-Term Development (English)	03/90	112/90
	Biomass Assessment and Mapping (English)	03/90	--
	Symposium on Power Sector Reform and Efficiency Improvement in Sub-Saharan Africa (English)	06/96	182/96
Angola	Energy Assessment (English and Portuguese)	05/89	4708-ANG
	Power Rehabilitation and Technical Assistance (English)	10/91	142/91
Benin	Energy Assessment (English and French)	06/85	5222-BEN
Botswana	Energy Assessment (English)	09/84	4998-BT
	Pump Electrification Prefeasibility Study (English)	01/86	047/86
	Review of Electricity Service Connection Policy (English)	07/87	071/87
	Tuli Block Farms Electrification Study (English)	07/87	072/87
	Household Energy Issues Study (English)	02/88	--
	Urban Household Energy Strategy Study (English)	05/91	132/91
Burkina Faso	Energy Assessment (English and French)	01/86	5730-BUR
	Technical Assistance Program (English)	03/86	052/86
	Urban Household Energy Strategy Study (English and French)	06/91	134/91
Burundi	Energy Assessment (English)	06/82	3778-BU
	Petroleum Supply Management (English)	01/84	012/84
	Status Report (English and French)	02/84	011/84
	Presentation of Energy Projects for the Fourth Five-Year Plan (1983-1987) (English and French)	05/85	036/85
	Improved Charcoal Cookstove Strategy (English and French)	09/85	042/85
	Peat Utilization Project (English)	11/85	046/85
	Energy Assessment (English and French)	01/92	9215-BU
Cape Verde	Energy Assessment (English and Portuguese)	08/84	5073-CV
	Household Energy Strategy Study (English)	02/90	110/90
Central African Republic	Energy Assessement (French)	08/92	9898-CAR
Chad	Elements of Strategy for Urban Household Energy The Case of N'djamena (French)	12/93	160/94
Comoros	Energy Assessment (English and French)	01/88	7104-COM
Congo	Energy Assessment (English)	01/88	6420-COB
	Power Development Plan (English and French)	03/90	106/90
Côte d'Ivoire	Energy Assessment (English and French)	04/85	5250-IVC
	Improved Biomass Utilization (English and French)	04/87	069/87
	Power System Efficiency Study (English)	12/87	--
	Power Sector Efficiency Study (French)	02/92	140/91
	Project of Energy Efficiency in Buildings (English)	09/95	175/95

Region/Country	*Activity/Report Title*	*Date*	*Number*
Ethiopia	Energy Assessment (English)	07/84	4741-ET
	Power System Efficiency Study (English)	10/85	045/85
	Agricultural Residue Briquetting Pilot Project (English)	12/86	062/86
	Bagasse Study (English)	12/86	063/86
	Cooking Efficiency Project (English)	12/87	--
	Energy Assessment (English)	02/96	179/96
Gabon	Energy Assessment (English)	07/88	6915-GA
The Gambia	Energy Assessment (English)	11/83	4743-GM
	Solar Water Heating Retrofit Project (English)	02/85	030/85
	Solar Photovoltaic Applications (English)	03/85	032/85
	Petroleum Supply Management Assistance (English)	04/85	035/85
Ghana	Energy Assessment (English)	11/86	6234-GH
	Energy Rationalization in the Industrial Sector (English)	06/88	084/88
	Sawmill Residues Utilization Study (English)	11/88	074/87
	Industrial Energy Efficiency (English)	11/92	148/92
Guinea	Energy Assessment (English)	11/86	6137-GUI
	Household Energy Strategy (English and French)	01/94	163/94
Guinea-Bissau	Energy Assessment (English and Portuguese)	08/84	5083-GUB
	Recommended Technical Assistance Projects (English & Portuguese)	04/85	033/85
	Management Options for the Electric Power and Water Supply Subsectors (English)	02/90	100/90
	Power and Water Institutional Restructuring (French)	04/91	118/91
Kenya	Energy Assessment (English)	05/82	3800-KE
	Power System Efficiency Study (English)	03/84	014/84
	Status Report (English)	05/84	016/84
	Coal Conversion Action Plan (English)	02/87	--
	Solar Water Heating Study (English)	02/87	066/87
	Peri-Urban Woodfuel Development (English)	10/87	076/87
	Power Master Plan (English)	11/87	--
	Power Loss Reduction Study (English)	09/96	186/96
Lesotho	Energy Assessment (English)	01/84	4676-LSO
Liberia	Energy Assessment (English)	12/84	5279-LBR
	Recommended Technical Assistance Projects (English)	06/85	038/85
	Power System Efficiency Study (English)	12/87	081/87
Madagascar	Energy Assessment (English)	01/87	5700-MAG
	Power System Efficiency Study (English and French)	12/87	075/87
	Environmental Impact of Woodfuels (French)	10/95	176/95
Malawi	Energy Assessment (English)	08/82	3903-MAL
	Technical Assistance to Improve the Efficiency of Fuelwood Use in the Tobacco Industry (English)	11/83	009/83
	Status Report (English)	01/84	013/84
Mali	Energy Assessment (English and French)	11/91	8423-MLI
	Household Energy Strategy (English and French)	03/92	147/92
Islamic Republic of Mauritania	Energy Assessment (English and French)	04/85	5224-MAU
	Household Energy Strategy Study (English and French)	07/90	123/90
Mauritius	Energy Assessment (English)	12/81	3510-MAS
	Status Report (English)	10/83	008/83
	Power System Efficiency Audit (English)	05/87	070/87

Region/Country	*Activity/Report Title*	*Date*	*Number*
Mauritius	Bagasse Power Potential (English)	10/87	077/87
	Energy Sector Review (English)	12/94	3643-MAS
Morocco	Energy Sector Institutional Development Study (English and French)	07/95	173/95
Mozambique	Energy Assessment (English)	01/87	6128-MOZ
	Household Electricity Utilization Study (English)	03/90	113/90
	Electricity Tariffs Study (English)	06/96	181/96
	Sample Survey of Low Voltage Electricity Customers	06/97	195/97
Namibia	Energy Assessment (English)	03/93	11320-NAM
Niger	Energy Assessment (French)	05/84	4642-NIR
	Status Report (English and French)	02/86	051/86
	Improved Stoves Project (English and French)	12/87	080/87
	Household Energy Conservation and Substitution (English and French)	01/88	082/88
Nigeria	Energy Assessment (English)	08/83	4440-UNI
	Energy Assessment (English)	07/93	11672-UNI
Rwanda	Energy Assessment (English)	06/82	3779-RW
	Status Report (English and French)	05/84	017/84
	Improved Charcoal Cookstove Strategy (English and French)	08/86	059/86
	Improved Charcoal Production Techniques (English and French)	02/87	065/87
	Energy Assessment (English and French)	07/91	8017-RW
	Commercialization of Improved Charcoal Stoves and Carbonization Techniques Mid-Term Progress Report (English and French)	12/91	141/91
SADC	SADC Regional Power Interconnection Study, Vols. I-IV (English)	12/93	--
SADCC	SADCC Regional Sector: Regional Capacity-Building Program for Energy Surveys and Policy Analysis (English)	11/91	--
Sao Tome and Principe	Energy Assessment (English)	10/85	5803-STP
Senegal	Energy Assessment (English)	07/83	4182-SE
	Status Report (English and French)	10/84	025/84
	Industrial Energy Conservation Study (English)	05/85	037/85
	Preparatory Assistance for Donor Meeting (English and French)	04/86	056/86
	Urban Household Energy Strategy (English)	02/89	096/89
	Industrial Energy Conservation Program (English)	05/94	165/94
Seychelles	Energy Assessment (English)	01/84	4693-SEY
	Electric Power System Efficiency Study (English)	08/84	021/84
Sierra Leone	Energy Assessment (English)	10/87	6597-SL
Somalia	Energy Assessment (English)	12/85	5796-SO
South Africa Republic of	Options for the Structure and Regulation of Natural Gas Industry (English)	05/95	172/95
Sudan	Management Assistance to the Ministry of Energy and Mining	05/83	003/83
	Energy Assessment (English)	07/83	4511-SU
	Power System Efficiency Study (English)	06/84	018/84
	Status Report (English)	11/84	026/84
	Wood Energy/Forestry Feasibility (English)	07/87	073/87
Swaziland	Energy Assessment (English)	02/87	6262-SW
	Household Energy Strategy Study	10/97	198/97
Tanzania	Energy Assessment (English)	11/84	4969-TA
	Peri-Urban Woodfuels Feasibility Study (English)	08/88	086/88
	Tobacco Curing Efficiency Study (English)	05/89	102/89
	Remote Sensing and Mapping of Woodlands (English)	06/90	--
	Industrial Energy Efficiency Technical Assistance (English)	08/90	122/90

Region/Country	*Activity/Report Title*	*Date*	*Number*
Togo	Energy Assessment (English)	06/85	5221-TO
	Wood Recovery in the Nangbeto Lake (English and French)	04/86	055/86
	Power Efficiency Improvement (English and French)	12/87	078/87
Uganda	Energy Assessment (English)	07/83	4453-UG
	Status Report (English)	08/84	020/84
	Institutional Review of the Energy Sector (English)	01/85	029/85
	Energy Efficiency in Tobacco Curing Industry (English)	02/86	049/86
	Fuelwood/Forestry Feasibility Study (English)	03/86	053/86
	Power System Efficiency Study (English)	12/88	092/88
	Energy Efficiency Improvement in the Brick and Tile Industry (English)	02/89	097/89
	Tobacco Curing Pilot Project (English)	03/89	UNDP Terminal Report
	Energy Assessment (English)	12/96	193/96
Zaire	Energy Assessment (English)	05/86	5837-ZR
Zambia	Energy Assessment (English)	01/83	4110-ZA
	Status Report (English)	08/85	039/85
	Energy Sector Institutional Review (English)	11/86	060/86
	Power Subsector Efficiency Study (English)	02/89	093/88
	Energy Strategy Study (English)	02/89	094/88
	Urban Household Energy Strategy Study (English)	08/90	121/90
Zimbabwe	Energy Assessment (English)	06/82	3765-ZIM
	Power System Efficiency Study (English)	06/83	005/83
	Status Report (English)	08/84	019/84
	Power Sector Management Assistance Project (English)	04/85	034/85
	Power Sector Management Institution Building (English)	09/89	--
	Petroleum Management Assistance (English)	12/89	109/89
	Charcoal Utilization Prefeasibility Study (English)	06/90	119/90
	Integrated Energy Strategy Evaluation (English)	01/92	8768-ZIM
	Energy Efficiency Technical Assistance Project: Strategic Framework for a National Energy Efficiency Improvement Program (English)	04/94	--
	Capacity Building for the National Energy Efficiency Improvement Programme (NEEIP) (English)	12/94	--
	EAST ASIA AND PACIFIC (EAP)		
Asia Regional	Pacific Household and Rural Energy Seminar (English)	11/90	--
China	County-Level Rural Energy Assessments (English)	05/89	101/89
	Fuelwood Forestry Preinvestment Study (English)	12/89	105/89
	Strategic Options for Power Sector Reform in China (English)	07/93	156/93
	Energy Efficiency and Pollution Control in Township and Village Enterprises (TVE) Industry (English)	11/94	168/94
	Energy for Rural Development in China: An Assessment Based on a Joint Chinese/ESMAP Study in Six Counties (English)	06/96	183/96
Fiji	Energy Assessment (English)	06/83	4462-FIJ
Indonesia	Energy Assessment (English)	11/81	3543-IND
	Status Report (English)	09/84	022/84
	Power Generation Efficiency Study (English)	02/86	050/86

Region/Country	*Activity/Report Title*	*Date*	*Number*
Indonesia	Energy Efficiency in the Brick, Tile and Lime Industries (English)	04/87	067/87
	Diesel Generating Plant Efficiency Study (English)	12/88	095/88
	Urban Household Energy Strategy Study (English)	02/90	107/90
	Biomass Gasifier Preinvestment Study Vols. I & II (English)	12/90	124/90
	Prospects for Biomass Power Generation with Emphasis on Palm Oil, Sugar, Rubberwood and Plywood Residues (English)	11/94	167/94
Lao PDR	Urban Electricity Demand Assessment Study (English)	03/93	154/93
Malaysia	Sabah Power System Efficiency Study (English)	03/87	068/87
	Gas Utilization Study (English)	09/91	9645-MA
Myanmar	Energy Assessment (English)	06/85	5416-BA
Papua New Guinea	Energy Assessment (English)	06/82	3882-PNG
	Status Report (English)	07/83	006/83
	Energy Strategy Paper (English)	--	--
	Institutional Review in the Energy Sector (English)	10/84	023/84
	Power Tariff Study (English)	10/84	024/84
Philippines	Commercial Potential for Power Production from Agricultural Residues (English)	12/93	157/93
	Energy Conservation Study (English)	08/94	--
Solomon Islands	Energy Assessment (English)	06/83	4404-SOL
	Energy Assessment (English)	01/92	979-SOL
South Pacific	Petroleum Transport in the South Pacific (English)	05/86	--
Thailand	Energy Assessment (English)	09/85	5793-TH
	Rural Energy Issues and Options (English)	09/85	044/85
	Accelerated Dissemination of Improved Stoves and Charcoal Kilns (English)	09/87	079/87
	Northeast Region Village Forestry and Woodfuels Preinvestment Study (English)	02/88	083/88
	Impact of Lower Oil Prices (English)	08/88	--
	Coal Development and Utilization Study (English)	10/89	--
Tonga	Energy Assessment (English)	06/85	5498-TON
Vanuatu	Energy Assessment (English)	06/85	5577-VA
Vietnam	Rural and Household Energy-Issues and Options (English)	01/94	161/94
	Power Sector Reform and Restructuring in Vietnam: Final Report to the Steering Committee (English and Vietnamese)	09/95	174/95
	Household Energy Technical Assistance: Improved Coal Briquetting and Commercialized Dissemination of Higher Efficiency Biomass and Coal Stoves (English)	01/96	178/96
Western Samoa	Energy Assessment (English)	06/85	5497-WSO
	SOUTH ASIA (SAS)		
Bangladesh	Energy Assessment (English)	10/82	3873-BD
	Priority Investment Program (English)	05/83	002/83
	Status Report (English)	04/84	015/84
	Power System Efficiency Study (English)	02/85	031/85
	Small Scale Uses of Gas Prefeasibility Study (English)	12/88	--
India	Opportunities for Commercialization of Nonconventional Energy Systems (English)	11/88	091/88

Region/Country	*Activity/Report Title*	*Date*	*Number*
India	Maharashtra Bagasse Energy Efficiency Project (English)	07/90	120/90
	Mini-Hydro Development on Irrigation Dams and Canal Drops Vols. I, II and III (English)	07/91	139/91
	WindFarm Pre-Investment Study (English)	12/92	150/92
	Power Sector Reform Seminar (English)	04/94	166/94
Nepal	Energy Assessment (English)	08/83	4474-NEP
	Status Report (English)	01/85	028/84
	Energy Efficiency & Fuel Substitution in Industries (English)	06/93	158/93
Pakistan	Household Energy Assessment (English)	05/88	--
	Assessment of Photovoltaic Programs, Applications, and Markets (English)	10/89	103/89
	National Household Energy Survey and Strategy Formulation Study: Project Terminal Report (English)	03/94	--
	Managing the Energy Transition (English)	10/94	--
	Lighting Efficiency Improvement Program Phase 1: Commercial Buildings Five Year Plan (English)	10/94	--
Sri Lanka	Energy Assessment (English)	05/82	3792-CE
	Power System Loss Reduction Study (English)	07/83	007/83
	Status Report (English)	01/84	010/84
	Industrial Energy Conservation Study (English)	03/86	054/86

EUROPE AND CENTRAL ASIA (ECA)

Bulgaria	Natural Gas Policies and Issues (English)	10/96	188/96
Central and Eastern Europe	Power Sector Reform in Selected Countries	07/97	196/97
Eastern Europe	The Future of Natural Gas in Eastern Europe (English)	08/92	149/92
Kazakhstan and Kyrgyzstan	Opportunities for Renewable Energy Development	11/97	16855-KAZ
Kazakhstan	Natural Gas Investment Strategy Study, Volumes 1, 2 and 3	12/97	199/97
Poland	Energy Sector Restructuring Program Vols. I-V (English)	01/93	153/93
Portugal	Energy Assessment (English)	04/84	4824-PO
Romania	Natural Gas Development Strategy (English)	12/96	192/96
Turkey	Energy Assessment (English)	03/83	3877-TU

MIDDLE EAST AND NORTH AFRICA (MNA)

Arab Republic of Egypt	Energy Assessment (English)	10/96	189/96
Morocco	Energy Assessment (English and French)	03/84	4157-MOR
	Status Report (English and French)	01/86	048/86
	Energy Sector Institutional Development Study (English and French)	05/95	173/95
Syria	Energy Assessment (English)	05/86	5822-SYR
	Electric Power Efficiency Study (English)	09/88	089/88
	Energy Efficiency Improvement in the Cement Sector (English)	04/89	099/89
	Energy Efficiency Improvement in the Fertilizer Sector (English)	06/90	115/90

Region/Country	*Activity/Report Title*	*Date*	*Number*
Tunisia	Fuel Substitution (English and French)	03/90	--
	Power Efficiency Study (English and French)	02/92	136/91
	Energy Management Strategy in the Residential and Tertiary Sectors (English)	04/92	146/92
	Renewable Energy Strategy Study, Volume I (French)	11/96	190A/96
	Renewable Energy Strategy Study, Volume II (French)	11/96	190B/96
Yemen	Energy Assessment (English)	12/84	4892-YAR
	Energy Investment Priorities (English)	02/87	6376-YAR
	Household Energy Strategy Study Phase I (English)	03/91	126/91
	LATIN AMERICA AND THE CARIBBEAN (LAC)		
LAC Regional	Regional Seminar on Electric Power System Loss Reduction in the Caribbean (English)	07/89	--
	Elimination of Lead in Gasoline in Latin America and the Caribbean (English and Spanish)	04/97	194/97
Bolivia	Energy Assessment (English)	04/83	4213-BO
	National Energy Plan (English)	12/87	--
	La Paz Private Power Technical Assistance (English)	11/90	111/90
	Prefeasibility Evaluation Rural Electrification and Demand Assessment (English and Spanish)	04/91	129/91
	National Energy Plan (Spanish)	08/91	131/91
	Private Power Generation and Transmission (English)	01/92	137/91
	Natural Gas Distribution: Economics and Regulation (English)	03/92	125/92
	Natural Gas Sector Policies and Issues (English and Spanish)	12/93	164/93
	Household Rural Energy Strategy (English and Spanish)	01/94	162/94
	Preparation of Capitalization of the Hydrocarbon Sector	12/96	191/96
Brazil	Energy Efficiency & Conservation: Strategic Partnership for Energy Efficiency in Brazil (English)	01/95	170/95
	Hydro and Thermal Power Sector Study	09/97	197/97
Chile	Energy Sector Review (English)	08/88	7129-CH
Colombia	Energy Strategy Paper (English)	12/86	--
	Power Sector Restructuring (English)	11/94	169/94
	Energy Efficiency Report for the Commercial and Public Sector (English)	06/96	184/96
Costa Rica	Energy Assessment (English and Spanish)	01/84	4655-CR
	Recommended Technical Assistance Projects (English)	11/84	027/84
	Forest Residues Utilization Study (English and Spanish)	02/90	108/90
Dominican Republic	Energy Assessment (English)	05/91	8234-DO
Ecuador	Energy Assessment (Spanish)	12/85	5865-EC
	Energy Strategy Phase I (Spanish)	07/88	--
	Energy Strategy (English)	04/91	--
	Private Minihydropower Development Study (English)	11/92	--
	Energy Pricing Subsidies and Interfuel Substitution (English)	08/94	11798-EC
	Energy Pricing, Poverty and Social Mitigation (English)	08/94	12831-EC
Guatemala	Issues and Options in the Energy Sector (English)	09/93	12160-GU
Haiti	Energy Assessment (English and French)	06/82	3672-HA
	Status Report (English and French)	08/85	041/85
	Household Energy Strategy (English and French)	12/91	143/91

Region/Country	*Activity/Report Title*	*Date*	*Number*
Honduras	Energy Assessment (English)	08/87	6476-HO
	Petroleum Supply Management (English)	03/91	128/91
Jamaica	Energy Assessment (English)	04/85	5466-JM
	Petroleum Procurement, Refining, and Distribution Study (English)	11/86	061/86
	Energy Efficiency Building Code Phase I (English)	03/88	--
	Energy Efficiency Standards and Labels Phase I (English)	03/88	--
	Management Information System Phase I (English)	03/88	--
	Charcoal Production Project (English)	09/88	090/88
	FIDCO Sawmill Residues Utilization Study (English)	09/88	088/88
	Energy Sector Strategy and Investment Planning Study (English)	07/92	135/92
Mexico	Improved Charcoal Production Within Forest Management for the State of Veracruz (English and Spanish)	08/91	138/91
	Energy Efficiency Management Technical Assistance to the Comision Nacional para el Ahorro de Energia (CONAE) (English)	04/96	180/96
Panama	Power System Efficiency Study (English)	06/83	004/83
Paraguay	Energy Assessment (English)	10/84	5145-PA
	Recommended Technical Assistance Projects (English)	09/85	--
	Status Report (English and Spanish)	09/85	043/85
Peru	Energy Assessment (English)	01/84	4677-PE
	Status Report (English)	08/85	040/85
	Proposal for a Stove Dissemination Program in the Sierra (English and Spanish)	02/87	064/87
	Energy Strategy (English and Spanish)	12/90	--
	Study of Energy Taxation and Liberalization of the Hydrocarbons Sector (English and Spanish)	120/93	159/93
Saint Lucia	Energy Assessment (English)	09/84	5111-SLU
St. Vincent and the Grenadines	Energy Assessment (English)	09/84	5103-STV
Trinidad and Tobago	Energy Assessment (English)	12/85	5930-TR

GLOBAL

Energy End Use Efficiency: Research and Strategy (English)	11/89	--
Women and Energy--A Resource Guide The International Network: Policies and Experience (English)	04/90	--
Guidelines for Utility Customer Management and Metering (English and Spanish)	07/91	--
Assessment of Personal Computer Models for Energy Planning in Developing Countries (English)	10/91	--
Long-Term Gas Contracts Principles and Applications (English)	02/93	152/93
Comparative Behavior of Firms Under Public and Private Ownership (English)	05/93	155/93
Development of Regional Electric Power Networks (English)	10/94	--
Roundtable on Energy Efficiency (English)	02/95	171/95
Assessing Pollution Abatement Policies with a Case Study of Ankara (English)	11/95	177/95
A Synopsis of the Third Annual Roundtable on Independent Power Projects: Rhetoric and Reality (English)	08/96	187/96

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